national highways

Lower Thames Crossing

6.3 Environmental Statement Appendices
Appendix 7.9 – Schedule of Landscape Effects (Clean version)

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Lower Thames Crossing

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List of contents

Page number

List of tables

Page number

1 Introduction

1.1 Overview

1.1.1 The assessment of effects on landscape (including seascape character) considers the A122 Lower Thames Crossing (the Project) as detailed in Chapter 2: Project Description (Application Document 6.1). It considers residual effects following implementation of mitigation measures during the construction and operational phases of the Project. This appendix provides a detailed assessment of effects on national landscape character, seascape character and local landscape character including landscape features and elements. The detailed effect on trees, including veteran trees, is considered in Appendix 7.12: Arboricultural Impact Assessment.

1.1.2 The locations of character areas are shown in Figure 7.1: National Landscape Character including Seascape and Figure 7.2: Local Landscape Character Areas (Application Document 6.2).

1.2 Landscape receptors' susceptibility to specific change

1.2.1 Table 1.1, Table 1.2 and Table 1.3 below define landscape receptor susceptibility to change for the national, seascape and local landscape character. These judgements are made on the basis of the specific Project details following definition of the baseline landscape value (reported in Appendix 7.5: Local Landscape Character Baseline) and nature of the likely Project effects. The criteria for susceptibility to specific change are set out in Table 3.2 of Appendix 7.2: Landscape and Visual Assessment Methodology.

1.3 Sensitivity and magnitude and nature of effect

1.3.1 The criteria for landscape sensitivity and magnitude and nature of effect are set out in Table 7.3 and Table 7.5 of Chapter 7: Landscape and Visual (Application Document 6.1).

1.4 Significance of effect

1.4.1 Table 3.8.1 of Design Manual for Roads and Bridges (DMRB) LA 104 Environmental Assessment and Monitoring (Highways England, 2020) provides guidance on how to determine the level of significance from the assessment of landscape sensitivity and magnitude of effect. Where Table 3.8.1 provides two significance categories, justification for the reporting of a single significance category is provided in the assessment commentary in this appendix.

1.4.2 Typical descriptors for landscape significance of effect and the extent to which the level of significance is likely to be material to the decision-making process are set out in Table 3.3 of Appendix 7.2.

1.5 Terminology

1.5.1 The terminology used to describe the duration of effects is as follows:

a. Short term: less than five years

b. Medium term: between five to 10 years

c. Long term: more than 10 years

1.5.2 Temporary effects are considered to be those arising during construction and that would stop when construction is completed.

Table 1.1 National Character Areas (NCAs) susceptibility to specific change

Landscape receptor	Degree of susceptibility to specific change	Commentary
NCA 119: North Downs[1]	Medium	The North Downs are characterised by twisting sunken lanes, often ancient drove roads, cutting across the scarp and traversing much of the dip slope. Significant infrastructure is present in the NCA with the presence of the M20 running from Folkestone and Ashford along the southern boundary of the NCA until it turns towards London. The M2/A2 skirts the northern boundary and High Speed 1 (HS1) runs through part of the NCA. Other improvements to the road network have also taken place, with the M20, M25 and M2 all running through the NCA. This extensive infrastructure lowers the susceptibility to change. NCA 119 has some capacity to accommodate the Project and ability to accommodate some change without substantial loss to its intrinsic characteristics.
NCA 113: North Kent Plain[2]	Medium	The landscape contains the wooded skyline of Shorne Woods within the Kent Downs Area of Outstanding Natural Beauty (AONB). The built environment exerts a strong influence on the open farmland character of the North Kent Plain, with associated infrastructure such as pylons dominating in expansive vistas. Large settlements and urban infrastructure are often visually dominant in the landscape, with significant development around Greater London and the Medway Towns. Major rail and road links connect the towns with London. NCA 113 has some capacity to accommodate the Project, without substantial loss.
NCA 81: Greater Thames Estuary[3]	Low	The Greater Thames Estuary contains highly urbanised areas within London and marsh edges subject to widespread activity of various major developments including ports, waste disposal, marine dredging, housing regeneration, mineral extraction, and prominent power stations plus numerous other industry-related activities. There are increasing development pressures around major settlements and especially towards London, with urban, industrial, and recreational sites often highly visible within the low-lying marshes. Much of the Shorne and Higham Marshes marshland area is a nationally designated Site of Special Scientific Interest (SSSI) and a designated Ramsar site. NCA 81 has the ability to accommodate the change associated with the Project without substantial loss.

[1] National Character Area Profile: 119 North Downs (Natural England, 2013b)
[2] National Character Area Profile: 113 North Kent Plain (Natural England, 2015)
[3] National Character Area Profile: 81 Greater Thames Estuary (Natural England, 2013c)

Landscape receptor	Degree of susceptibility to specific change	Commentary
NCA 111: Northern Thames Basin[4]	Medium	This landscape has a diverse range of land uses including rough grazing on the ridge top, mineral extraction, industry, landfill and recreation. The settlement pattern includes Linford, Tilbury and Chadwell St Mary with dispersed farm buildings. The landscape becomes extensively urbanised close to the Inner London NCA and includes major transport links such as the M25, A13, A12 and A127, which combined with pylons and powerlines are visually intrusive features within this character area. NCA 111 has some capacity to accommodate the Project and ability to accommodate some change without substantial loss to its intrinsic characteristics; the characteristics of this landscape would be retained.

Table 1.2 Marine Character Areas (MCAs) susceptibility to specific change

Landscape receptor	Degree of susceptibility to specific change	Commentary
South East MCA 18: Thames and Medway Estuaries[5]	Medium	A sense of tranquillity, remoteness and wildness is associated with the extensive salt marshes, mudflats and reclaimed farmed marshland across the Thames and Medway Estuaries. High levels of tranquillity remain in the parts of the character area which are not near London. MCA 18 could experience some damage to these characteristics in the immediate vicinity of the Project as a result of the increased activity. However, this would be in the context of industrial development near Gravesend to the south of the River Thames, and Tilbury Docks, Tilbury Water Treatment Works and raised areas of landfill to the north. Overall, a similar level of remoteness and sense of place within the MCA would be retained and the receptor has some capacity to accommodate the Project without substantial loss to key characteristics.

[4] National Character Area Profile: 111 Northern Thames Basin (Natural England, 2013a)
[5] Seascape Character Assessment for the South East Inshore marine plan area (Marine Management Organisation, 2018)

Table 1.3 Local Landscape Character Areas (LLCAs) susceptibility to specific change

Landscape receptor	Degree of susceptibility to specific change	Commentary
Kent Downs AONB		
West Kent Downs (sub area Cobham)	Medium	This LLCA lies within a nationally valued, accessible landscape designated as an AONB and contains nationally important biodiversity designations and heritage assets, as well as having an area of recreational value at Ashenbank Wood. Due to the presence of the existing A2 corridor and HS1 along the northern boundary of this LLCA, the receptor has some ability to accommodate the Project without substantial loss of its overall integrity.
West Kent Downs (sub area Shorne)	High	This LLCA lies within a nationally valued, accessible landscape designated as an AONB and contains nationally important biodiversity designations. The local character area of Shorne has been severed from the more extensive AONB landscape to the south by the A2 road corridor. It is bounded to the north by the open farmland of the Hoo Peninsula. There are areas of designated ancient woodland, a SSSI and several veteran trees. The receptor has limited capacity to accommodate the Project, which would require large-scale loss of prominent and mature woodland, a key characteristic of the landscape and one of the special components, characteristics and qualities of the AONB.
West Kent Downs Landscape Character Area (LCA) 1A (Overview comprising sub areas of Shorne and Cobham)	High	This is a nationally designated landscape, containing nationally important biodiversity designations and large areas of woodland, including ancient woodland. The existing A2 and HS1 corridors cross the LCA, although existing woodland reduces the influence of these infrastructure features in the wider LCA. The receptor has limited capacity to accommodate the Project, which would require large-scale loss of prominent and mature woodland, a key characteristic of the landscape and one of the special components, characteristics and qualities of the AONB.

Landscape receptor	Degree of susceptibility to specific change	Commentary
Mid Kent Downs (sub area Bredhurst)	Medium	This LLCA lies within a nationally valued landscape designated as an AONB and contains nationally important areas of ancient woodland and a footpath network of recreational value, including the North Downs Way national trail. The receptor has some ability to accommodate the nitrogen deposition compensation site proposed as part of the Project, due to large areas of woodland being a key characteristic of the landscape.
Hollingbourne Scarp and Vale (sub area Boxley Vale)	Medium	This LLCA lies within a nationally valued landscape designated as an AONB and contains nationally important biodiversity and heritage designations and a footpath network of recreational value. The receptor has some ability to accommodate the nitrogen deposition compensation site proposed in the adjacent Mid Kent Downs (sub area Bredhurst) LLCA, due to large areas of woodland being a key characteristic of the adjacent landscape.
Medway Valley (sub area The Eastern Scarp)	Medium	This is a nationally designated landscape, with nationally important biodiversity and heritage designations, some ancient woodland and the nationally important North Downs Way. The receptor has some ability to accommodate the nitrogen deposition compensation site proposed within the neighbouring Mid Kent Downs (sub area Bredhurst) LLCA, as woodland planting would be in keeping with the existing character of the adjacent landscape.
The setting of the Kent Downs AONB and Green Belt		
Higham Arable Farmland (sub area Gadshill)	Medium	This area has a distinct urban fringe character due to the presence of the settlements on higher ground to the north and south. The M2 junction 1 sits at the western edge of this area. The receptor has some capacity to accommodate the Project without substantial loss of characteristic features.
Shorne Wooded Slopes	Medium	The Shorne Wooded Slopes LLCA is between the rural settlement of Shorne to the west and the urban centre of Higham to the east, and incorporates the east part of Shorne Woods. This is an intimate, elevated landscape, which is shielded from the M2 junction 1 and A289 by a densely planted false cutting and dense unmanaged young woodland in the adjacent West Kent Downs (sub area Shorne) LLCA. The receptor has some capacity to accommodate the Project without substantial loss, due to its heavily wooded character and slightly remote nature.

Landscape receptor	Degree of susceptibility to specific change	Commentary
Higham Arable Farmland (sub area Thong)	High	This receptor is east of Gravesend and north of the HS1 corridor near Thong. The focus of this area is the rural settlement of Thong, a designated conservation area with associated listed buildings. The settlement has a strong relationship with the open arable landscape to its west, which provides separation from Gravesend. Due to its open nature, the receptor has a limited ability to accommodate the Project without substantial loss in the distinctive small scale and defined LLCA.
Istead Arable Farmlands	High	This open, arable landscape has a strong association with the wooded skyline of Shorne and Ashenbank Woods within the AONB to the east. The LLCA contains part of this nationally important SSSI (Shorne and Ashenbank Woods), as well as Jeskyns Community Woodland and Public Rights of Way (PRoWs) of recreational value. The receptor has some ability to accommodate change without substantial alteration, due to the presence of the HS1 and the A2 corridors along the northern boundary of the LLCA.
Gravesend Southern Fringe	Low	The Gravesend Southern Fringe forms an open, gently undulating, linear landscape characterised by the A2, HS1 and the southern edge of Gravesend. The receptor can accommodate a degree of change without substantial loss to the landscape features within this linear, recreational landscape. It would only experience slight damage to its function as a buffer between the urban edge and the A2 corridor. The new features of the Project would not be wholly uncharacteristic in this existing infrastructure corridor. Overall, the receptor has capacity to accommodate the Project without substantial loss of overall integrity.
Higham Arable Farmland (sub area Chalk)	High	The LLCA is a locally valued landscape, which provides part of the immediate setting to the Kent Downs AONB and comprises gently undulating arable fields with limited vegetation cover. It contains a nationally important biodiversity designation, heritage assets and PRoWs of recreational value. The receptor has limited capacity to accommodate the Project without substantial loss of characteristic features.

Landscape receptor	Degree of susceptibility to specific change	Commentary
Shorne and Higham Marshes	Low	The LLCA is a locally valued landscape associated with the Thames Estuary and provides part of the wider setting to the Kent Downs AONB, containing internationally and nationally important biodiversity designations, some heritage assets and PRoWs of recreational value. It has a sense of remoteness and a strong association with the Higham Arable Farmland LLCA to the south. The receptor has the ability to accommodate change associated with the Project without substantial loss, due to the Project being largely underground in this location.
Mucking Marshes	Low	This marshland landscape is a grazed, flat and low-lying area immediately adjacent to the north bank of the River Thames. Settlement is limited to the western edge and comprises the village of East Tilbury. The Project would not affect the overall exposed characteristics or association with the adjacent historic Coal House Battery and Coalhouse Fort. The receptor has the capacity to accommodate the Project without substantial loss of characteristic features.
Tilbury Marshes	Low	This area has a strong association with Chadwell Escarpment Urban Fringe to the north. The tower of West Tilbury church forms a skyline landmark. To the south is the open, low-lying landscape of the Thames Estuary with the Kent landscape beyond. Powerlines and raised landfill sites form notable features within the landscape. The landscape is degraded in part with indistinct features and minimal variation in landscape pattern. The Project would only result in a slight detraction in the sense of place. The receptor can accommodate change without substantial loss of characteristic features.
Chadwell Escarpment Urban Fringe	Medium	The Chadwell Escarpment Urban Fringe is a locally valued landscape, which provides the backdrop to the low-lying, flat Tilbury Marshes to the south. This is an urban fringe landscape where overhead lines (OHL) and major roads and housing around Chadwell St Mary influence character. The Tilbury Loop railway line also crosses the eastern end of the LLCA. The receptor has some capacity to accommodate the Project without substantial loss of overall integrity and characteristic features.

Landscape receptor	Degree of susceptibility to specific change	Commentary
Green Belt/areas beyond the setting of the Kent Downs AONB		
Dartford and Gravesend Fringe	Low	This urban fringe landscape is bounded by the A2 corridor to the south and by a defined built edge to the north, west and east, resulting in a strong urban influence within the LLCA. The receptor is able to accommodate the Project without substantial loss of characteristic features.
West Tilbury Urban Fringe	Medium	The landscape of the West Tilbury Urban Fringe forms a broad, open, large-scale area of arable farmland between Chadwell St Mary and East Tilbury. It is clearly defined by the adjacent escarpments to the north-east and south, and the urban edges of Chadwell St Mary and East Tilbury. Pylons and powerlines are dominant features. The receptor has some ability to accommodate change without substantial loss of characteristic features.
Linford/ Buckingham Hill Urban Fringe	Low	This urban fringe landscape forms a locally distinctive area of elevated landform comprising a visually prominent, broad, flat to undulating topped ridge. There are a diverse range of land uses including mixed arable and pasture fields, mineral extraction, industry, landfill and St Cleres Hall Golf Club. The receptor is able to accommodate the Project without substantial loss of its overall integrity and characteristic features associated with new infrastructure.
White Croft/ Orsett Heath Urban Fringe	Medium	This urban fringe landscape predominantly consists of gently undulating farmland, strongly influenced by the presence of transport corridors and utilities infrastructure. The LLCA is also influenced by the northern urban edge of Chadwell St Mary, the eastern urban edge of Grays and the large junction on the A13 south of Baker Street. Despite the urban influences, new features would weaken the perception of the arable landscape across a broad area. The receptor has some capacity to accommodate the Project without substantial loss.
Orsett Lowland Farmland	Medium	The Orsett Lowland Farmland landscape falls outside of the Thames Chase Community Forest area. This LLCA has a relationship with the open, large-scale Thurrock Reclaimed Fen to the north and its southern edge is defined by the A13 corridor. It is a low-lying, gently undulating fen edge landscape focused on the historic nucleated settlement of Orsett. Given the prominence of the A13 corridor, the receptor has some capacity to accommodate the Project without substantial loss.

Landscape receptor	Degree of susceptibility to specific change	Commentary
Thurrock Reclaimed Fen (sub area Mardyke)	High	Thurrock Reclaimed Fen (sub area Mardyke) forms the focus of the Fanns Landscape and is partly within the Thames Chase Community Forest. The north-west part of the LLCA is affected by the M25 corridor, including highway infrastructure and vehicle movements. However, this is an open and sparsely settled landscape, with a strong sense of place, remoteness and tranquillity, and contains PRoWs of recreational value. The receptor has limited ability to accommodate change without substantial loss.
Thurrock Reclaimed Fen (sub area Thames Chase)	Medium	Thurrock Reclaimed Fen (sub area Thames Chase) forms a key part of the Fanns Landscape and falls within the Thames Chase Community Forest, which is of high recreational value. The landscape is typically wooded in nature, occupying a slightly elevated position above the wider fen landscape to the east, from which it is severed by the M25 corridor. Highway infrastructure and vehicle movements along the M25 influence the LLCA. The receptor has some capacity to accommodate change without substantial loss of characteristic features.
Belhus Lowland Quarry Farmland	Medium	Belhus Lowland Quarry Farmland is in the Thames Chase Community Forest. It is a low-lying, gently rolling, mixed arable and pasture landscape, interspersed with numerous tree belts and woodland blocks. Heritage assets include conservation areas at North Ockendon and Cranham and Belhus Park Grade II Registered Park and Garden. Highway infrastructure and vehicle movements along the M25 influence the LLCA. The receptor can accommodate some change without substantial loss.
Brentwood Wooded Hills	Low	The Brentwood Wooded Hills is located within the Thames Chase Community Forest. It is an undulating, pasture and arable landscape with large areas of woodland including ancient woodland at Codham Hall Wood, Hobbs Hole and Warley Hall Wood. Highway infrastructure and vehicle movements along the M25 and at junction 29 of the M25 influence the LLCA. The receptor has the ability to accommodate change without substantial loss of characteristic features.

2 Construction

2.1 Landscape effects on National Character Areas (NCAs) during construction

2.1.1 Refer to Figure 7.1: National Landscape Character including Seascape (Application Document 6.2) for the locations of NCAs.

Table 2.1 Schedule of landscape effects on National Character Areas (NCAs) during construction

Landscape receptor	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
NCA 119: North Downs	High	Minor adverse	Slight adverse effect	Project construction activity would occur over a medium-term period. Main Project (highway and associated infrastructure, earthworks, construction compounds and walkers, cyclists, and horse riders (WCHs)) – nature of effects Only a very small area on the northern edge of the North Downs NCA falls within the Order Limits for the modified A2 corridor and the effects of construction would be largely indirect. A very small part of the NCA has also been included in the Order Limits for a nitrogen deposition compensation site south of Chatham. Activity in this NCA would be principally confined to upgrading an existing WCH route to the south of the A2 corridor and HS1; diversion of National Cycle Network (NCN) Route 177; and operation of the Marling Cross compound at the Gravesend East junction. The principal construction activities within NCA 119 would be as described in Table 2.3 for West Kent Downs (sub area Cobham) LLCA and Istead Arable Farmlands LLCA, resulting respectively in a slight to noticeable change to existing landscape character. However, these effects would not alter the overall character of the NCA given the small physical footprint and limited extent of NCA affected by the construction works. An overall minor adverse magnitude of effect on the North Downs NCA has therefore been assessed. Project utility works – nature of effects The principal construction activities associated with the proposed utility works within NCA 119 would be as described in Table 2.3 for West Kent Downs (sub area Cobham) LLCA and Istead Arable Farmlands LLCA, resulting in slight damage to existing landscape character. However, the Project utility works would occur in only a small linear

Landscape receptor	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				area on the northern margin of the North Downs NCA and would therefore only result in very minor damage to existing landscape character. Justification for significance level where two significance categories are given in LA 104 The significance of effect has been assessed as slight rather than moderate due to the small physical footprint and limited extent of NCA affected by the construction works.
NCA 113: North Kent Plain	High	Moderate adverse	Moderate adverse effect	Project construction activity would occur over a medium-term period. Main Project (highway and associated infrastructure, earthworks, construction compounds and WCHs) – nature of effects This NCA would encompass most of the A2 widening works, the full M2/A2/A122 Lower Thames Crossing junction and construction of the South Portal and approach cutting slopes, as well as earthworks to create the new hilltop landform at Chalk Park. The principal construction activities within NCA 113 would be as described in Table 2.3 for Dartford and Gravesend Fringe LLCA, Gravesend Southern Fringe LLCA, Higham Arable Farmland (sub area Chalk) LLCA, Higham Arable Farmland (sub area Thong) LLCA, Higham Arable Farmland (sub area Gadshill) LLCA, Shorne Wooded Slopes LLCA and West Kent Downs (sub area Shorne) LLCA. Within these LLCAs, the change to existing landscape character would vary from no change within Dartford and Gravesend Fringe in the west, very minor change in Shorne Wooded Slopes and Higham Arable Farmland (sub area Gadshill) in the east, slight change within Gravesend Southern Fringe and large-scale change in West Kent Downs (sub area Shorne), Higham Arable Farmland (sub area Thong) and Higham Arable Farmland (sub area Chalk), where most construction activity would be concentrated. The extent of construction activity would be relatively small in proportion to the wider extent of the NCA and the Project is located within an area already notably influenced by the existing urban area of Gravesend and the A2 corridor. Overall, the Project would result in some loss of distinctive landscape elements and a noticeable change in the existing landscape character of the North Kent Plain NCA 113 near the construction activity. However, the landscape characteristics of the wider NCA to the east and west of the Project would be maintained. An overall moderate adverse magnitude of effect on the North Kent Plain NCA has therefore been assessed.

Landscape receptor	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				Project utility works – nature of effects The principal construction activities associated with the proposed utility works within NCA 113 would be as described in Table 2.3 for Dartford and Gravesend Fringe LLCA, Gravesend Southern Fringe LLCA, Higham Arable Farmland (sub area Chalk) LLCA, Higham Arable Farmland (sub area Thong) LLCA, Higham Arable Farmland (sub area Gadshill) LLCA, Shorne Wooded Slopes LLCA and West Kent Downs (sub area Shorne) LLCA. Within these LLCAs, the damage to existing landscape character would vary from no change within Dartford and Gravesend Fringe in the west, very minor within Shorne Wooded Slopes and Higham Arable Farmland (sub area Gadshill) in the east, to slight damage within Gravesend Southern Fringe and Higham Arable Farmland (sub area Chalk), with noticeable damage limited to within West Kent Downs (sub area Shorne) and Higham Arable Farmland (sub area Thong) where most utility works would be concentrated. However, the Project utility works would occur in only relatively narrow linear corridors within NCA 113: North Kent Plain, generally along the A2, Gravesend Road or other local roads, or near the Project route. Overall, there would only be slight damage to existing landscape character. Justification for significance level where two significance categories are given in LA 104 The significance of effect has been assessed as moderate rather than large due to the localised extent of construction activity in relation to the wider NCA, in an area already notably influenced by the existing urban area of Gravesend and the A2 corridor.
NCA 81: Greater Thames Estuary	Medium	Moderate adverse	Moderate adverse effect	Project construction activity would occur over a medium-term period. Main Project (highway and associated infrastructure, earthworks, construction compounds and WCHs) – nature of effects Within the Greater Thames Estuary NCA, proposed construction activity principally comprises below ground tunnelling works south of the River Thames. Above ground operations would be limited to the A226 Gravesend Road compound and Milton compound, with more extensive above ground activity to the north of the River Thames focused on the northern tunnel entrance compound, construction of the North Portal

Landscape receptor	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				and associated construction of sculptural landscape mounding and construction of Tilbury Viaduct. The principal construction activities within NCA 81 would be as described in Table 2.3 for Shorne and Higham Marshes LLCA, Tilbury Marshes LLCA, Chadwell Escarpment Urban Fringe LLCA (partial area), Mucking Marshes LLCA, and West Tilbury Urban Fringe LLCA (partial area). Within these LLCAs, the change to existing landscape character would vary from very minor change within Mucking Marshes to large-scale change within Tilbury Marshes and West Tilbury Urban Fringe associated with the northern tunnel entrance compound and related construction works, and construction of Tilbury Viaduct. Within Shorne and Higham Marshes there would be a slight change to existing landscape character and in Chadwell Escarpment Urban Fringe there would be a noticeable change. The main effects on the landscape character of this NCA would occur to the north of the River Thames. Overall, the Project would result in partial loss of distinctive landscape elements and a noticeable change to the existing landscape character of the Greater Thames Estuary NCA 81. An overall moderate adverse magnitude of effect on the Greater Thames Estuary NCA has therefore been assessed. <u>Project utility works – nature of effects</u> The principal utility works within NCA 81 would be as described in Table 2.3 for Shorne and Higham Marshes LLCA, Tilbury Marshes LLCA, Chadwell Escarpment Urban Fringe LLCA (partial area), Mucking Marshes LLCA, and West Tilbury Urban Fringe LLCA (partial area). Within these LLCAs, the damage to existing landscape character would vary from no change within Mucking Marshes to slight damage within West Tilbury Urban Fringe where there would be a greater concentration of utility works. Within Shorne and Higham Marshes LLCA, Tilbury Marshes LLCA and Chadwell Escarpment Urban Fringe LLCA there would be only very minor damage to existing landscape character. However, the Project utility works would occur in only relatively narrow linear areas, generally along Tilbury Loop railway line, Station Road or other local roads, or near the Project route. Overall, there would only be very minor damage to existing landscape character.

Landscape receptor	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
NCA 111: Northern Thames Basin	Medium	Minor adverse	Slight adverse effect	Project construction activity would occur over a medium-term period. Main Project (highway and associated infrastructure, earthworks, construction compounds and WCHs) – nature of effects Construction activity in the Northern Thames Basin NCA would include installation of street lighting, gantries and road signage along the new highway, and the construction of green bridges and the Mardyke and Orsett Fen Viaducts along the Project route, as well as several new overbridges, supporting structures and retaining walls at the A13/A1089/A122 Lower Thames Crossing junction. The principal construction activities within NCA 111 would be as described in Table 2.3 for Chadwell Escarpment Urban Fringe LLCA (partial area), West Tilbury Urban Fringe LLCA (partial area), Linford/Buckingham Hill Urban Fringe LLCA, White Croft/Orsett Heath Urban Fringe LLCA, Orsett Lowland Farmland LLCA, Thurrock Reclaimed Fen (sub area Mardyke) LLCA, Belhus Lowland Quarry Farmland LLCA, Thurrock Reclaimed Fen (sub area Thames Chase) LLCA and Brentwood Wooded Hills LLCA. Within these LLCAs, change to existing landscape character would vary from very minor change within Brentwood Wooded Hills to large-scale change within West Tilbury Urban Fringe, White Croft/Orsett Heath Urban Fringe and Thurrock Reclaimed Fen (sub area Mardyke), where there is a greater concentration of construction activity or the Project route crosses open landscape. Within Chadwell Escarpment Urban Fringe, Orsett Lowland Farmland, Belhus Lowland Quarry Farmland and Thurrock Reclaimed Fen (sub area Thames Chase), there would be noticeable change to existing landscape character, and there would be a slight change within Linford/Buckingham Hill Urban Fringe. The footprint of construction activity would be proportionally very small in relation to the wider extent of the NCA, in particular given the corridor already affected by the M25 motorway. Overall, the Project would result in a slight loss of distinctive landscape elements and a slight change to the existing landscape character of the Northern Thames Basin NCA 111. An overall minor adverse magnitude of effect on the Northern Thames Basin NCA has therefore been assessed.

Landscape receptor	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				Project utility works – nature of effects The principal construction activities associated with the proposed utility works within NCA 111 would be as described in Table 2.3 for Chadwell Escarpment Urban Fringe LLCA (partial area), West Tilbury Urban Fringe LLCA (partial area), Linford/Buckingham Hill Urban Fringe LLCA, White Croft/Orsett Heath Urban Fringe LLCA, Orsett Lowland Farmland LLCA, Thurrock Reclaimed Fen (sub area Mardyke) LLCA, Belhus Lowland Quarry Farmland LLCA, Thurrock Reclaimed Fen (sub area Thames Chase) LLCA and Brentwood Wooded Hills LLCA. Within these LLCAs, damage to existing landscape character would vary from very minor damage within Chadwell Escarpment Urban Fringe and Brentwood Wooded Hills, slight damage within Thurrock Reclaimed Fen (sub area Thames Chase), to noticeable damage within Thurrock Reclaimed Fen (sub area Mardyke) and White Croft/Orsett Heath Urban Fringe where there is a greater concentration of utility works. Within West Tilbury Urban Fringe LLCA, Linford/Buckingham Hill Urban Fringe LLCA, Orsett Lowland Farmland LLCA and Belhus Lowland Quarry Farmland LLCA, there would be slight damage to existing landscape character. However, the Project utility works would occur in only relatively narrow linear areas, generally along the A13 or other local roads, or near the Project route. Overall, there would only be slight damage to existing landscape character.

2.2 Landscape effects on MCAs during construction

2.2.1 Refer to Figure 7.1: National Landscape Character including Seascape (Application Document 6.2) for MCA locations.

Table 2.2 Schedule of landscape effects on MCAs during construction

Landscape receptor	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
South East MCA 18: Thames and Medway Estuaries	Medium	Minor adverse	Slight adverse effect	Project construction activity would occur over a medium-term period. Main Project (highway and associated infrastructure, earthworks, construction compounds and WCHs) – nature of effects *Note: the section of MCA 18 which falls within the study area also lies within the NCA 81: Greater Thames Estuary.* No above ground construction would take place within the Thames and Medway Estuaries MCA, with proposed tunnel construction taking place below the River Thames. There would therefore be no direct effects on marine character resulting from construction activity. However, some indirect effects on this MCA would result from construction activity in the adjoining Tilbury Marshes LLCA to the north. Construction activity within the Tilbury Marshes LLCA is summarised in Table 2.3 and would result in the following indirect effects on this MCA: • Localised uncharacteristic and conspicuous construction activity would be perceptible close to the northern shore of the Thames Estuary, associated with sculptural landscape mounding at Tilbury Fields around the North Portal. • Some localised further reduction to tranquillity due to construction activity and associated additional noise sources, experienced in the context of the existing urban influences along this stretch of estuary, including Gravesend and upstream Tilbury Docks.

Landscape receptor	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				Construction activity in the south within the Higham Arable Farmland (sub area Chalk) LLCA is summarised in Table 2.3 and is also likely to result in some indirect effects as follows: • Distant, uncharacteristic construction activity would be perceptible to the south of the A226 Gravesend Road, within the southern tunnel entrance compound and for the construction of a hilltop landform, evident in front of the wooded skyline of Shorne Woods Country Park within the Kent Downs AONB. Construction activity in the immediately adjoining Shorne and Higham Marshes LLCA to the south is not likely to result in any notable indirect effects on marine character, due to the limited nature of above ground construction activity. Overall, the Project would result in a slight change to the existing marine character of South East MCA 18: Thames and Medway Estuaries. <u>Project utility works – nature of effects</u> No utility works are proposed within South East MCA 18: Thames and Medway Estuaries and there would be no notable indirect effects resulting from proposed utilities in adjoining LLCAs.

2.3 Landscape effects on LLCAs during construction

2.3.1 Refer to Figure 7.2: Local Landscape Character Areas (Application Document 6.2) for the locations of LLCAs.

Table 2.3 Schedule of landscape effects on LLCAs during construction

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
Kent Downs AONB				
West Kent Downs (sub area Cobham) Key characteristics of relevance to study area (based on Kent Downs AONB Landscape Character Assessment Update 2020 (Kent Downs AONB Unit, revised and published 2023)): • Extensive woodland blocks, some providing a backdrop to the wider landscape, with several designated features, including ancient woodland at Ashenbank Wood and some veteran trees. • Woodland, parkland, a golf course and wood pasture within Cobham	High	Minor adverse	Moderate adverse effect	Project construction activity would occur over a medium-term period. <u>Main Project (highway and associated infrastructure, earthworks, construction compounds and WCHs) – nature of effects</u> Construction activity would be isolated to a minimal area on the northern edge of this LLCA, with activities unlikely to be perceivable from the wider area. Proposed activity would be largely confined to construction of the proposed WCH route to the south of HS1. Works in the adjacent West Kent Downs (sub area Shorne) LLCA would include replacement of street lighting (new LED (light-emitting diode) luminaires on columns at a reduced height to the existing columns) and existing gantries and installation of new road signage, as well as demolition of the existing Brewers Road overbridges and construction of a new Brewers Road green bridge with temporary cranage. The diversion of NCN Route 177 to the south of HS1 along footpath NS179 would result in some short-term construction activity along this existing route. Activity within this LLCA would result in the following direct effects: • Loss of a small number of trees south-east of Brewers Road overbridge • Uncharacteristic and conspicuous construction activity within the rural and parkland landscape

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
Hall Grade II* Registered Park and Garden. • The gently undulating landform, combined with hedgerow trees and woodland, provides containment. • Northern boundary influenced by HS1 and A2 corridors, with the perception of night-time lighting and reduced levels of tranquillity.				• A further reduction in the level of tranquillity experienced along the A2 corridor, due to construction activity and associated additional noise sources, including along the periphery of Cobham Hall Grade II* Registered Park and Garden and Rochester and Cobham Park Golf Club, close to the A2 Some indirect effects on this LLCA would also result from construction activity in the adjoining West Kent Downs (sub area Shorne) and nearby Higham Arable Farmland (sub area Thong) LLCAs as follows: • The perception of reduced tree cover to the north would result from the removal of the existing tree belt in the A2 central reservation, which currently reduces the apparent scale and width of the existing road corridor. • The perception of reduced tree cover to the north due to the removal of the existing woodland between the A2 and HS1, including remnant woodland within the Shorne and Ashenbank Woods SSSI between the A2 and HS1, which currently contributes to the landscape buffer along the existing road corridor. • The perception of large-scale construction activity to the north for the A2 widening and north-west for the M2/A2/A122 Lower Thames Crossing junction. • A further reduction in the level of tranquillity experienced alongside the A2 corridor, due to construction activity and associated additional noise sources, including along the periphery of Cobham Hall Grade II* Registered Park and Garden and Rochester and Cobham Park Golf Club, close to the A2.

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				• Limited perceived change in the night-time environment as a result of construction activity and new light sources evident along the widened A2 corridor, experienced in the context of existing street lighting along the A2. The key characteristics of the landscape would be largely unaffected, apart from a small group of trees along the northern edge of Cobham Hall Grade II* Registered Park and Garden. There would, however, be some indirect effects associated with woodland removal for the A2 widening works in the adjoining West Kent Downs (sub area Shorne) LLCA that forms part of the wooded backdrop to the West Kent Downs (sub area Cobham) LLCA. Overall, the Project would result in a slight change to the existing landscape character of the West Kent Downs (sub area Cobham) LLCA, due to the limited direct effects on landscape elements and perception of indirect effects from removal of existing woodland and construction activity in the adjoining LLCAs.
				<u>Project utility works – nature of effects</u> Utility works in the West Kent Downs (sub area Cobham) would include the installation of a multi-utility corridor in one lane of Halfpence Lane. The utility works would result in direct effects, in addition to the related construction activity, comprising the loss of a small number of trees adjoining Brewers Lane roundabout junction with Thong Lane. Some indirect effects on this LLCA would also result from utility works in the adjoining West Kent Downs (sub area Shorne) LLCA as follows: • The perception of construction activity associated with the installation of multi-utility corridors between HS1 and the modified A2 corridor.

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				• The perception of reduced vegetation cover would result from the removal of corridors of woodland for utilities between HS1 and the A2 westbound carriageway. This would include some woodland removal within the part of the northern margin of Cobham Hall Grade II* Registered Park and Garden that lies between the A2 and HS1. Overall, the perception of reduced vegetation cover would be limited to the northern edge of the LLCA due to the wooded nature of the surrounding landscape which would reduce intervisibility. There would be indirect effects on the key characteristics of the landscape, associated with removal of woodland corridors for utilities in the West Kent Downs (sub area Shorne) LLCA. Overall, the utility works would result in a very minor loss of landscape elements and slight damage to existing landscape character within the West Kent Downs (sub area Cobham) LLCA.
				<u>Justification for significance level where two significance categories are given in LA 104</u> The significance of effect has been assessed as moderate rather than slight due to the indirect effects associated with vegetation removal, and the increased perception of construction activity and the A2 corridor as a result, as well as the perception of construction activity for the M2/A2/A122 Lower Thames Crossing junction.
West Kent Downs (sub area Shorne) Key characteristics of relevance to study area (based on Kent Downs AONB Landscape Character Assessment Update 2020	Very high	Major adverse	Very large adverse effect	Project construction activity would occur over a medium-term period. <u>Main Project (highway and associated infrastructure, earthworks, construction compounds and WCHs) – nature of effects</u> Proposed construction activity would be focused on the A2 widening work, which would occur within the same footprint of the existing A2, and slightly to the north and south of the existing

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
(Kent Downs AONB Unit, revised and published 2023)): • Extensive areas of woodland, with several designated features, including ancient woodland at Shorne Woods Country Park and veteran trees. • The densely wooded nature creates a strong sense of enclosure. • Steeply undulating, ridge landform that provides an attractive backdrop to views from surrounding LLCAs. • Prominent transportation infrastructure along the A2 and HS1 corridors, with the perception of night-time lighting and reduced levels of tranquillity. • Mature tree belts along the A2 corridor.				footprint in some areas to accommodate additional carriageways. The widening would require a number of retaining structures to account for level changes along the widened corridor. Other works would include replacement of street lighting (new LED luminaires on columns at a reduced height to the existing columns), dismantling of existing gantries and installation of new gantries and road signage. There would also be the demolition of the existing Thong Lane and Brewers Road overbridges, construction of the replacement Brewers Road green bridge with temporary cranage and construction of an attenuation basin to the east of Park Pale. Activities would be limited to the southern periphery of this LLCA and would result in the following direct effects: • Loss of woodland in the A2 central reservation would result in increased perception of the modified A2 corridor, specifically the westbound carriageway, with increased prominence of highway infrastructure. • Loss of woodland between the A2 westbound carriageway and HS1, including within the part of the northern margin of Cobham Hall Grade II* Registered Park and Garden that lies between the A2 and HS1 and remnant woodland within the Shorne and Ashenbank Woods SSSI between the A2 and HS1. • Loss of a small area of trees to facilitate construction of Brewers Road green bridge. • Loss of woodland on the southern edge of Shorne Woods Country Park, including some ancient woodland, adjoining the northern edge of the A2 eastbound carriageway. Some tree loss along Brewers Road would affect the characteristic enclosure along this rural lane as it approaches the Project/A2 corridor. • Partial loss of woodland east of Park Pale as a result of new earthworks.

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				• Noticeable change to the existing false cutting east of Park Pale. • Noticeable loss of the existing false cutting between the A2 and HS1, near Brewers Road overbridge. • Perceived large-scale construction activity along the A2 corridor associated with the dismantling of existing highway infrastructure, installation of new gantries, road signs and lighting, and construction of retaining walls and carriageways along the A2 and a new large-scale attenuation basin east of Park Pale. • A further reduction in the level of tranquillity experienced along the A2 corridor, due to construction activity and associated additional noise sources, although this would be most apparent close to the A2 where the existing road corridor is audible. • Limited perceived change in the night-time environment as a result of construction activity and new light sources evident along the widened A2 corridor, experienced in the context of existing street lighting along the A2. Some indirect effects on this LLCA would also result from construction activity in the adjoining Higham Arable Farmland (sub area Thong) LLCA as follows: • The perception of reduced tree cover to the west due to the removal of existing woodland at Gravelhill Wood, which currently provides enclosure on the south-western edge of the LLCA. This would open up views across the landscape to the west. • The perception of large-scale construction activity to the west for the M2/A2/A122 Lower Thames Crossing junction, due to removal of existing woodland at Gravelhill Wood and the new

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				Thong Lane green bridge south, as well as within the A2 compound. The majority of the key characteristics of the landscape would be unaffected. Removal of woodland along the A2 corridor for the widening works, including some ancient woodland on the edge of Shorne Woods Country Park, would adversely affect the wooded character of the LLCA, as well as reducing integration of the A2 corridor. Overall, the Project would result in partial loss of distinctive landscape elements due to loss of woodland, and large-scale change to existing landscape character due to widening of the existing A2 road corridor on the southern edge of the West Kent Downs (sub area Shorne) LLCA. However, the perception of change would be principally limited to the A2 road corridor and immediately adjoining area and perceived in the context of the existing heavily trafficked A2 route corridor.
				<u>Project utility works – nature of effects</u> Utility works in the West Kent Downs (sub area Shorne) LLCA would include: • Installation of a large-bore medium-pressure gas pipeline diversion, from the Inn on the Lake to Park Pale, following a line parallel to and north of the A2 eastbound local distributor road • Installation of multi-utility corridors along both sides of the A2 • Installation and operation of Park Pale Utility Hub The following direct effect would result from utility works, in addition to the related construction activity: • The loss of woodland corridors, including some ancient woodland along the southern edge of the Shorne Woods Country Park and woodland adjoining Park Pale

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				The following indirect effects on this LLCA would result from utility works in the adjoining Higham Arable Farmland (sub area Thong) LLCA: • The perception of utility works west of Thong Lane • The perception of reduced vegetation cover as a result of woodland removal at Gravelhill Wood Most of this LLCA would be unaffected by utility works, however, removal of woodland along the A2, including some ancient woodland within Shorne Woods Country Park, would adversely affect the wooded character of the LLCA locally, as well as reducing integration of the A2 corridor. Overall, the utility works would result in the partial loss of landscape elements and noticeable damage to existing landscape character within the West Kent Downs (sub area Shorne) LLCA.
West Kent Downs LCA 1A (which includes the LLCA sub areas of Shorne and Cobham) Relevant special components, characteristics and qualities from the Kent Downs AONB Management Plan 2021–2026 (Kent Downs AONB Unit, 2021): • Dramatic landform and views • Farmed landscape • Woodland and trees (including ancient	Very high	Moderate adverse	Large adverse effect	The principal construction activities within the West Kent Downs LCA 1A would be as described above for the West Kent Downs (sub area Cobham) LLCA and West Kent Downs (sub area Shorne) LLCA. Within these LLCAs, change to existing landscape character resulting from main Project construction would vary from a slight change within West Kent Downs (sub area Cobham) to large-scale change locally within West Kent Downs (sub area Shorne). The change to existing landscape character resulting from utility works would vary from a slight change within West Kent Downs (sub area Cobham) to noticeable change locally within West Kent Downs (sub area Shorne). <u>AONB special components, characteristics and qualities</u> Effects on the relevant landscape special components, characteristics and qualities would be as follows:

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
woodland and veteran trees) and hedgerows • Tranquillity and remoteness (including dark night skies, space, beauty and peace)				• Dramatic landform and views: changes in landform would only be minor and limited to the existing A2 corridor for the widening works. The dramatic landform in the wider AONB would be unaffected. Removal of woodland along the A2 corridor would open up some limited views from within the AONB towards construction activity. However, this would be largely localised to the immediately adjoining area alongside the existing A2 corridor due to retained woodland in the wider AONB, and with affected views already influenced to an extent by existing highway infrastructure and vehicle movements. • Farmed landscape: the farmed landscape of the AONB would be largely unaffected, apart from the conversion of arable fields east of Brewers Wood to woodland for ancient woodland compensation, and a small area of pasture field east of Randall Wood to woodland and grassland for a nitrogen deposition compensation site. Only a small proportion of the farmed landscape would be affected, to be replaced with woodland in keeping with one of the key AONB special components. • Woodland and trees: there would be extensive removal of trees and woodland within the AONB to accommodate the A2 widening works. However, this would be focused along the edges and central reservation of the A2 corridor, with trees and woodland beyond the A2 corridor largely unaffected. The removal of trees and woodland would reduce the sense of enclosure along the A2 corridor, resulting in increased perception of the A2 corridor along which construction activity would be focused. Vegetation removal would also include ancient woodland in Shorne Woods Country Park. • Tranquillity and remoteness: construction activity associated with the A2 widening works and M2/A2/A122 Lower Thames Crossing junction would slightly reduce perceived tranquillity in

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				the AONB. However, this would be very localised to areas along the edge of the existing A2 corridor, and along the western margin of the AONB north and south of the A2 corridor, where levels of tranquillity are already influenced by the existing road corridor. There would be a perceived increase in night-time lighting along the A2 corridor due to vegetation removal, and along the western margin of the AONB due to lighting within the A2 compound and at the M2/A2/A122 Lower Thames Crossing junction. However, this change would only be perceived in localised areas, where existing lighting sources are apparent along the A2 and within Gravesend. Existing dark night skies of the AONB would be unaffected. The footprint of construction activity focused along the A2 corridor would be proportionally very small in relation to the overall extent of the LCA and effects would be perceived in the context of the existing M2/A2 corridor. Overall, the Project would result in a partial loss of distinctive landscape elements and a noticeable change to the existing landscape character of the West Kent Downs LCA 1A. A moderate adverse magnitude of effect on the West Kent Downs LCA 1A has therefore been assessed. Justification for significance level where two significance categories are given in LA 104 The significance of effect has been assessed as large rather than very large due to the localised nature of construction activity.
Mid Kent Downs (sub area Bredhurst) Key characteristics of relevance to study area	High	No change	Neutral effect	Main Project (highway and associated infrastructure, earthworks, construction compounds and WCHs) – nature of effects

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
(based on Kent Downs AONB Landscape Character Assessment Update 2020 (Kent Downs AONB Unit, revised and published 2023)): • Mosaic of flat to gently rolling arable fields and woodland blocks • Woodland provides a backdrop to farmland and contains views • Limited settlement • Notable communications masts and pylons • Noise from the M2 permeates into the landscape, although the motorway is largely screened				There would be no direct or indirect effects on the landscape character of the Blue Bell Hill nitrogen deposition compensation site as a result of Main Project construction. Project utility works – nature of effects There would be no direct or indirect effects as a result of utility works.
Hollingbourne Scarp and Vale (sub area Boxley Vale) Key characteristics of relevance to study area (based on Kent Downs AONB Landscape Character Assessment Update 2020 (Kent Downs AONB Unit, revised and published 2023)):	High	No change	Neutral effect	Main Project (highway and associated infrastructure, earthworks, construction compounds and WCHs) – nature of effects There would be no direct or indirect effects on the landscape character of the Blue Bell Hill nitrogen deposition compensation site as a result of Main Project construction. Project utility works – nature of effects There would be no direct or indirect effects as a result of utility works.

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
• Steep wooded escarpment along northern edge, which forms a backdrop to farmland to the south • Patchwork of pasture and arable fields, vineyards, tree belts and small woodland blocks at base of escarpment • Limited settlement • North Downs Way and Pilgrims Way follow the escarpment • Influences from HS1, the A229 and pylons				
Medway Valley (sub area The Eastern Scarp) Key characteristics of relevance to study area (based on Kent Downs AONB Landscape Character Assessment Update 2020 (Kent Downs AONB Unit, revised and published 2023)): • Steep wooded escarpment, which forms a backdrop to views from the south-west	High	No change	Neutral effect	<u>Main Project (highway and associated infrastructure, earthworks, construction compounds and WCHs) – nature of effects</u> There would be no direct or indirect effects on the landscape character as a result of Main Project construction. <u>Project utility works – nature of effects</u> There would be no direct or indirect effects as a result of utility works.

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
• Intensively managed fields with few hedgerows below the escarpment • Disused chalk quarries and chalk cliffs • Limited settlement • North Downs Way and Pilgrims Way pass through the LLCA • Influences from the M2, A229 and development within the lower River Medway valley				
For the approach, methodology and assessment of the effects of traffic and noise on the Kent Downs AONB during construction, please refer to Appendix 7.11				
The setting of the Kent Downs AONB and Green Belt				
Higham Arable Farmland (sub area Gadshill) Key characteristics of relevance to study area (based on Gravesham Landscape Character Assessment (Gravesham Borough Council, 2009), as well as site appraisal and analysis):	Medium	Negligible adverse	Slight adverse effect	Project construction activity would occur over a medium-term period. <u>Main Project (highway and associated infrastructure, earthworks, construction compounds and WCHs) – nature of effects</u> Proposed construction activity would be focused on the eastern extent of the A2 widening works and include replacement of street lighting (new LED luminaires on columns at a reduced height to the existing columns), dismantling of a gantry, installation of a new gantry and construction of a retaining wall. This activity would result in very minor loss of roadside vegetation.

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
• Chalk downland dry valley • Dense tree belts along the A289 and junctions • Urban fringe character due to nearby settlements, the M2/A2 corridor and the A289 • Perception of night-time lighting and reduced levels of tranquillity close to road corridors and adjoining urban area • Visually prominent woodland in adjacent Shorne Wooded Slopes LLCA				Only a very small part of the south-western edge of this LLCA lies within the Order Limits at the existing M2 junction 1. In addition, the broader A2 widening works in adjacent LLCAs would be largely in cutting, and most of the densely planted A289 roadside tree belt would be retained and protected during construction. As a result, direct and indirect effects during construction would be predominantly contained by existing vegetation and perceived in the context of the existing road corridor. The key characteristics of the landscape would be largely unaffected. Overall, the Project would result in a very minor change to the existing landscape character of the Higham Arable Farmland (sub area Gadshill) LLCA. <u>Project utility works – nature of effects</u> Utility works in the Higham Arable Farmland (sub area Gadshill) LLCA would include: • A multi-utility corridor along the northern edge of the M2 The utility works would result in the following direct effect, in addition to the related construction activity: • Loss of a strip of woodland along the northern edge of the M2 The following indirect effects on this LLCA would result from utility works in the adjoining West Kent Downs (sub area Shorne) LLCA: • The perception of utility works along the northern edge of the M2 • The perception of reduced vegetation cover as a result of some limited woodland removal along the northern edge of the M2 The key characteristics of the landscape would be largely unaffected. There would, however, be some indirect effects

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				associated with removal of visually prominent woodland along utility corridors in the West Kent Downs (sub area Shorne) LLCA. Overall, the utility works would result in a very minor loss of landscape elements and very minor damage to existing landscape character within the Higham Arable Farmland (sub area Gadshill) LLCA.
				Justification for significance level where two significance categories are given in LA 104 The significance of effect has been assessed as slight rather than neutral due to the indirect effects associated with construction activity and vegetation removal.
Shorne Wooded Slopes Key characteristics of relevance to study area (based on Gravesham Landscape Character Assessment (Gravesham Borough Council, 2009), as well as site appraisal and analysis): • Intimate, elevated landscape with a ridgeline delineated by Pear Tree Lane and associated ribbon development, with Shorne village also occupying high ground to the north	High	Negligible adverse	Slight adverse effect	Project construction activity would occur over a medium-term period. Main Project (highway and associated infrastructure, earthworks, construction compounds and WCHs) – nature of effects The Order Limits within this LLCA have been included for nitrogen deposition compensation sites and ancient woodland compensation areas only and there would be no construction activity taking place for the modified A2 corridor within the LLCA. Adjoining construction activity would be focused on the eastern extent of the A2 widening works and limited to a slight modification to the M2 junction 1, replacement of street lighting (new LED luminaires on columns at a reduced height to the existing columns) and installation of a new gantry and road signage. There would be no notable direct effects on this LLCA as a result of the main Project construction works. Indirect effects associated with adjoining activity would be limited and largely contained by the wooded landscape, except for the following:

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
• Heavily wooded slopes leading up to the ridgeline, with some ancient woodland • Existing vegetation limits views out and provides a sense of enclosure • A false cutting and associated planting in the adjacent West Kent Downs (sub area Shorne) LLCA forms a buffer along the A2 corridor, limiting traffic noise • Night-time lighting apparent along the M2/A2 corridor and within suburban and residential areas				• The perception of reduced woodland cover on the existing densely planted false cutting in the adjoining West Kent Downs (sub area Shorne) LLCA • A further reduction in the level of tranquillity experienced along the A2/M2 corridor, due to construction activity and associated additional noise sources relating to the A2 widening works and the installation of the large attenuation basin to the east of Park Pale The key characteristics of the landscape would be largely unaffected. There would, however, be some indirect effects associated with removal of part of the false cutting and associated planting in the adjoining West Kent Downs (sub area Shorne) LLCA. Overall, the Project would result in a very minor change to the existing landscape character of the Shorne Wooded Slopes LLCA.
				<u>Project utility works – nature of effects</u> There would be no notable direct effects on this LLCA as a result of utility works. Some indirect effects on this LLCA would result from utility works in the adjoining Higham Arable Farmland (sub area Gadshill) and West Kent Downs (sub area Shorne) LLCAs as follows: • The perception of utility works along the northern edge of the M2 • The perception of reduced vegetation cover as a result of some limited woodland removal along the northern edge of the M2 The key characteristics of the landscape would be largely unaffected. There would, however, be some indirect effects associated with removal of woodland along a utility corridor in the

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				West Kent Downs (sub area Shorne) LLCA, which could reduce the sense of enclosure slightly. Overall, the utility works would result in a very minor loss of landscape elements and very minor damage to existing landscape character within the Shorne Wooded Slopes LLCA.
Higham Arable Farmland (sub area Thong) Key characteristics of relevance to study area (based on Gravesham Landscape Character Assessment (Gravesham Borough Council, 2009), as well as site appraisal and analysis): • Open, arable landscape between Gravesend and Shorne Woods Country Park, incorporating Thong village • Flat to gently undulating landform, which generally rises to the east and south-east • Woodland present along the A2 corridor and at Claylane Wood ancient woodland	High	Major adverse	Very large adverse effect	Project construction activity would occur over a medium-term period. <u>Main Project (highway and associated infrastructure, earthworks, construction compounds and WCHs) – nature of effects</u> The Higham Arable Farmland (sub area Thong) LLCA includes the rural settlement of Thong, a designated conservation area with associated listed buildings, and has a strong association with the wooded skyline of Shorne Woods within the Kent Downs AONB to the east. Construction activity would be focused on the M2/A2/A122 Lower Thames Crossing junction and A2 widening works, which would include substantial earthworks and land remodelling, and the construction of new carriageways for the various slip roads and local distributor roads at the junction area, two large viaducts, several retaining walls, the Thong Lane green bridge south, street lighting, several gantries and road signage. The A2 compound would be located in the east of the LLCA, including welfare and site offices, earthwork and material storage, plant and equipment storage, specific workshops and a concrete batching plant up to 25m in height. Activity in this LLCA would result in the following direct effects: • Substantial, partially reversible loss of arable land, and associated change in the open character and existing

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
• Association with woodland in the AONB, which often forms a backdrop • Prominent OHL • Southern edge influenced by A2 and HS1 corridors, with the perception of lighting along existing A2 corridor and reduced levels of tranquillity				landscape pattern, would result from extensive earthwork operations • Loss of woodland including a substantial portion of Claylane Wood ancient woodland to the west, all of Gravelhill Wood adjoining Shorne Woods Country Park and the Kent Downs AONB to the east, and a substantial portion of woodland along the A2 corridor to the south between the A2 and HS1 • Substantial change to the existing flat to gently undulating landform as a result of extensive earthwork operations for new embankments and false cutting slopes • Uncharacteristic and conspicuous construction activity within the urban fringe landscape associated with construction of the M2/A2/A122 Lower Thames Crossing junction, including elevated viaducts and retaining walls, and an associated loss of intervisibility with the wooded ridgelines in the Kent Downs AONB as a result of intervening structures • A further reduction in the level of tranquillity experienced near the A2 corridor and edge of Gravesend, due to construction activity and associated additional noise sources • Slight perceived change in the night-time environment as a result of construction activity and new light sources evident at the M2/A2/A122 Lower Thames Crossing junction and at the A2 compound, experienced in the context of existing lighting along the A2 Some indirect effects on this LLCA would also result from construction activity in the adjoining LLCAs as follows: • The perception of reduced tree cover within the West Kent Downs (sub area Shorne) LLCA to the south-east, due to the removal of existing woodland between the A2 and HS1

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				• The perception of construction activity within the southern tunnel entrance compound in the Higham Arable Farmland (sub area Chalk) LLCA to the north • The perception of construction activity for Thong Lane green bridge north within the Higham Arable Farmland (sub area Chalk) LLCA to the north Some of the key characteristics of the landscape would be affected by the Project, in particular changes to the open, flat to gently undulating farmland between Gravesend and Thong village. The open landscape between the settlements would be interrupted by large-scale earthworks and structures. In addition, the removal of characteristic woodland at Claylane Wood, Gravelhill Wood and along the A2 corridor would alter the structure of the landscape, as well as increasing perceptibility of the A2 corridor. Overall, the Project would result in large-scale change to the existing landscape character of the Higham Arable Farmland (sub area Thong) LLCA, due to the loss of arable fields and woodland and some loss of intervisibility with the Kent Downs AONB. This would damage the sense of place across a broad area of this relatively compact LLCA, although its character is currently partially influenced by existing OHL and the A2/HS1 corridor.
				<u>Project utility works – nature of effects</u> Utility works in the Higham Arable Farmland (sub area Thong) LLCA would include the following: • Installation of a large-bore medium-pressure gas pipeline as part of the diversion from Marling Cross to the Inn on the Lake • Installation of three high-pressure gas pipelines near and to the north-east of Claylane Wood

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				• OHL modifications east of Claylane Wood and west and north of Thong village • Removal of existing 33kV wood-pole-mounted OHL west of Thong Lane • Replacement of two existing substations on Thong Lane to a new location, south-west of Thong Mead residential property • Installation of multi-utility corridors where Thong Lane crosses the A2, and to the south of the A2 • Installation and operation of the A2 East Utility Hub and A2 West Utility Hub The utility works would result in the following direct effect, in addition to the related construction activity: • Loss of part of Claylane Wood ancient woodland and Gravelhill Wood adjoining Shorne Woods Country Park at the western edge of the Kent Downs AONB Some indirect effects on this LLCA would also result from utility works in the adjoining LLCAs as follows: • The perception of reduced vegetation cover as a result of tree removal within Jeskyns Community Woodland to the south within the Istead Arable Farmland LLCA • The potential perception of reduced vegetation cover as a result of woodland removal along the A2 to the south-east within the West Kent Downs (sub area Shorne) LLCA • The perception of reduced vegetation cover as a result of tree removal near Thong Lane to the north within the Higham Arable Farmland (sub area Chalk) LLCA The main changes to the key characteristics of the landscape would result from the partial removal of characteristic woodland at

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				Claylane Wood and Gravelhill Wood, which would noticeably alter the composition of the landscape. Overall, the utility works would result in the partial loss of distinctive landscape elements and noticeable damage to landscape character within the Higham Arable Farmland (sub area Thong) LLCA.
				<u>Justification for significance level where two significance categories are given in LA 104</u> The significance of effect has been assessed as very large rather than large due to the large-scale and prominent nature of construction activity.
Istead Arable Farmlands Key characteristics of relevance to study area (based on Gravesham Landscape Character Assessment (Gravesham Borough Council, 2009)): • Gently undulating landform • Open, arable landscape, with wide views towards Gravesend and HS1 • Minor native woodland clumps, including within Jeskyns Community Woodland	Medium	Moderate adverse	Moderate adverse effect	Project construction activity would occur over a medium-term period. <u>Main Project (highway and associated infrastructure, earthworks, construction compounds and WCHs) – nature of effects</u> The Istead Arable Farmlands LLCA includes Jeskyns Community Woodland, which is an important community asset, as well as arable fields, small blocks of native woodland and numerous pylons carrying the three lines of OHL crossing the landscape. The LLCA is located largely outside the Order Limits to the south of HS1. A large proportion of the Order Limits within this LLCA have been included for a nitrogen deposition compensation site and ancient woodland mitigation area only There would be no construction activity taking place, except for the very limited direct effects resulting from the diversion of NCN Route 177 alongside Church Road and through Jeskyns Community Woodland. There would also be perceived change due to the loss of woodland and large-scale construction activity in the adjoining Higham Arable

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
• Association with woodland in the AONB, which often forms a backdrop • OHL are prominent • Perception of lighting along existing A2 corridor, with reduced levels of tranquillity				Farmland (sub area Thong) LLCA, as outlined above. Associated indirect effects would be as follows: • The perception of reduced vegetation cover as a result of woodland removal at Claylane Wood and Gravelhill Wood and between the A2 and HS1. • The perception of uncharacteristic and conspicuous construction activity within the adjoining urban fringe landscape. • A further reduction in the level of tranquillity experienced near the A2 corridor, due to construction activity and associated additional noise sources, including operation of the A2 compound. • Slight perceived change in the night-time environment as a result of construction activity and new light sources at the M2/A2/A122 Lower Thames Crossing junction and the A2 compound, experienced in the context of existing lighting along the A2. In addition, as a result of the removal of vegetation, increasing perception of light sources along the A2 corridor. The key characteristics of the landscape would be largely unaffected. There would, however, be some indirect effects associated with removal of woodland in the Higham Arable Farmland (sub area Thong) and West Kent Downs (sub area Shorne) LLCAs, that forms part of the wooded backdrop to the LLCA. Overall, the Project would result in a noticeable change to the existing landscape character of the Istead Arable Farmlands LLCA, in particular to the north-east due to the indirect effects resulting from the loss of woodland and perception of construction activity in the adjoining LLCA.
				<u>Project utility works – nature of effects</u>

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				Utility works in the Istead Arable Farmlands would include: • OHL modifications within Jeskyns Community Woodland, which would require some restringing works The utility works would result in the following direct effect, in addition to the related construction activity: • Loss of a small area of woodland within the Jeskyns Community Woodland The following indirect effects on this LLCA would result from utility works in the adjoining Higham Arable Farmland (sub area Thong) LLCA: • The perception of construction works associated with the large pylon within the area of Claylane Wood and associated OHL modifications • The perception of reduced vegetation cover as a result of woodland removal through Claylane Wood, along the southern edge of Gravelhill Wood and south of the A2 corridor The key characteristics of the landscape would be largely unaffected. There would, however, be some indirect effects associated with the removal of woodland along utility corridors in the Higham Arable Farmland (sub area Thong) and West Kent Downs (sub area Shorne) LLCAs. This woodland forms part of the wooded backdrop to the LLCA. In addition, some small characteristic woodland copses would be removed within Jeskyns Community Woodland. Overall, the utility works would result in the slight loss of landscape elements and slight damage to existing landscape character within the Istead Arable Farmlands LLCA.

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
Gravesend Southern Fringe Key characteristics of relevance to study area (based on Gravesham Landscape Character Assessment (Gravesham Borough Council, 2009)): • Typically linear, urban fringe landscape between Gravesend and HS1, dominated by the A2 corridor • Linear open spaces include rough grassland, tree screening belts, a footway/cycleway and a park with a BMX track and skatepark • Perception of lighting along existing A2 corridor and within Gravesend, with reduced levels of tranquillity	Medium	Minor adverse	Slight adverse effect	Project construction activity would occur over a medium-term period. Main Project (highway and associated infrastructure, earthworks, construction compounds and WCHs) – nature of effects Proposed construction activity would comprise the western extent of the A2 widening works, including replacement of street lighting (new LED luminaires on columns at a reduced height to the existing columns), the construction of new retaining structures and a new attenuation basin east of Henhurst Road, modification of the existing Marling Cross overbridge and an existing pond south of Hever Court Road, and the installation of new gantries and road signage. In addition, the Marling Cross compound would be located on the eastern edge of the LLCA in a former car park, including welfare and site offices and plant storage. Activity in this LLCA would result in the following limited direct effects: • Loss of roadside vegetation along the existing A2 corridor and at the Gravesend East junction • The perception of construction activity within the context of the existing road corridor, including the presence of the Marling Cross compound • Limited perceived change in the night-time environment as a result of construction activity and new light sources evident at the Marling Cross compound, experienced in the context of existing lighting along the A2 and adjoining urban area The following indirect effects on this LLCA would result from construction activity in the adjoining Higham Arable Farmland (sub area Thong) LLCA:

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				• The perception of reduced vegetation cover due to the removal of woodland at Claylane Wood and along the A2 corridor • The perception of large-scale construction works at the M2/A2/A122 Lower Thames Crossing junction • Limited perceived change in the night-time environment as a result of construction activity and new light sources evident at the M2/A2/A122 Lower Thames Crossing junction, experienced in the context of existing lighting along the A2 and adjoining urban area The key characteristics of the landscape would remain largely unaffected, apart from the removal of some tree planting at the Gravesend East junction, which would slightly increase perception of the A2 corridor. Overall, the Project would result in a slight change to the existing landscape character of the Gravesend Southern Fringe LLCA, largely due to the loss of roadside planting, which helps integrate the existing A2 corridor into the surrounding urban fringe landscape.
				<u>Project utility works – nature of effects</u> Utility works in the Gravesend Southern Fringe LLCA would include: • Multi-utility works along Roman Road, Valley Drive and adjoining Hever Court Road to the north of the A2 • Multi-utility works along Henhurst Road to the south of the A2, extending west to the A2 footbridge connecting with Church Road The utility works would result in the following direct effects, in addition to the related construction activity:

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				• Loss of roadside woodland planting near the Gravesend East junction • Loss of small areas of vegetation, including two short sections of hedgerow along the footpath south of Pepper Hill and Roman Road and scrub woodland at the junction of the A227 Wrotham Road and A2 Some indirect effects on this LLCA would also result from utility works in the adjoining Higham Arable Farmland (sub area Thong) LLCA as follows: • The perception of construction works associated with the large pylon within the area of Claylane Wood and pylon restringing works • The perception of reduced vegetation cover as a result of woodland removal along the edge of Claylane Wood and vegetation removal south of the A2 corridor The key characteristics of the landscape would remain largely unaffected, apart from the removal of scrub woodland at the junction of the A227 Wrotham Road and A2, and trees along utility corridors around the Gravesend East junction, which would increase the perceptibility of the A2 corridor slightly. Overall, the utility works would result in the slight loss of landscape elements and a slight damage to the landscape character of the Gravesend Southern Fringe LLCA.
Higham Arable Farmland (sub area Chalk) Key characteristics of relevance to study area (based on Gravesham Landscape Character	High	Major adverse	Very large adverse effect	Project construction activity would occur over a medium-term period. Main Project (highway and associated infrastructure, earthworks, construction compounds and WCHs) – nature of effects Proposed construction activity would be focused on the South Portal and approach cutting slopes, which would include substantial

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
Assessment (Gravesham Borough Council, 2009), as well as site appraisal and analysis): • Gently undulating landscape, rising from north to south • Open, arable fields allow extensive and dramatic views out towards the River Thames • Limited tree cover • St Marys Church is a local landmark • Few roads • Some tranquillity exists away from the urban edge of Gravesend and the A226 and prominent OHL • Perception of lighting within Gravesend and Tilbury Docks				earthworks and land remodelling, construction of a new highway including street lighting, gantries and road signage, and construction of Thong Lane green bridge north, emergency access roads and new attenuation basins within the dry valley of this LLCA. The southern tunnel entrance compound would be located within this LLCA, extending from Thong Lane in the south to the A226 Gravesend Road in the north and spanning approximately 1.5km at the widest point. This compound would include welfare and site offices and a concrete batching plant up to 25m in height, as well as a prominent tower crane present in the short term. Initial operations at this compound would occur during core working hours, with extended durations required during construction of the headwalls for the South Portal. Construction activity surrounding the South Portal would also include haul routes running north and south, a stockpile for site-gained material and the construction of a hilltop landform in the western part of the southern tunnel entrance compound. The A226 Gravesend Road compound would be located within this LLCA to the north of the A226 Gravesend Road, including a new access track, attenuation basins, workshops, and plant and material storage, and a crane in the short term. Activity in this LLCA would result in the following direct effects: • Substantial, partially reversible loss of arable land • Loss of field-bounding hedgerows within the arable land, and tree belts east of Thong Lane adjacent to the former Hartshill Nursery and the Gravesend Golf Centre pitch and putt golf course

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				• Substantial change to the existing gently undulating landform as a result of extensive earthwork operations associated with the South Portal cutting slopes, material stockpiles and construction of a hilltop landform • Uncharacteristic and conspicuous construction activity within the urban fringe landscape associated with construction of the South Portal and operation of the southern tunnel entrance compound and A226 Gravesend Road compound • A reduction in the level of tranquillity due to extensive construction activity and associated additional noise sources • Slight perceived change in the night-time environment as a result of construction activity and new light sources evident in the southern tunnel entrance compound and in the A226 Gravesend Road compound, experienced in the context of existing lighting within Gravesend to the west Some indirect effects on this LLCA would also result from construction activity in the adjoining Higham Arable Farmland (sub area Thong) and Shorne and Higham Marshes LLCAs as follows: • The perception of reduced vegetation cover due to the removal of woodland at Claylane Wood • The perception of large-scale construction works at the M2/A2/A122 Lower Thames Crossing junction • The perception of a crane at the Milton compound Some of the key characteristics of the landscape would be affected by the Project, in particular the open, gently undulating arable farmland which would be interrupted by extensive earthworks around the South Portal and its approach, including temporary material storage and the hilltop landform. These elements are also likely to interrupt extensive views north over the Thames Estuary.

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				There would also be a perceived reduction to tranquillity as a result of construction activity in the largely tranquil landscape. Overall, the Project would result in large-scale change to the existing landscape character of the Higham Arable Farmland (sub area Chalk) LLCA due to the extensive and conspicuous construction activity and almost total loss of existing landscape elements within the Order Limits.
				<u>Project utility works – nature of effects</u> Utility works in the Higham Arable Farmland (sub area Chalk) LLCA would include the following: • A new primary electricity substation for power supplies to the South Portal, located to the south of the A226 Gravesend Road adjacent to a cluster of agricultural buildings • Installation of two high-pressure gas pipeline diversions running from Claylane Wood and connecting to the existing network at the A226 Gravesend Road and at a point north of Shorne Ifield Road • OHL modifications • Multi-utility works along Gravesend Road The utility works would result in the following direct effect, in addition to the related construction activity: • Loss of a short length of hedgerow close to the A226 Gravesend Road as result of the substation. However, the existing hedgerow and tree planting lining Gravesend Road would be largely retained. Some indirect effects on this LLCA would also result from utility works in the adjoining Higham Arable Farmland (sub area Thong) LLCA as follows:

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				• The perception of construction works associated with the large pylon within the area of Claylane Wood and pylon restringing works • The perception of reduced vegetation cover as a result of woodland removal along the edges of Claylane Wood The key characteristics of the landscape would remain largely unaffected, apart from a perceived reduction to tranquillity as a result of utility works in the largely tranquil landscape. Overall, the utility works would result in the slight loss of landscape elements and slight damage to existing landscape character within the Higham Arable Farmland (sub area Chalk) LLCA. Justification for significance level where two significance categories are given in LA 104 The significance of effect has been assessed as very large rather than large due to the extensive loss of farmland and interruption of dramatic views over the Thames Estuary.
Shorne and Higham Marshes Key characteristics of relevance to study area (based on Gravesham Landscape Character Assessment (Gravesham Borough Council, 2009)): • Reclaimed estuarine marsh, divided by ditches and meandering waterways, predominantly used as pasture and	Medium	Minor adverse	Slight adverse effect	Project construction activity would occur over a medium-term period. Main Project (highway and associated infrastructure, earthworks, construction compounds and WCHs) – nature of effects Construction activities within this LLCA would typically be below ground and associated with construction of the tunnel, with above ground operations limited to the Milton compound. The compound would comprise welfare facilities, workshops and material storage, and a crane in the short term. Activity in this LLCA would result in the following direct effects: • Small-scale, reversible loss of grazing land associated with the Milton compound

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
mostly designated as SSSI and Ramsar site • Milton Rifle Range, with intrusive fencing • Away from the housing area in Chalk and the rifle range, there are no roads, with the landscape largely tranquil as a result • Flat landform and absence of trees and hedgerows result in open, wide views • Distinct character with a strong sense of place and remoteness away from settlement edge • Cultural association with Charles Dickens' Great Expectations • Perception of lighting within Gravesend and Tilbury Docks				• Uncharacteristic and conspicuous construction activity, largely associated with the Milton compound and the crane • A slight reduction in the level of tranquillity due to construction activity at the Milton compound • Limited perceived change in the night-time environment as a result of construction activity and new light sources evident at the compound, experienced in the context of existing lighting within Gravesend to the west Some indirect effects on this LLCA would also result from construction activity in the adjoining Higham Arable Farmland (sub area Chalk) LLCA to the south and the Tilbury Marshes LLCA to the north as follows: • The perception of extensive construction activity for the South Portal and in the southern tunnel entrance compound on the rising arable slopes, which form part of the southern backdrop to this LLCA. In addition, the perception of construction activity adjacent to the LLCA in the A226 Gravesend Road compound, in particular the crane. • A perceived reduction in tranquillity as a result of construction activity and associated additional noise sources within the southern tunnel entrance compound and A226 Gravesend Road compound to the south. • The perception of construction activity for the North Portal and associated structural landscape mounding north of the River Thames. The key characteristics of the landscape would remain largely unaffected, apart from a perceived reduction to tranquillity as a result of construction activity, although in a part of the landscape affected by the urban edge and rifle range.

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				Overall, the Project would result in a slight change to the existing landscape character of the Shorne and Higham Marshes LLCA, largely as a result of the crane within the Milton compound in the short term, and the indirect effects associated with the crane in the A226 Gravesend Road compound in the short term, and construction activity taking place in the adjoining Higham Arable Farmland (sub area Chalk) LLCA to the south. Project utility works – nature of effects There would be no notable direct effects on this LLCA as a result of utility works. Only minimal multi-utility works are proposed within the Higham Arable Farmland (sub area Chalk) LLCA to the south near the A226 Gravesend Road compound, with limited construction activity apparent. The key characteristics of the landscape would remain largely unaffected. Overall, utility works would only result in a very minor short-term change to existing landscape character.
Mucking Marshes Key characteristics of relevance to study area (based on Thurrock Landscape Capacity Study (Thurrock Council, 2005)): • Estuarine, low-lying, flat, exposed and windswept reclaimed marsh area, partially used for pasture	Medium	Negligible adverse	Slight adverse effect	Project construction activity would occur over a medium-term period. Main Project (highway and associated infrastructure, earthworks, construction compounds and WCHs) – nature of effects Mucking Marshes LLCA encompasses land on the eastern edge of the Order Limits and includes Coalhouse Fort Scheduled Monument, with a strong association with the River Thames. Direct effects on this LLCA would be limited to environmental mitigation measures, including: • Ecological translocation of acid grassland • Construction of new ponds for ecological mitigation

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
• Limited settlement, including East Tilbury • Coal House Battery and Coalhouse Fort scheduled monuments • Open, wide views • Tranquillity reduced by East Tilbury settlement and large landfill site • Perception of lighting within East Tilbury, as well as skyglow within Tilbury and Chadwell St Mary				• Creation of open mosaic and wet grassland areas Some indirect effects on this LLCA would also result from construction activity in the adjoining Tilbury Marshes LLCA as follows: • The perception of construction activity associated with the creation of water vole habitat, including new scrapes, ditches and wet grassland • The perception of construction activity at the North Portal and for the structural landscape mounding around the portal, as well as the operation of the northern tunnel entrance compound • Limited perceived change in the night-time environment as a result of construction activity and new light sources evident in the northern tunnel entrance compound, experienced in the context of existing lighting in Tilbury The key characteristics of the landscape would remain largely unaffected. There would, however, be limited indirect effects on perceived tranquillity as a result of construction activity in the adjoining Tilbury Marshes LLCA. Overall, the Project would result in a very minor change to the existing landscape character of the Mucking Marshes LLCA, due to the limited direct effects on landscape elements and limited perception of indirect effects from construction activity in the adjoining LLCA. <u>Project utility works – nature of effects</u> No utility works are proposed within the Mucking Marshes LLCA. There would therefore be no notable direct effects on this LLCA as a result of utility works.

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				Some indirect effects on this LLCA would result from utility works in the adjoining Linford/Buckingham Hill Urban Fringe LLCA as follows: • The perception of construction activity associated with OHL modifications The utility works would result in no noticeable change to the landscape character and key characteristics of the Mucking Marshes LLCA.
				Justification for significance level where two significance categories are given in LA 104 The significance of effect has been assessed as slight rather than neutral due to indirect effects within the adjoining Tilbury Marshes LLCA.
Tilbury Marshes Key characteristics of relevance to study area (based on Thurrock Landscape Capacity Study (Thurrock Council, 2005)): • Large-scale, open, flat, low-lying, exposed reclaimed marsh • Arable farmland and areas used for landfill, with pockets of pasture • Irregular pattern of ditches and dykes to the east	Low	Major adverse	Moderate adverse effect	Project construction activity would occur over a medium-term period. Main Project (highway and associated infrastructure, earthworks, construction compounds and WCHs) – nature of effects Construction activity would be focused on the northern tunnel entrance compound, which would include the North Portal and its approach road and construction of diaphragm retaining walls to facilitate launching the tunnel boring machines. Within the LLCA, the northern tunnel entrance compound would include a slurry treatment plant, segment factory and a concrete batching plant (up to 25m in height). Operations would include substantial earthworks and material storage, treatment of site-gained material from tunnel excavation for reuse, structural landscape mounding around the North Portal, and the subsequent construction of the new highway, including street lighting, gantries and road signage, and North Portal

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
• Tilbury Fort juxtaposed with Tilbury Sewage Treatment Works, OHL, raised landfill areas and the expanding Tilbury2 • Some tranquil pockets away from the urban edge and landfill areas • Perception of lighting at Tilbury Docks and within Tilbury, as well as in Gravesend south of the River Thames				operational access bridge with associated roundabouts and attenuation ponds. Operations would occur during core working hours, with extended durations required to facilitate tunnelling operations. Other activity would include culverting of the West Tilbury Main watercourse and diversion of two further watercourses within this LLCA to facilitate construction of the Project. Activity in this LLCA would result in the following direct effects: • Substantial, partially reversible loss of arable and pastoral land • Loss of some scrub and hedgerow vegetation along existing watercourses and within fields • Substantial change to the flat and open landform as a result of material storage and permanent earthworks and land raising • Culverting of the West Tilbury Main watercourse and diversion of two further watercourses south of Station Road and south of Bowaters Farm • Uncharacteristic and conspicuous construction activity within the urban fringe landscape • A further reduction in the level of tranquillity experienced near existing urban development and landfill operations due to extensive construction activity and associated additional noise sources • Slight perceived change in the night-time environment as a result of construction activity and new light sources evident within the northern tunnel entrance compound, experienced in the context of existing lighting in Tilbury

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				Some indirect effects on this LLCA would also result from construction activity in the adjoining Chadwell Escarpment Urban Fringe and West Tilbury Urban Fringe LLCAs as follows: • The perception of reduced vegetation cover as a result of the removal of woodland to accommodate Tilbury Viaduct • The perception of construction activity associated with Tilbury Viaduct and the adjacent embankment Some of the key characteristics of the landscape would be affected by the Project, in particular the open, flat, low-lying land and associated pattern of ditches and dykes, which would be interrupted by the Project route and earthworks to create the sculptural landscape mounding around and to the south of the North Portal. Overall, the Project would result in large-scale change to the existing landscape character of the Tilbury Marshes LLCA, including loss of open, low-lying farmland and the introduction of prominent construction activity for major earthworks. Changes would be perceived in a landscape partly degraded by the industrial area at the west of the LLCA, numerous areas of raised landfill and multiple OHL crossing the landscape.
				<u>Project utility works – nature of effects</u> Utility works in the Tilbury Marshes LLCA would include: • Several multi-utility works in the vicinity of the Tilbury Loop railway line and Station Road and to the east of Tilbury substation • Construction of a large temporary electricity substation for the tunnel boring machine • OHL modifications

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				The utility works would result in the following direct effects, in addition to the related construction activity: • Loss of areas of scrub vegetation • The perception of construction works associated with the large temporary substation and associated loss of arable farmland • The perception of construction activity associated with OHL modifications Some indirect effects on this LLCA would also result from utility works in the adjoining LLCAs as follows: • The perception of reduced vegetation cover as a result of woodland removal near the proposed Tilbury Viaduct within the West Tilbury Urban Fringe LLCA • The perception of construction activity associated with OHL modifications within the West Tilbury Urban Fringe LLCA • The perception of construction activity associated with OHL modifications within the Chadwell Escarpment Urban Fringe LLCA The key characteristics of the landscape would remain largely unaffected. Overall, the utility works would result in very minor loss of landscape elements and very minor damage to the landscape character within the Tilbury Marshes LLCA. <u>Justification for significance level where two significance categories are given in LA 104</u> The significance of effect has been assessed as moderate rather than slight due to the large-scale nature of construction activity taking place within the Tilbury Marshes LLCA.

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
Chadwell Escarpment Urban Fringe Key characteristics of relevance to study area (based on Thurrock Landscape Capacity Study (Thurrock Council, 2005)): • Steep-sided, south-facing sand and gravel escarpment, indented by small dry valleys • Low in height but contrasts with reclaimed marsh area to south • Small-scale and intimate landscape with copses, scrub and irregular pasture and arable fields • Urban fringe landscape where OHL, the Tilbury Loop railway line and housing around Chadwell St Mary influence character • Varying degrees of tranquillity, influenced by built development • Perception of skyglow from urban and industrial	Medium	Moderate adverse	Moderate adverse effect	Project construction activity would occur over a medium-term period. <u>Main Project (highway and associated infrastructure, earthworks, construction compounds and WCHs) – nature of effects</u> Only the eastern end of this LLCA lies within the Order Limits associated with Main Project construction, and the Tilbury Loop railway line and associated vegetation restricts intervisibility with the wider LLCA to the west. Construction activity would be focused on the new highway, including a new gantry, road signage and earthworks, a road between the North Portal operational access bridge and Station Road, an attenuation pond and a watercourse diversion south of Station Road. The Station Road compound would include welfare facilities, site offices, plant and material storage and earthwork stockpiles. Activity in this LLCA would result in the following direct effects: • Small-scale, partially reversible loss of pasture and arable land • Slight loss of field boundary hedgerow and woodland/scrub west of Buckland (residential property) • Noticeable change to the existing flat landform as a result of temporarily stored material and earthwork operations for permanent embankments along the highway and a road between the North Portal operational access bridge and Station Road • Part of a watercourse diversion under the Tilbury Viaduct • Uncharacteristic and conspicuous construction activity within the urban fringe landscape • A further reduction in the level of tranquillity due to construction activity and associated additional noise sources including within the Station Road compound

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
areas, including Tilbury Docks				• Slight perceived change in the night-time environment as a result of construction activity and new light sources evident within the Station Road compound, experienced in the context of existing lighting at Tilbury and East Tilbury Some indirect effects on this LLCA would also result from construction activity in the adjoining LLCAs as follows: • The perception of reduced vegetation cover as a result of woodland removal along the proposed Tilbury Viaduct in the West Tilbury Urban Fringe LLCA to the north • The perception of construction activity in the northern tunnel entrance compound in the Tilbury Marshes LLCA to the south • The perception of construction works for the Tilbury Viaduct in the West Tilbury Urban Fringe LLCA to the north • A further reduction in the level of tranquillity due to construction activity and associated additional noise sources including within the northern tunnel entrance compound • Slight perceived change in the night-time environment as a result of construction activity and new light sources evident within the northern tunnel entrance compound Some key characteristics of the landscape would be affected, including the gently sloping landform along the eastern end of the escarpment where the new road would cross on embankment. In addition, the earthworks within this LLCA, and the Tilbury Viaduct structure in the adjacent West Tilbury Urban Fringe LLCA, would contrast with the small-scale, intimate nature of the landscape, as well as resulting in the removal of characteristic copses and scrub. Overall, the Project would result in a noticeable change to the existing landscape character of the eastern edge of the Chadwell

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				Escarpment Urban Fringe LLCA due to the slight loss of distinctive landscape features and substantial construction activity. <u>Project utility works – nature of effects</u> Utility works in the Chadwell Escarpment Urban Fringe LLCA would include: • OHL modifications, including removal of one OHL • Multi-utility works adjacent to Tilbury Loop railway line and across farmland south of Church Road, Low Street Lane and Station Road • Multi-utility works along Chadwell Hill The utility works would result in the following direct effects, in addition to the related construction activity: • Loss of small areas of trees and scrub vegetation • The perception of construction activity associated with OHL modifications Some indirect effects on this LLCA would also result from utility works in the adjoining LLCAs as follows: • The perception of construction activity associated with OHL modifications within the Tilbury Marshes LLCA • The perception of construction activity associated with OHL modifications within the West Tilbury Urban Fringe LLCA The key characteristics of the landscape would remain largely unaffected, apart from the removal of some characteristic copses and scrub within utility corridors. Overall, the utility works would result in the very minor loss of landscape elements and very minor damage to the landscape character within the Chadwell Escarpment Urban Fringe LLCA.

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
Green Belt/areas beyond the setting of the Kent Downs AONB				
Dartford and Gravesend Fringe Key characteristics of relevance to study area (based on The Landscape Assessment of Kent (Kent County Council, 2004)): • Industrial and residential urban edge between Gravesend and Swanscombe • Pockets of undeveloped land, including semi-natural heathland and grassland and regenerating woodland • Urban fringe character especially due to influence of urban and suburban edge • Low levels of tranquillity	Low	No change	Neutral effect	Project construction activity would occur over a medium-term period. Main Project (highway and associated infrastructure, earthworks, construction compounds and WCHs) – nature of effects No main Project works would take place within the Dartford and Gravesend Fringe LLCA. There would be no notable direct or indirect effects on this LLCA. Project utility works – nature of effects There would be no direct or indirect effects on this LLCA as a result of utility works and no change to the landscape character and key characteristics of the Dartford and Gravesend Fringe LLCA.
West Tilbury Urban Fringe Key characteristics of relevance to study area (based on Thurrock Landscape Capacity Study (Thurrock Council, 2005)):	Medium	Major adverse	Large adverse effect	Project construction activity would occur over a medium-term period. Main Project (highway and associated infrastructure, earthworks, construction compounds and WCHs) – nature of effects Construction activity would be focused on the Tilbury Viaduct, the new highway including gantries, road signage and false cutting slopes, Muckingford Road green bridge and the realignment of part

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
• Urban fringe, open, large-scale, gently undulating and mostly arable farmland • Boundaries defined by escarpments and abrupt urban edges • Limited tree cover, with localised small copses and hedgerows along field boundaries and historic lanes, including Hoford Road Protected Lane • Scattered farmsteads linked by lanes • Prominent OHL crossing the landscape • Varying degrees of tranquillity, influenced by built development • Perception of skyglow from London Gateway Port, East Tilbury, Tilbury and Chadwell St Mary				of Hoford Road. Works would also include shallow excavation to create an extensive flood compensation area beneath Tilbury Viaduct, modification of an existing field pond and a watercourse diversion south of Station Road. The northerly extent of the northern tunnel entrance compound would be located within this LLCA, including a concrete batching plant (up to 25m in height), workers' accommodation, welfare facilities, site offices and car parking. Activity in this LLCA would result in the following direct effects: • Substantial, partially reversible loss of arable farmland to facilitate construction for the Project route and the creation of environmental mitigation areas, including areas of open mosaic habitat to the south-eastern edge of the LLCA and adjacent to a recreational playing field near Linford to the east • Loss of woodland adjoining Readmans Industrial Estate • Partial loss of hedgerows and tree belts along Muckingford Road and Hoford Road • Noticeable change to the existing flat landform as a result of temporarily stored material, permanent false cutting earthworks and reduced ground levels at the flood compensation area • Part of a watercourse diversion at the southern edge of the LLCA under the Tilbury Viaduct • Uncharacteristic and conspicuous construction activity within the urban fringe landscape • A further reduction in the level of tranquillity due to construction activity and associated additional noise sources • Slight damage to the character of Hoford Road Protected Lane due to the re-routing of a short section of the existing lane

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				• Slight perceived change in the night-time environment as a result of construction activity and new light sources evident, including those within the northerly part of the northern tunnel entrance compound, experienced in the context of existing lighting at East Tilbury, Linford and Chadwell St Mary Some indirect effects on this LLCA would also result from construction activity in the adjoining LLCAs as follows: • The perception of construction activity in the adjoining Chadwell Escarpment Urban Fringe LLCA associated with new earthworks along the highway and operation of the Station Road compound • The perception of construction activity in the adjoining White Croft/Orsett Heath Urban Fringe LLCA, including Brentwood Road overbridge • The perception of construction activity in the northern tunnel entrance compound within the Tilbury Marshes LLCA to the south • The perception of reduced vegetation cover due to the partial loss of ancient woodland at Rainbow Wood adjacent to Hoford Road within the adjacent Linford/Buckingham Hill Urban Fringe LLCA Some of the key characteristics of the landscape would be affected by the Project, in particular the open, gently undulating arable farmland, which would be interrupted by Tilbury Viaduct and the false cutting slopes along the Project route. A short section of Hoford Road Protected Lane (a historic lane) would be crossed and realigned. Overall, the Project would result in a partial loss of distinctive landscape elements and large-scale change to the existing landscape character of the West Tilbury Urban Fringe LLCA, due to

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				conspicuous construction activity crossing the central part of the LLCA.
				<u>Project utility works – nature of effects</u> Utility works in the West Tilbury Urban Fringe LLCA would include: • OHL diversion, including removal of one OHL • Multi-utility works along Muckingford Road and across farmland to the west of East Tilbury • Installation and operation of Muckingford Road and Low Street Lane Utility Hubs The utility works would result in the following direct effects, in addition to the related construction activity: • The perception of construction activity associated with OHL modifications • Slight loss of trees west of Linford • Loss of trees along part of Hoford Road Protected Lane, which would damage its unique character • Slight loss of roadside vegetation along Muckingford Road and Station Road Some indirect effects on this LLCA would also result from utility works in the adjoining LLCAs as follows: • The perception of reduced vegetation cover as a result of vegetation removal in the vicinity of the Tarmac plant in the Linford/Buckingham Hill Urban Fringe LLCA • The perception of construction activity associated with OHL modifications within the Linford/Buckingham Hill Urban Fringe LLCA

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				• The perception of construction activity associated with OHL modifications within the Chadwell Escarpment Urban Fringe LLCA • The perception of construction activity associated with OHL modifications within the Tilbury Marshes LLCA The key characteristics of the landscape would remain largely unaffected, apart from the removal of hedgerows and copses, including part of a hedgerow along Hoford Road Protected Lane (a historic lane). Overall, the utility works would result in the slight loss of landscape elements and slight damage to existing landscape character within the West Tilbury Urban Fringe LLCA.
				<u>Justification for significance level where two significance categories are given in LA 104</u> The significance of effect has been assessed as large rather than moderate due to the extensive and large-scale nature of construction activity.
Linford/Buckingham Hill Urban Fringe Key characteristics of relevance to study area (based on Thurrock Landscape Capacity Study (Thurrock Council, 2005)): • Elevated landform, comprising a broad, flat to undulating, rounded ridge plateau, which is the	Low	Minor adverse	Slight adverse effect	Project construction activity would occur over a medium-term period. <u>Main Project (highway and associated infrastructure, earthworks, construction compounds and WCHs) – nature of effects</u> Construction activity for the Project route would be limited to a small area on the south-western edge of this LLCA and be focused on the new highway in cutting and false cutting, Hoford Road green bridge, the culverting of an existing watercourse and modification of an existing field pond. Construction activity would also be associated with new gantries and road signage along the highway and a new retaining wall adjacent to the existing field pond to be modified.

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
principal unifying feature of the LLCA • Urban fringe character, with diverse land uses including mixed arable and pasture fields, mineral extraction, industry, landfill and a golf course • Concentration of woodland around existing Tarmac plant, with ancient woodland at Rainbow Wood adjacent to the historic Hoford Road Protected Lane • OHL are prominent • Extensive views north and south • Levels of tranquillity influenced by industry and mineral extraction • Perception of skyglow from London Gateway Port, Tilbury and Chadwell St Mary				Order Limits have also been included within this LLCA for nitrogen deposition compensation sites and ancient woodland compensation areas, where there would be no construction activity taking place. Activity in this LLCA would result in the following direct effects: • Small-scale, permanent loss of arable farmland associated with the highway and earthwork construction • Partial loss of ancient woodland at Rainbow Wood adjacent to Hoford Road, and partial loss of tree belts along Hoford Road and an existing watercourse • Very limited change to the existing undulating landform as a result of cutting and false cutting slopes • The culverting of a watercourse and modification of a field pond west of Linford • Uncharacteristic and conspicuous construction activity within the urban fringe landscape • A further reduction in the level of tranquillity due to construction activity and associated additional noise sources, experienced in the context of the existing Tarmac plant and adjacent mineral extraction workings • Damage to the character of Hoford Road Protected Lane due to the removal and re-routing of a section of the existing lane to cross the Project route on a new green bridge • Slight perceived change in the night-time environment as a result of construction activity and new light sources, experienced in the context of existing lighting at the existing Tarmac plant Some indirect effects on this LLCA would also result from construction activity in the West Tilbury Urban Fringe LLCA as follows:

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				• The perception of construction activity for the Project route, the Muckingford Road green bridge and the realignment of part of Hoford Road The key characteristics of the landscape would remain largely unaffected, apart from earthwork operations associated with new cutting and false cutting slopes, which would slightly alter the landform on the south-west edge of the LLCA. In addition, Hoford Road Protected Lane (a historic lane) would be crossed and realigned. Overall, the Project would result in a slight change to the existing landscape character of the Linford/Buckingham Hill Urban Fringe LLCA, given the small area affected and the partial loss of ancient woodland, with changes contained by existing woodland cover.
				<u>Project utility works – nature of effects</u> Utility works in the Linford/Buckingham Hill Urban Fringe LLCA would include: • OHL modifications • A short section of multi-utility works along Hoford Road to the west of the Tarmac plant The utility works would result in the following direct effects, in addition to the related construction activity: • The perception of construction activity associated with OHL modifications • Loss of woodland on the periphery of the adjacent Tarmac plant associated with OHL modifications • Loss of trees and hedgerows along Hoford Road Protected Lane, which would damage its unique character Some indirect effects on this LLCA would also result from utility works in the adjoining LLCAs as follows:

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				• The perception of construction activity associated with OHL modifications within the West Tilbury Urban Fringe LLCA • The perception of construction activity associated with OHL modifications within the White Croft/Orsett Heath Urban Fringe LLCA The key characteristics of the landscape would remain largely unaffected, apart from the removal of woodland around the existing Tarmac plant, which would slightly reduce the containment of the industrial area. In addition, there would be some tree and hedgerow removal along Hoford Road Protected Lane (a historic lane). Overall, the utility works would result in the slight loss of landscape elements and slight damage to existing landscape character within the Linford/Buckingham Hill Urban Fringe LLCA.
				<u>Justification for significance level where two significance categories are given in LA 104</u> The significance of effect has been assessed as slight rather than neutral due to the conspicuous nature of construction activity on the edge of and adjacent to the LLCA.
White Croft/Orsett Heath Urban Fringe Key characteristics of relevance to study area (based on Thurrock Landscape Capacity Study (Thurrock Council, 2005)): • Gently undulating, urban fringe, medium- to large-scale farmland strongly	Medium	Major adverse	Large adverse effect	Project construction activity would occur over a medium-term period. <u>Main Project (highway and associated infrastructure, earthworks, construction compounds and WCHs) – nature of effects</u> Construction activity would be focused on the new A13/A1089/A122 Lower Thames Crossing junction south of the existing A13, including the Project route and several slip roads, new street lighting, gantries and road signage, and multiple new structures and retaining walls. The demolition of a number of residential properties would also be required along Baker Street (south of the A13) and along the A1013 Stanford Road.

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
influenced by transport corridors and OHL. • A sense of the former historic rural landscape remains near the hedgerow-lined Hornsby Lane and Heath Place. • Scattered farmsteads are linked by minor hedgerow-lined lanes, with larger settlement apparent at the edges of the LLCA. • Tranquillity is strongly influenced by the A13 and urban edge of Chadwell St Mary and Grays. • Perception of skyglow from adjacent settlements.				Four construction compounds would be located within this LLCA to facilitate construction. The Brentwood Road compound would include welfare and site offices, earthwork stockpiles, plant and material storage, workshops and a concrete batching plant up to 25m in height. The Stanford Road, Long Lane A and Long Lane B compounds would be smaller in scale with no concrete batching plant. The Long Lane A compound would be larger than the Long Lane B compound but would primarily comprise earthwork stockpiles. Construction activity in this LLCA would also include a number of haul routes along the Project route. Activity in this LLCA would result in the following direct effects: • Substantial, permanent loss of arable land due to highway and earthwork construction, and reversible loss for construction compounds • Extensive loss of woodland and trees along the A13, the A1013 Stanford Road and A1089 Dock Approach Road • Loss of field-bounding hedgerows, and trees and hedgerows along Brentwood Road • Noticeable change to the existing gently undulating landform as a result of temporarily stored material and major earthworks, including creation of the landscape mounds within the A13/A1089/A122 Lower Thames Crossing junction • Uncharacteristic and conspicuous construction activity within the urban fringe landscape • A further reduction in the level of tranquillity due to construction activity and associated additional noise sources, experienced in the context of the existing main road corridors and urban fringe influences • Slight perceived change in the night-time environment as a result of construction activity and new light sources,

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				experienced in the context of existing lighting, in particular along the A13 Some indirect effects on this LLCA would also result from construction activity in the Orsett Lowland Farmland LLCA as follows: • The perception of conspicuous construction activity for the northern part of the new A13/A1089/A122 Lower Thames Crossing junction • The perception of building demolition along Baker Street • The perception of reduced vegetation cover as a result of the removal of tree belts along the north of the existing A13 Some of the key characteristics of the landscape would be affected by the Project, in particular the gently undulating farmland, which would be interrupted by false cutting and embankment slopes. Hornsby Lane, a characteristic feature of the former historic landscape, would be stopped up to the north and south of the Project route. Overall, the Project would result in a large-scale change to the existing landscape character of the White Croft/Orsett Heath Urban Fringe LLCA. This would be due to the partial loss of a range of characteristic features, including existing vegetation that currently helps integrate the A13 and A1089 Dock Approach Road into the landscape, and conspicuous construction activity.
				<u>Project utility works – nature of effects</u> Utility works in the White Croft/Orsett Heath Urban Fringe LLCA would include the following: • OHL modifications to the south of the Project route, across the A1089 Dock Approach Road and to the west of the proposed A13/A1089/A122 Lower Thames Crossing junction

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				• Numerous multi-utility works throughout the LLCA, including works at Brentwood Road, A1013 Stanford Road, A13, A1089 Dock Approach Road, Hornsby Lane and Heath Road • High-pressure gas pipelines within the western part of Orsett Golf Club and along the north side of the A13 • Installation and operation of Stanford Road Utility Hub, Long Lane Utility Hub, Hornsby Lane Utility Hub and Brentwood Road Utility Hub The utility works would result in the following direct effect, in addition to the related construction activity: • Loss of trees on the western edge of Orsett Golf Club Some indirect effects on this LLCA would also result from utility works in the adjoining LLCAs as follows: • The perception of construction activity associated with OHL modifications within the West Tilbury Urban Fringe LLCA • The perception of construction activity associated with OHL modifications within the Linford/Buckingham Hill LLCA • The perception of construction activity associated with OHL modifications within the Orsett Lowland Farmland LLCA The key characteristics of the landscape would remain largely unaffected, apart from the removal of hedgerows and copses along the historic Hornsby Lane. Overall, the utility works would result in the partial loss of distinctive landscape elements and noticeable damage to landscape character within the White Croft/Orsett Heath Urban Fringe LLCA. Justification for significance level where two significance categories are given in LA 104

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				The significance of effect has been assessed as large rather than moderate due to the large-scale nature of construction activity, in particular at the A13/A1089/A122 Lower Thames Crossing junction.
Orsett Lowland Farmland Key characteristics of relevance to study area (based on Land of the Fanns Landscape Character Assessment (Lands of the Fanns Landscape Partnership, 2016)): • Low-lying, gently undulating fen edge landscape • Small- to large-scale pasture and arable fields surround the historic settlement of Orsett • Pattern of small woodland blocks, mature hedgerows and hedgerow trees • Some extensive views north • Considerable time depth and long history of occupation	Medium	Moderate adverse	Moderate adverse effect	Project construction activity would occur over a medium-term period. <u>Main Project (highway and associated infrastructure, earthworks, construction compounds and WCHs) – nature of effects</u> Proposed construction activity would be focused on the new A13/A1089/A122 Lower Thames Crossing junction north of the existing A13, including the Project route and several new slip roads with connections to the A13 and A1089 Dock Approach Road. Works would include the installation of new street lighting, gantries and road signage, and construction of multiple new structures and retaining walls. New structures would also be constructed along the realigned Stifford Clays Road and Rectory Road (with demolition of the existing Rectory Road structure). Demolition of a number of residential properties would also be required along Baker Street (north of the A13) and the south side of Stifford Clays Road. The Stifford Clays Road compound West and Stifford Clays Road compound East would be located within this LLCA to facilitate construction. The Stifford Clays Road compound East would include welfare and site offices, earthwork stockpiles, plant and material storage, workshops and a concrete batching plant up to 25m in height. The Stifford Clays Road compound West would have a smaller area for earthwork stockpiles and no concrete batching plant. Construction activity would also include use of haul routes along the Project route. Activity in this LLCA would result in the following direct effects:

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
• Prominent OHL to west of Baker Street and east of the A128 • Tranquillity is influenced by the A13 corridor • Perception of skyglow from adjacent settlements and the A13				• Substantial, permanent loss of pasture and arable land due to highway and earthwork construction, and reversible loss associated with construction compounds • Loss of roadside vegetation along Stifford Clays Road and Green Lane, and part of the northern edge of the A13 • Noticeable change to the flat lowland landform, due to embankments, cuttings, a false cutting and a landscape mound at the south-western edge of this LLCA • Uncharacteristic and conspicuous construction activity within the urban fringe landscape • A further reduction in the level of tranquillity due to construction activity and associated additional noise sources, experienced in the context of the existing A13 corridor and urban edge of Baker Street and Orsett • Slight perceived change in the night-time environment as a result of construction activity and new light sources, experienced in the context of existing lighting along the A13 and within Baker Street and Orsett Some indirect effects on this LLCA would also result from construction activity in the adjoining White Croft/Orsett Heath Urban Fringe LLCA as follows: • The perception of uncharacteristic and conspicuous construction activity for the new A13 slip roads and associated earthworks south of Orsett • The perception of reduced vegetation cover as a result of the removal of tree belts along the south of the A13 and A1013 Stanford Road Some of the key characteristics of the landscape would be affected by the Project, including the low-lying fenland landform and

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				associated fields, which would be interrupted by earthworks for the A13/A1089/A122 Lower Thames Crossing junction. Characteristic mature hedgerows would also be removed along Stifford Clays Road and Green Lane. Overall, the Project would result in the partial loss of characteristic features and a noticeable change to the existing landscape character of the Orsett Lowland Farmland LLCA.
				<u>Project utility works – nature of effects</u> Utility works in the Orsett Lowland Farmland LLCA would include: • OHL modifications to the west of the new A13/A1089/A122 Lower Thames Crossing junction • Installation of a high-pressure gas pipeline across arable land to the south and west of Orsett, and north of the Baker Street settlement • Multi-utility works through the settlement of Baker Street and Stifford Clays Road and alongside the A13/A1089/A122 Lower Thames Crossing junction • Installation and operation of Stifford Clays Road Utility Hub and Green Lane Utility Hub The utility works would result in the following direct effects, in addition to the related construction activity: • Limited loss of trees and hedgerows along Rectory Road and Stifford Clays Road • The perception of construction activity associated with OHL modifications Some indirect effects on this LLCA would also result from utility works in the adjoining LLCAs as follows:

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				• The perception of construction activity associated with OHL modifications within the Thurrock Reclaimed Fen (sub area Mardyke) LLCA • The perception of construction activity associated with OHL modifications within the White Croft/Orsett Heath Urban Fringe LLCA The key characteristics of the landscape would remain largely unaffected, apart from the limited removal of characteristic hedgerows along Rectory Road and Stifford Clays Road within utility corridors. Overall, the utility works would result in a very minor loss of landscape elements and slight damage to existing landscape character within the Orsett Lowland Farmland LLCA.
Thurrock Reclaimed Fen (sub area Mardyke) Key characteristics of relevance to study area (based on Land of the Fanns Landscape Character Assessment (Lands of the Fanns Landscape Partnership, 2016), as well as site appraisal and analysis): • Flat, low-lying, inland basin associated with the Mardyke • Expansive views	High	Major adverse	Large adverse effect	Project construction activity would occur over a medium-term period. <u>Main Project (highway and associated infrastructure, earthworks, construction compounds and WCHs) – nature of effects</u> Construction activity within this LLCA is focused on the Mardyke and Orsett Fen Viaducts, the new highway including new gantries, road signage, embankments and false cuttings, Green Lane green bridge, FP136 bridge and widening works along the M25 corridor. Other activities include construction of flood compensation areas adjacent to the Mardyke (with associated ecological mitigation works), attenuation basins with connections to the surrounding network of ditches and dykes, new WCH routes and retaining structures at The Wilderness woodland block. The Mardyke, Medebridge and Warley Street compounds would be located within the LLCA. These compounds would include welfare and site offices, space for plant and material storage and earthwork

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
• Sparsely settled, large-scale, open and remote arable landscape, with a strong sense of place • Rectilinear field boundaries of open ditches, fen causeways and gappy hedgerows • Infrequent woodland blocks • OHL, a landfill near South Ockendon and the M25 locally contrast with the rural landscape • High levels of tranquillity due to sparsely settled nature • Largely dark night-time character, with some perception of light sources at Chadwell St Mary and Grays and along the M25				stockpiles. The Mardyke and Medebridge compounds would also include a concrete batching plant up to 25m in height. Activity in this LLCA would result in the following direct effects: • Substantial, permanent loss of arable land due to highway and earthwork construction, and reversible loss for construction compounds • Loss of field boundary trees and hedgerows crossing the Project route, including part of a tree belt along the Mardyke • Loss of the southern part of The Wilderness woodland block, trees and hedgerows along Green Lane and tree groups and tree belts along the east of the M25 • Noticeable change to the existing flat, low-lying landform as a result of the construction of new road embankments and false cuttings, together with the lowered ground level for the flood compensation area • Uncharacteristic and conspicuous construction activity within the urban fringe landscape, as well as in areas more rural in nature within the fenland • A further reduction in the level of tranquillity due to construction activity and associated additional noise sources, particularly within the rural fen landscape, concentrated along the Project route but also affecting the surrounding landscape due to its flat and open nature • Slight perceived change in the night-time environment as a result of construction activity and new light sources, experienced within a largely dark area within the fenland, but in the context of existing lighting along the M25 to the north-west Some indirect effects on this LLCA would also result from construction activity in the adjoining LLCAs, as follows:

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				• The perception of uncharacteristic and conspicuous construction activity for the large-scale A13/A1089/A122 Lower Thames Crossing junction in the Orsett Lowland Farmland LLCA to the south, including the Stifford Clays Road compound East with a concrete batching plant up to 25m high • The perception of uncharacteristic and conspicuous construction activity for the western part of the M25 widening works and reduced roadside screen planting in the Thurrock Reclaimed Fen (sub area Thames Chase) LLCA Some of the key characteristics of the landscape would be affected by the Project, in particular the low-lying landform, rectilinear field boundaries and views, which would be interrupted by raised earthworks and the Orsett Fen and Mardyke Viaducts. There would also be a perceived reduction to tranquillity, remoteness and sense of place as a result of construction activity in the largely tranquil, rural landscape. Overall, the Project would result in the slight loss of characteristic features and large-scale change to the existing landscape character of the Thurrock Reclaimed Fen (sub area Mardyke) LLCA, due to uncharacteristic and conspicuous construction activity within the open reclaimed fen landscape.
				<u>Project utility works – nature of effects</u> Utility works in the Thurrock Reclaimed Fen (sub area Mardyke) LLCA would include: • OHL modifications between Green Lane in the south and Fen Lane to the north, and OHL modifications between the M25 and Clay Tye Farm • Installation of two high-pressure gas pipelines, one in the vicinity of Green Lane and one in the vicinity of Fen Lane

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				• Several multi-utility works along Medebridge Road in the vicinity of the Mardyke Way and field edges to the east, multi-utility works to the north of South Ockendon, multi-utility works along the B186 Clay Tye Road and multi-utility works adjoining the M25 west of North Ockendon • Installation and operation of Green Lane Utility Hub and Medebridge Utility Hub The utility works would result in the following direct effects, in addition to the related construction activity: • Slight loss of linear woodland/tree belts and field boundary hedgerows • Loss of trees within a corridor through The Wilderness woodland block • Loss of trees within Thames Chase Forest Centre, east of the M25 Some indirect effects on this LLCA would also result from utility works in the adjoining LLCAs as follows: • The perception of construction activity associated with OHL modifications within the Orsett Lowland Farmland LLCA • The perception of construction activity associated with OHL modifications within the Thurrock Reclaimed Fen (sub area Thames Chase) LLCA The key characteristics of the landscape would remain largely unaffected, apart from a perceived reduction to tranquillity, remoteness and sense of place as a result of utility works in the largely tranquil, rural landscape. Overall, the utility works would result in the partial loss of distinctive landscape elements and noticeable damage to landscape

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				character within the Thurrock Reclaimed Fen (sub area Mardyke) LLCA. <u>Justification for significance level where two significance categories are given in LA 104</u> The significance of effect has been assessed as large rather than very large due to the relatively contained nature of construction activity along the Project route in the context of this extensive LLCA, and the loss of existing landscape elements being largely focused on hedgerows and tree belts along field boundaries.
Thurrock Reclaimed Fen (sub area Thames Chase) Key characteristics of relevance to study area (based on Land of the Fanns Landscape Character Assessment (Lands of the Fanns Landscape Partnership 2016), as well as site appraisal and analysis): • Typically wooded in nature • Diverse land uses including Thames Chase Forest Centre, a golf course, arable and pasture fields, a solar farm and recreational green spaces on the urban edge • Influenced by the Upminster urban area and	Medium	Moderate adverse	Moderate adverse effect	Project construction activity would occur over a medium-term period. <u>Main Project (highway and associated infrastructure, earthworks, construction compounds and WCHs) – nature of effects</u> Construction activity would occur on the eastern margin of this LLCA, primarily associated with the M25 widening including new earthworks, demolition of retaining walls, dismantling of gantries, construction of new retaining structures, and installation of replacement street lighting (new LED luminaires), new signage and new gantries. Other activities would include construction of the A122 to M25 junction 29 link road to the west of the M25 corridor, including new overbridge structures across a watercourse (tributary of the West Mardyke), St Marys Lane and the Upminster to Basildon railway line, and construction of the Project road northbound slip road. Works would also include decommissioning of the existing Cranham Solar Farm and construction of the new Thames Chase WCH bridge structure adjoining the Upminster to Basildon railway line to the north. Activity in this LLCA would result in the following direct effects: • Small-scale, largely reversible loss of arable farmland, required for construction operations

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
M25 corridor, including the perception of night-time lighting and reduced tranquillity				• Small-scale, permanent loss of recreational land within Thames Chase Forest Centre • Loss of existing roadside screen planting • Noticeable modifications to the artificial landform of the existing M25 corridor, including a new embankment for the A122 to M25 junction 29 link road, as well as cutting slopes for the Project road northbound slip road • Noticeable damage to the character of the Thames Chase Forest Centre and surrounding community forest due to the loss of effective roadside screen planting • Uncharacteristic and conspicuous construction activity within the context of the M25 corridor • A further reduction in the level of tranquillity experienced along the M25 corridor due to construction activity and associated additional noise sources • Limited perceived change in the night-time environment as a result of construction activity and new light sources, experienced in the context of existing lighting along the M25 corridor Some indirect effects on this LLCA would also result from construction activity in the adjoining Thurrock Reclaimed Fen (sub area Mardyke) LLCA as follows: • The perception of uncharacteristic and conspicuous construction activity for the eastern part of the M25 widening works and reduced roadside screen planting There would be limited effects on the key characteristics of the landscape as a result of the removal of roadside screen planting, which would result in a slight reduction of vegetation cover within

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				the typically wooded landscape and an increase in the perception of the M25 corridor from adjoining land. Overall, the Project would result in the slight loss of characteristic features which currently aid the integration of the M25 into the adjoining landscape, and a noticeable change to the existing landscape character of the Thurrock Reclaimed Fen (sub area Thames Chase) LLCA along its eastern margin.
				<u>Project utility works – nature of effects</u> Utility works in the Thurrock Reclaimed Fen (sub area Thames Chase) LLCA would include: • OHL diversion to the south of the Thames Chase Forest Centre • Multi-utility works along the Project route The utility works would result in the following direct effects, in addition to the related construction activity: • Limited loss of trees and hedgerows along the west side of the M25, including in the vicinity of the B187 St Marys Lane • Loss of a swathe of trees within the Thames Chase Forest Centre, along part of the realigned OHL corridor There would be no notable indirect effects on this LLCA as a result of utility works. There would be limited effects on the key characteristics of the landscape as a result of the removal of small areas of woodland, trees and hedgerows, within the typically wooded landscape. Overall, the utility works would result in a perceptible loss of landscape elements and slight damage to landscape character within the Thurrock Reclaimed Fen (sub area Thames Chase) LLCA.
Belhus Lowland Quarry Farmland	Medium	Moderate adverse	Moderate adverse effect	Project construction activity would occur over a medium-term period.

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
Key characteristics of relevance to study area (based on Land of the Fanns Landscape Character Assessment, (Lands of the Fanns Landscape Partnership, 2016)): • Low-lying, predominantly flat, mixed arable and pasture landscape, with historic quarrying and landfill evident from lakes and structural tree planting • Numerous tree belts and woodland blocks, with some ancient woodland • Heritage assets such as Cranham Hall and former parkland within Belhus Woods Country Park, often associated with established mature vegetation • Tranquillity influenced by M25 corridor, with associated perception of night-time lighting				<u>Main Project (highway and associated infrastructure, earthworks, construction compounds and WCHs) – nature of effects</u> Construction activity would occur within the north-eastern part of this LLCA and be focused on the new Project route east of the M25 and the A122 Lower Thames Crossing/M25 junction. Activities along the Project route would include installation of new gantries, lighting and road signage, earthworks for cuttings and false cuttings, and construction of North Road green bridge and the FP252 WCH bridges east and west. Activities at the A122 Lower Thames Crossing/M25 junction and along the M25 would include the installation of replacement lighting (new LED luminaires) and new lighting, the dismantling of existing gantries and the installation of new gantries. Activities would also include earthworks for a cutting and landscape mounding and construction of the new M25 underpass for the Project road northbound slip road and the new Ockendon Road overbridge. Two construction compounds would be located within this LLCA. The M25 compound, located to the south of North Ockendon, would include welfare and site offices, earthwork stockpiles, plant and material storage, workshops and a concrete batching plant up to 25m in height. The Ockendon Road compound, adjoining the Upminster to Grays railway line, would be smaller in scale with reduced areas of material storage and no concrete batching plant. Activity in this LLCA would result in the following direct effects: • Noticeable, permanent loss of largely arable farmland within the Project footprint and reversible loss associated with construction compounds • Loss of maturing woodland screening along the M25 and field-bounding vegetation

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				• Noticeable change to the existing predominantly flat landform as a result of earthworks for the cuttings and false cuttings associated with road construction and the landscape mounds between the M25 and the Project road northbound slip road • Uncharacteristic and conspicuous construction activity within the modified landscape, although partially in the context of the M25 corridor • A further reduction to tranquillity, partially experienced along the M25 corridor, due to construction activity and associated additional noise sources • Slight perceived change in the night-time environment away from the M25 corridor as a result of construction activity and new light sources Some indirect effects on this LLCA would also result from construction activity in the adjoining Thurrock Reclaimed Fen (sub area Mardyke) LLCA as follows: • The perception of reduced vegetation cover at The Wilderness woodland block to the east There would be limited effects on the key characteristics of the landscape due to earthwork operations for cuttings and false cuttings in the low-lying, mixed arable and pasture landscape, with associated removal of some hedgerows. Overall, the Project would result in a slight reduction in the extent of M25 landscape integration and a noticeable change to the existing landscape character of the Belhus Lowland Quarry Farmland LLCA, due to the concentration of construction activity around the A122 Lower Thames Crossing/M25 junction and the Project route to the east.
				<u>Project utility works – nature of effects</u>

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				Utility works in the Belhus Lowland Quarry Farmland LLCA would include: • Installation of a high-pressure gas pipeline north of South Ockendon • Multi-utility works along the Project route to the south and west of North Ockendon The utility works would result in the following direct effect, in addition to the related construction activity: • Limited loss of field boundary trees and hedgerows west of The Wilderness, and in the region of Manor Farm Some indirect effects on this LLCA would also result from utility works in the adjoining Thurrock Reclaimed Fen (sub area Mardyke) LLCA as follows: • The perception of reduced vegetation cover at The Wilderness woodland block to the east due to the utility corridor The key characteristics of the landscape would remain largely unaffected, apart from the limited removal of trees and hedgerows within utility corridors. Overall, the utility works would result in the slight loss of landscape elements and slight damage to existing landscape character within the Belhus Lowland Quarry Farmland LLCA.
Brentwood Wooded Hills Key characteristics of relevance to study area (based on Land of the Fanns Landscape Character Assessment (Lands of the Fanns Landscape Partnership, 2016)):	Medium	Negligible adverse	Neutral effect	Project construction activity would occur over a medium-term period. Main Project (highway and associated infrastructure, earthworks, construction compounds and WCHs) – nature of effects Construction activity would be focused on the modification of the existing M25 corridor, including the dismantling of existing gantries, installation of new gantries, replacement street lighting (new LED luminaires) and new road signage, minor earthworks, and

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
• Undulating, rural pasture and arable landscape generally rising to the north • Frequent areas of woodland, including several areas of ancient woodland • Frequent dense hedgerow boundaries • Local ridgeline north of M25 junction 29, with extensive views south across the Thurrock Reclaimed Fen • Scattered settlement pattern, with heritage features at the village of Great Warley • Influenced by existing M25 corridor, including the perception of night-time lighting and reduced tranquillity				construction of new retaining structures. In addition, there would also be the construction of a new WCH route along the A127 and the A127 WCH bridges east and west across the A127, as well as modifications to an existing attenuation basin north of the M25 junction 29. Order Limits have also been included within this LLCA for nitrogen deposition compensation sites and ancient woodland mitigation areas, where there would be no construction activity taking place. Activity in this LLCA would result in the following direct effects: • Loss of roadside woodland at the M25 junction 29, trees on the edge of Codham Hall Wood ancient woodland and some individual trees along the M25 • Uncharacteristic and conspicuous construction activity within the context of the M25 corridor • A further reduction in the level of tranquillity due to construction activity and associated additional noise sources, experienced in the context of the existing M25 corridor and junction 29 There would be no notable indirect effects on this LLCA. There would be limited effects on the key characteristics of the landscape as a result of the removal of roadside woodland at the M25 junction 29 and trees on the edge of Codham Hall Wood ancient woodland, which would slightly reduce the characteristic wooded nature of the landscape in limited locations adjoining the M25 corridor. Overall, the Project would result in a partial loss of landscape elements, which currently help to integrate the M25 junction 29 into the landscape. However, there would only be a very minor change to the existing landscape character of the Brentwood Wooded Hills LLCA, with effects limited to the existing M25 and A127 corridors and motorway junction.

Landscape receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect	Significance of effect	Commentary
				<u>Project utility works – nature of effects</u> Utility works in the Brentwood Wooded Hills LLCA would include: • The installation of a section of high-pressure gas pipeline adjacent to the M25, west of Parker's Shaw wood • Multi-utility works principally associated with the A127 junction • Multi-utility works associated with the proposed A127 WCH bridges east and west crossing the A127 either side of the M25 • Installation and operation of Beredens Lane Utility Hub and Folkes Lane Utility Hub There would be direct effects as a result of the works upon the following landscape elements: • Loss of roadside tree planting at the A127 junction • Limited loss of woodland adjacent to Folkes Lane Utility Hub There would be no notable indirect effects on this LLCA as a result of utility works. There would be limited effects on the key characteristics of the landscape as a result of the removal of small areas of trees and woodland, which would very slightly alter tree cover in limited locations within the M25 corridor. Overall, the utility works would result in very minor loss of landscape elements and very minor damage to the landscape character of the Brentwood Wooded Hills LLCA.
				<u>Justification for significance level where two significance categories are given in LA 104</u> The significance of effect has been assessed as neutral rather than slight due to the limited nature of construction activity, which would be perceived in the context of the existing major transport corridors of the M25 and A127.

3 Operation

3.1 Landscape effects on National Character Areas (NCAs) during operation

3.1.1 Refer to Figure 7.1: National Landscape Character including Seascape (Application Document 6.2) for the locations of NCAs.

Table 3.1 Schedule of landscape effects on National Character Areas (NCAs) during operation

Landscape receptor	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)	
NCA 119: North Downs	High	Minor adverse	Negligible adverse	Slight adverse effect	Slight adverse effect	Only a very small area on the northern edge of the North Downs NCA falls within the Order Limits for the modified A2 corridor and the effects of operation would be largely indirect. A very small part of the NCA has also been included in the Order Limits for a nitrogen deposition compensation site south of Chatham. Opening year (winter) The principal operation effects within NCA 119 would be as described in Table 3.3 for West Kent Downs (sub area Cobham) LLCA, Mid Kent Downs (sub area Bredhurst) LLCA, Hollingbourne Scarp and Vale (sub area Boxley Vale) LLCA, Medway Valley (sub area The Eastern Scarp) and Istead Arable Farmlands LLCA, resulting in a very minor change to landscape character in the opening year within the West Kent Downs (sub area Cobham) and Mid Kent Downs (sub area Bredhurst) LLCAs, no change in the Hollingbourne Scarp and Vale (sub area Boxley Vale) and Medway Valley (sub area The Eastern Scarp) LLCAs and a noticeable change to landscape character within the Istead Arable Farmlands LLCA.

Landscape receptor	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)	
						However, these effects would not notably alter the overall character of the NCA given the small physical footprint and limited extent of NCA affected. An overall minor adverse magnitude of effect on the North Downs NCA has therefore been assessed. *Justification for significance level where two significance categories are given in LA 104* The significance of effect has been assessed as slight rather than moderate due to the small physical footprint of the Project within the NCA and limited extent of NCA affected by the Project. <u>Design year (summer)</u> The principal operation effects at design year within NCA 119 would be as described in Table 3.3 for West Kent Downs (sub area Cobham) LLCA, Mid Kent Downs (sub area Bredhurst) LLCA, Hollingbourne Scarp and Vale (sub area Boxley Vale) LLCA, Medway Valley (sub area The Eastern Scarp) and Istead Arable Farmlands LLCA. The change to existing landscape character in the design year would vary from very minor (adverse) in West Kent Downs (sub area Cobham) to minor (adverse) within Istead Arable Farmlands. However, there would be no change within Medway Valley (sub area The Eastern Scarp), a very minor (beneficial) change within Hollingbourne Scarp and Vale (sub area Boxley Vale), and a noticeable (beneficial) change in Mid Kent Downs (sub area Bredhurst). Established mitigation planting would reduce the perceptibility of the modified A2 corridor, although a similar level of effect would remain in the part of the NCA adjacent to the road. Established woodland within the nitrogen deposition compensation site south of Chatham would enhance existing landscape character within the

Landscape receptor	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)	
						AONB, although the enhancement would only affect a localised part of the NCA. An overall negligible adverse magnitude of effect on the North Downs NCA has therefore been assessed.
NCA 113: North Kent Plain	High	Moderate adverse	Minor adverse	Moderate adverse effect	Slight adverse effect	The North Kent Plain NCA would encompass most of the A2 widening works, the full M2/A2/A122 Lower Thames Crossing junction and the South Portal and approach cutting slopes. The principal operation effects within NCA 113 would be as described in Table 3.3 for Dartford and Gravesend Fringe LLCA, Gravesend Southern Fringe LLCA, Higham Arable Farmland (sub area Chalk) LLCA, Higham Arable Farmland (sub area Thong) LLCA, Higham Arable Farmland (sub area Gadshill) LLCA, Shorne Wooded Slopes LLCA and West Kent Downs (sub area Shorne) LLCA. <u>Opening year (winter)</u> Within these LLCAs, the change to existing landscape character would vary from no change within Dartford and Gravesend Fringe to large-scale change within Higham Arable Farmland (sub area Thong), where the new M2/A2/A122 Lower Thames Crossing junction would be located. There would be a very minor change within Higham Arable Farmland (sub area Gadshill) and Shorne Wooded Slopes, a slight change within Gravesend Southern Fringe and noticeable change within Higham Arable Farmland (sub area Chalk) and within West Kent Downs (sub area Shorne). The extent of the Project would be proportionally relatively small in relation to the NCA, which extends east to west along the south of the River Thames. In addition, the Project is located within an area already notably influenced by the existing urban area of Gravesend

Landscape receptor	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)	
						and the A2 corridor. Overall, the Project would result in some loss of distinctive landscape elements and a noticeable change in the existing landscape character of the North Kent Plain NCA 113 near the Project. However, the landscape characteristics of the wider NCA to the east and west of the Project would be maintained. An overall moderate adverse magnitude of effect on the North Kent Plain NCA has therefore been assessed. *Justification for significance level where two significance categories are given in LA 104* The significance of effect has been assessed as moderate rather than large due to the localised extent of the Project in relation to the wider NCA, in an area already notably influenced by the existing urban area of Gravesend and the A2 corridor. <u>Design year (summer)</u> Over time, the establishment of mitigating landscape features would help reduce the prominence of infrastructure. Within the corresponding LLCAs, the change to existing landscape character would vary from no change within Dartford and Gravesend Fringe and Higham Arable Farmland (sub area Gadshill), very minor change within Gravesend Southern Fringe, slight change within Higham Arable Farmland (sub area Chalk) and West Kent Downs (sub area Shorne) to large-scale change within Higham Arable Farmland (sub area Thong) where the new M2/A2/A122 Lower Thames Crossing junction would be located. There would also be a noticeable (beneficial) change within Shorne Wooded Slopes. By the design year, the Project would result in a slight change in

Landscape receptor	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)	
						the existing landscape character of the North Kent Plain NCA 113 near the Project route. Established woodland within the nitrogen deposition compensation sites and ancient woodland compensation areas around Shorne and Shorne Ridgeway would enhance existing landscape character, although this would be in a very localised part of the NCA. An overall minor adverse magnitude of effect on the North Kent Plain NCA has therefore been assessed. *Justification for significance level where two significance categories are given in LA 104* The significance of effect has been assessed as slight rather than moderate due to the localised extent of the Project in relation to the wider NCA, in an area already notably influenced by the existing urban area of Gravesend and the A2 corridor.
NCA 81: Greater Thames Estuary	Medium	Minor adverse	Minor adverse	Slight adverse effect	Slight adverse effect	Within the Greater Thames Estuary NCA, the Project would be principally below ground in a tunnel south of the River Thames and above ground to the north. Above ground features would include the North Portal and approach road and part of the Tilbury Viaduct. The principal operation effects within NCA 81 would be as described in Table 3.3 for Shorne and Higham Marshes LLCA, Tilbury Marshes LLCA, Chadwell Escarpment Urban Fringe LLCA (partial area), Mucking Marshes LLCA, and West Tilbury Urban Fringe LLCA (partial area). <u>Opening year (winter)</u> Within these LLCAs, the change to existing landscape character would vary from very minor change within Mucking Marshes and Shorne and Higham Marshes, to large-scale change within West

Landscape receptor	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)	
						Tilbury Urban Fringe, only part of which lies within NCA 81. There would also be a slight change within Chadwell Escarpment Urban Fringe and a noticeable change within Tilbury Marshes. The main effects on the landscape character of this NCA would occur to the north of the River Thames. Overall, the Project would result in partial loss of distinctive landscape elements and a slight change to the existing landscape character of the Greater Thames Estuary NCA 81. The above ground footprint of the Project would be proportionally very small in relation to the extent of the NCA and the overall sense of place would be maintained. An overall minor adverse magnitude of effect on the Greater Thames Estuary NCA has therefore been assessed. <u>Design year (summer)</u> Within the corresponding LLCAs, the change to existing landscape character would vary from no change within Mucking Marshes and Shorne and Higham Marshes, to noticeable change within West Tilbury Urban Fringe (only part of which lies within NCA 81) and Tilbury Marshes. There would also be a slight change within Chadwell Escarpment Urban Fringe. While there would be some reduction in landscape effects by the design year, the overall level of effect on Greater Thames Estuary NCA 81 would not change between the opening and design year. An overall minor adverse magnitude of effect on the Greater Thames Estuary NCA has therefore been assessed.

Landscape receptor	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)	
NCA 111: Northern Thames Basin	Medium	Minor adverse	Minor adverse	Slight adverse effect	Slight adverse effect	The Northern Thames Basin NCA includes the new highway and associated infrastructure between East Tilbury and the M25 interface, extending northwards beyond junction 29. The principal operation effects within NCA 111 would be as described in Table 3.3 for Chadwell Escarpment Urban Fringe LLCA (partial area), West Tilbury Urban Fringe LLCA (partial area), Linford/Buckingham Hill Urban Fringe LLCA, White Croft/Orsett Heath Urban Fringe LLCA, Orsett Lowland Farmland LLCA, Thurrock Reclaimed Fen (sub area Mardyke) LLCA, Belhus Lowland Quarry Farmland LLCA, Thurrock Reclaimed Fen (sub area Thames Chase) LLCA and Brentwood Wooded Hills LLCA. <u>Opening year (winter)</u> Within these LLCAs, change to existing landscape character would vary from very minor change within Brentwood Wooded Hills, and slight change within Chadwell Escarpment Urban Fringe and Linford/Buckingham Hill Urban Fringe, to large-scale change within West Tilbury Urban Fringe, White Croft/Orsett Heath Urban Fringe and Thurrock Reclaimed Fen (sub area Mardyke) where the Project route crosses open landscape. Within Orsett Lowland Farmland, Belhus Lowland Quarry Farmland and Thurrock Reclaimed Fen (sub area Thames Chase), there would be noticeable change to existing landscape character. The Project footprint would be proportionally very small in relation to the wider extent of the NCA, in particular given the corridor already affected by the M25 motorway. Overall, the Project would result in a slight loss of distinctive landscape elements and a slight change to the existing landscape

Landscape receptor	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)	
						character of the Northern Thames Basin NCA 111. An overall minor adverse magnitude of effect on the Northern Thames Basin NCA has therefore been assessed. <u>Design year (summer)</u> Within the corresponding LLCAs, change to existing landscape character would vary from very minor change within Linford/Buckingham Hill Urban Fringe to large-scale change within Thurrock Reclaimed Fen (sub area Mardyke) where the Project route crosses open landscape. There would also be a slight change to existing landscape character within Chadwell Escarpment Urban Fringe, Orsett Lowland Farmland, Belhus Lowland Quarry Farmland and Thurrock Reclaimed Fen (sub area Thames Chase) and a noticeable change within West Tilbury Urban Fringe and White Croft/Orsett Heath Urban Fringe. There would be a slight beneficial change to existing landscape character within Brentwood Wooded Hills. Established woodland within the nitrogen deposition compensation site at Hole Farm would enhance existing landscape character, although this would only affect a localised part of the NCA. While there would be some reduction in landscape effects by the design year, the overall level of effect on Northern Thames Basin NCA 111 would not change between the opening and design year. An overall minor adverse magnitude of effect on the Northern Thames Basin NCA has therefore been assessed.

3.2 Landscape effects on MCAs during operation

3.2.1 Refer to Figure 7.1: National Landscape Character including Seascape (Application Document 6.2) for the locations of MCAs.

Table 3.2 Schedule of landscape effects on MCAs during operation

Landscape receptor	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)	
South East MCA 18: Thames and Medway Estuaries	Medium	Negligible adverse	Negligible adverse	Neutral effect	Neutral effect	*Note: the section of MCA 18 which falls within the study area also lies within the NCA 81: Greater Thames Estuary.* No above ground part of the Project lies within MCA 18: Thames and Medway Estuaries, with the proposed tunnel located below the River Thames. <u>Opening year (winter)</u> There would be no direct effects on marine character during operation. However, some indirect effects on this MCA would result from operation in the adjoining Tilbury Marshes LLCA to the north. Operation effects within the Tilbury Marshes LLCA are summarised in Table 3.3. The existing marine character of this MCA would be indirectly affected by the introduction of the uncharacteristic structural landscape mounding at Tilbury Fields in the otherwise typically flat landscape adjoining the River Thames to the north. Overall, the Project would only result in very minor change to the existing marine character of the Thames and Medway Estuaries MCA 18 in the opening year.

Landscape receptor	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)	
						Justification for significance level where two significance categories are given in LA 104 The significance of effect has been assessed as neutral rather than slight due to the limited nature of indirect effects on the wider MCA. <u>Design year (summer)</u> By the design year, the overall effect on existing marine character would remain broadly the same as for the opening year.

3.3 Landscape effects on LLCAs during operation

3.3.1 Refer to Figure 7.2: Local Landscape Character Areas (Application Document 6.2) for the locations of LLCAs. Figure 12.7: Opening Year Noise Change Contour (DSOY minus DMOY) and Figure 12.8: Future Year Noise Change Contour (DSFY minus DMOY) (Application Document 6.2) show noise change contours in opening year and design year.

Table 3.3 Schedule of landscape effects on LLCAs during operation

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
Kent Downs AONB							
West Kent Downs (sub area Cobham) Key characteristics of relevance to study area (based on Kent Downs AONB Landscape Character Assessment Update 2020 (Kent Downs AONB Unit, revised and published 2023)): • Extensive woodland blocks, some providing a backdrop to the	High	Negligible adverse	Negligible adverse	Slight adverse effect	Slight adverse effect	The West Kent Downs (sub area Cobham) LLCA lies immediately adjacent to HS1 to the south of the proposed A2 widening works. Noticeable alterations to the physical fabric of this LLCA and perceived changes would be very limited due to the retained woodland along its northern boundary. Typically, the modified corridor would not be visible from the wider LLCA. A key consideration for proposed planting mitigation has been to reflect the parkland character of this LLCA, using scattered tree planting to reinstate trees removed during construction.	Highway Sections 1 and 2

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
wider landscape, with several designated features, including ancient woodland at Ashenbank Wood and some veteran trees. • Woodland, parkland, a golf course and wood pasture within Cobham Hall Grade II* Registered Park and Garden. • The gently undulating landform, combined with hedgerow trees and woodland, provides containment. • Northern boundary						<u>Opening year (winter)</u> The Project would result in the following main direct effects in the opening year: • The continued absence of vegetation removed during construction, as outlined in Table 2.3, resulting in a very limited increased perception of highway infrastructure, in a very limited location on the northern boundary of the LLCA. • Figure 12.7: Opening Year Noise Change Contour (DSOY minus DMOY) (Application Document 6.2) indicates a minor beneficial change (reduction) in noise along the northern edge of the LLCA and along Halfpence Lane, with localised areas of moderate beneficial change (reduction) to the south-east of Brewers Road green bridge and north-east of Jeskyns Community Woodland. Figure 12.7 also indicates a minor adverse change (increase) in noise at the south-eastern tip of the LLCA in proximity to the A228 corridor, as well as near the realigned Thong Lane and to the	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
influenced by HS1 and A2 corridors, with the perception of night-time lighting and reduced levels of tranquillity.						north-east of Jeskyns Road. Overall, despite some reductions in noise levels, there would be a limited, further reduction to existing tranquillity due to the increased prominence of the modified A2 corridor, associated vehicle traffic and highway infrastructure, in a very limited location on the northern boundary of the LLCA, where tranquillity is already adversely affected by transport infrastructure including HS1. Effects on existing tranquillity at the south-eastern tip of the LLCA would be limited by adjoining woodland. The Project would result in the following main indirect effects in the opening year, for a very limited geographical extent on the northern boundary of the LLCA: • The continued absence of vegetation removed during construction within the adjoining West Kent Downs (sub area Shorne) LLCA, as outlined in Table 2.3, resulting in a localised perception of a broadened A2 corridor and increased perception of	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						highway infrastructure and Brewers Road green bridge • Limited perception of the large-scale M2/A2/A122 Lower Thames Crossing junction in the Higham Arable Farmland (sub area Thong) LLCA *Night-time environment* There would be a perceived change in the night-time environment within the LLCA due to the change in street lighting (LED luminaires). Installed on lower columns, emitting reduced light spill and skyglow compared with the existing luminaires, the prominence of new lighting would be limited and perceived in the context of existing lighting. Additional light sources would be present at the Thong Lane green bridge south in the Higham Arable Farmland (sub area Thong) LLCA. However, this would be seen in the context of existing lighting along the A2. *Summary: opening year (winter)* The overall landscape character would therefore be maintained, with limited adverse effect. The key characteristics	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						of the landscape would be largely unaffected, apart from the continued absence of a small group of trees along the northern edge of Cobham Hall Grade II* Registered Park and Garden, which would alter the parkland character slightly. In addition, there would be some indirect effects associated with the continued absence of woodland in the adjoining West Kent Downs (sub area Shorne) LLCA, which would slightly alter the wooded backdrop to the West Kent Downs (sub area Cobham) LLCA. Overall, the Project would result in a very minor loss of existing landscape elements and very minor change to the existing landscape character of the West Kent Downs (sub area Cobham) LLCA. <u>Design year (summer)</u> The establishment of new planting on and adjacent to the new Brewers Road green bridge structure, within the adjacent West Kent Downs (sub area Shorne) LLCA, would aid integration of the structure into the landscape. Overall, the main change by design year would be the establishment of the new	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						linear planting along the southern edge of the modified A2, within the adjacent West Kent Downs (sub area Shorne) LLCA. This would soften the perception of the broader A2 corridor, experienced from a very limited extent of this LLCA on the northern edge. Figure 12.8: Future Year Noise Change Contour (DSFY minus DMOY) (Application Document 6.2) indicates no change/negligible change in noise within the majority of the LLCA, with localised areas of minor beneficial change (reduction) in noise to the south-east of Brewers Road green bridge and north-east of Jeskyns Community Woodland. However, despite some reductions in noise levels, there would continue to be a very limited reduction to tranquillity due to the increased perception of moving traffic and highway infrastructure along the A2 corridor, although in an area where tranquillity is already adversely affected by transport infrastructure. *Night-time environment* Between the opening and design years, the establishment of tree and shrub belt	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						planting along the southern edge of the modified A2 corridor would to some extent help reduce the effects of new lighting on the night-time environment. *Summary: design year (summer)* Due to the remaining indirect effects of the Project, the overall effects on this LLCA would remain as stated above for the opening year. Established scattered trees along the northern edge of Cobham Hall Grade II* Registered Park and Garden and linear tree and shrub planting in the adjoining West Kent Downs (sub area Shorne) LLCA would help to restore key characteristics altered during construction. However, slightly less planting would be present along the south side of the A2 corridor, resulting in a limited permanent but localised reduction in the wooded backdrop of the West Kent Downs (sub area Cobham) LLCA. By the design year, the Project would continue to result in a very minor change to the existing landscape character of	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						the West Kent Downs (sub area Cobham) LLCA.	
West Kent Downs (sub area Shorne) Key characteristics of relevance to study area (based on Kent Downs AONB Landscape Character Assessment Update 2020 (Kent Downs AONB Unit, revised and published 2023)): • Extensive areas of woodland, with several designated features, including ancient woodland at Shorne Woods Country Park and veteran trees.	Very high	Moderate adverse	Minor adverse	Large adverse effect	Moderate adverse effect	The West Kent Downs (sub area Shorne) LLCA would encompass the A2 widening, east of Thong Lane. Noticeable alterations to the physical fabric of this LLCA and perceived changes in character would be focused on the southern margin of this LLCA. Here, the modified A2 corridor would comprise up to 16 lanes of traffic (typically 12 with the A2 carriageways and new local distributor roads). The corridor would be at a similar elevation to existing, except where the widening works extend beyond the existing A2 footprint, resulting in a requirement for new earthworks and retaining structures. A key consideration for proposed mitigation has been to avoid loss of the most important existing woodland where practicable, together with the provision of new woodland to compensate for that lost and two new green bridges to reduce the perception of severance resulting from the widened A2 corridor.	Highway Sections 1 and 2

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
• The densely wooded nature creates a strong sense of enclosure. • Steeply undulating, ridge landform that provides an attractive backdrop to views from surrounding LLCAs. • Prominent transportation infrastructure along the A2 and HS1 corridors, with the perception of night-time lighting and reduced levels of tranquillity.						Order Limits have also been included within this LLCA for ancient woodland compensation planting and for the creation of woodland and grassland habitat in a nitrogen deposition compensation site. <u>Opening year (winter)</u> The Project would result in the following main direct effects in the opening year: • Permanent conversion of pasture fields to woodland and grassland habitat within the nitrogen deposition compensation site and ancient woodland compensation areas. • The continued absence of vegetation removed during construction, as outlined in Table 2.3, resulting in a perceived increase in the prominence and scale of the A2 corridor on the southern margin of the LLCA. • A perception of greater landscape severance north and south of the modified A2. • Increased perception of highway infrastructure due to new gantries, signage, retaining structures and	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
• Mature tree belts along the A2 corridor.						replacement lighting columns, in conjunction with vegetation removal. • Figure 12.7 (Application Document 6.2) indicates a range of major to minor beneficial change (reduction) in noise along the edge of the A2 corridor, with the greatest beneficial change occurring to the north-east of Thong Lane near the Inn on the Lake Hotel and further east in a narrow band within approximately 50m of the north of the A2. There would also be no change/negligible change in noise along the western edge of the LLCA, and isolated pockets of major to minor adverse change (increase) in noise close to the south of the A2 corridor, with the greatest adverse change near the realigned Thong Lane. Overall, despite some reductions in noise levels, there would be a further reduction to existing tranquillity along the southern edge of the LLCA due to the increased prominence of the modified A2 corridor and associated vehicle traffic. However, this would be experienced in the context of the	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						existing A2 corridor, which already compromises tranquillity in this location. Some indirect effects on this LLCA would also result from: • The continued absence of Gravelhill Wood in the adjoining Higham Arable Farmland (sub area Thong) LLCA, opening up localised outward views to the west. • Due to woodland removal described above, the perception of earthworks, structures, vehicle movements and highway infrastructure at the M2/A2/A122 Lower Thames Crossing junction and the Thong Lane green bridge south in the adjoining Higham Arable Farmland (sub area Thong) LLCA. However, these effects would be limited to the edge of the West Kent Downs (sub area Shorne) LLCA due to retained woodland within the wider LLCA. *Night-time environment* Overall, there would be a perceived change in the night-time environment within the LLCA due to the change in	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						street lighting (LED luminaires). Installed on lower columns, emitting reduced light spill and skyglow compared with the existing luminaires, the prominence of new lighting would be limited and perceived in the context of existing lighting. However, due to the widened corridor, the extent of lighting would be increased, with additional lanes of traffic and vehicle lights evident. Additional light sources would also be present along the reconfigured Thong Lane to the south of the A2 and on the Thong Lane green bridge south in the Higham Arable Farmland (sub area Thong) LLCA, these being additional prominent night-time features, although perceived in the context of existing lighting. *Summary: opening year (winter)* The majority of the key characteristics of the landscape would be unaffected. However, the continued absence of woodland along the A2 corridor would adversely affect the wooded character of the LLCA locally, as well as reducing integration of the A2 corridor. Overall, the Project would result in a noticeable loss of trees and woodland	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						along the A2 corridor resulting in a noticeable change to the existing landscape character on the southern margin of the West Kent Downs (sub area Shorne) LLCA. However, beyond the modified A2 corridor and adjoining area, the woodland character of the landscape would be maintained, and the effects of the Project therefore contained. *Justification for significance level where two significance categories are given in LA 104* The significance of effect has been assessed as large rather than very large due to the localised nature of effects. <u>Design year (summer)</u> The establishment of new planting along the modified A2 corridor would help to reinstate vegetation removed during construction and to some extent reinstate the existing landscape character. However, the permanent loss of trees and woodland, including within the former central reservation, would result in a continued perceived increase in the prominence and scale of the A2	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						corridor along the southern margin of the LLCA. Figure 12.8 (Application Document 6.2) indicates a moderate to minor beneficial change (reduction) in noise to the north-east of Thong Lane near the Inn on the Lake Hotel and in isolated pockets further east along the A2 corridor, the majority of which would be within 50m of the north of the A2. There would be no change/negligible change in noise within much of the rest of the LLCA, apart from a localised area of moderate to minor adverse change (increase) in noise near the realigned Thong Lane. Overall, despite some reductions in noise levels, there would continue to be a reduction to tranquillity due to the increased perception of moving traffic and highway infrastructure along the A2 corridor. However, this would be experienced in the context of the existing A2 corridor, which already compromises tranquillity in this location. Established planting on the Brewers Lane green bridge, and on the Thong Lane green bridge south within the adjacent Higham Arable Farmland (sub	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						area Thong) LLCA, would aid the integration of these prominent features into the landscape and help reduce the perception of landscape severance north and south of the modified A2 corridor. Established mitigation planting on the large embankment north-east of the M2/A2/A122 Lower Thames Crossing junction in the adjoining Higham Arable Farmland (sub area Thong) LLCA would help to reduce the perception of earthworks, structures, vehicle movements and highway infrastructure to the west. Ancient woodland compensation planting south of Shorne Ridgeway and Bowesden Lane would help reduce the perception of the A2/M2 corridor and reinforce the wooded landscape character within this part of the LLCA. *Night-time environment* The perception of the night-time environment would not notably change between opening and design years.	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						Summary: design year (summer) Established linear tree and shrub planting along the A2 corridor would help to restore key characteristics altered during construction. However, less planting would be present along the north and south of the A2, with the continued absence of woodland in the former central reservation, resulting in a permanent localised change in the wooded character of the LLCA and slight increased perception of highway infrastructure and vehicle movements. Highway infrastructure and viaduct structures at the M2/A2/A122 Lower Thames Crossing junction are likely to remain apparent from the western margin of the LLCA, although in views already influenced by the existing A2 corridor and OHL. By the design year, the Project would result in a slight change to the existing landscape character of the West Kent Downs (sub area Shorne) LLCA.	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						Justification for significance level where two significance categories are given in LA 104 The significance of effect has been assessed as moderate rather than large due to the retention of the existing wooded character beyond the modified A2, with the effects of the Project therefore contained by surrounding woodland.	
West Kent Downs LCA 1A (including the LLCA sub areas of Shorne and Cobham) Relevant special components, characteristics and qualities from the Kent Downs AONB Management Plan 2021–2026 (Kent Downs AONB Unit, 2021):	Very high	Moderate adverse	Minor adverse	Large adverse effect	Moderate adverse effect	The principal operation effects within the West Kent Downs LCA 1A and key considerations for proposed mitigation would be as described above for the West Kent Downs (sub area Cobham) LLCA and West Kent Downs (sub area Shorne) LLCA. The proposed Thong Lane green bridge south would provide a new gateway feature to the Kent Downs AONB for A2 road users. <u>Opening year (winter)</u> Within these LLCAs, change to existing landscape character resulting from the Project would vary from a very minor change within West Kent Downs (sub area Cobham) to a noticeable change	Refer to the West Kent Downs (sub area Cobham and Shorne) information above

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
• Dramatic landform and views • Farmed landscape • Woodland and trees (including ancient woodland and veteran trees) and hedgerows • Tranquillity and remoteness (including dark night skies, space, beauty and peace)						locally within West Kent Downs (sub area Shorne). *AONB special components, characteristics and qualities* Effects on the relevant landscape special components, characteristics and qualities would be as follows: • Dramatic landform and views: there would only be minor changes in landform along the existing A2 corridor, with the dramatic landform in the wider AONB unaffected. The continued absence of woodland removed during construction along the A2 corridor would result in some slightly more open views from within the AONB towards highway infrastructure and vehicle movements, for example from the northern periphery of Cobham Hall Grade II* Registered Park and Garden. However, this would be largely localised to the immediate area alongside the existing A2 corridor due to the retention of adjoining woodland and woodland within the wider AONB, with views in these areas already influenced to an	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						extent by existing highway infrastructure and vehicle movements. • Farmed landscape: the farmed landscape of the AONB would be largely unaffected, apart from the conversion of arable fields east of Brewers Wood and north of the A2/M2 corridor to woodland as part of ancient woodland compensation and provision of a new attenuation basin. In addition, there would be the conversion of a small area of pasture field to woodland and grassland for a nitrogen deposition compensation site east of Randall Wood. Only a small proportion of the farmed landscape would be affected. • Woodland and trees: there would be the continued absence of trees and woodland removed during construction within the AONB along the edges and former central reservation of the A2 corridor, with an associated reduction in the sense of enclosure and increased perceptibility of the road corridor. This would include the permanent	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						loss of ancient woodland in Shorne Woods Country Park. Trees and woodland within the wider AONB would be retained. • Tranquillity and remoteness: Figure 12.7 (Application Document 6.2) indicates a range of major to minor beneficial change (reduction) in noise adjoining the A2 corridor, with the greatest beneficial change occurring to the north-east of Thong Lane near the Inn on the Lake Hotel and further east in a narrow band approximately within 50m of the north of the A2. There would also be a moderate beneficial change (reduction) in noise to the north-east of Jeskyns Community Woodland, a minor beneficial change (reduction) in noise along Halfpence Lane and no change/negligible change in noise along the western edge of the LCA. There would also be isolated pockets of major to minor adverse change (increase) in noise close to the south of the A2 corridor, with the greatest adverse change near the realigned Thong Lane, and isolated	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						pockets of minor adverse change (increase) in noise at the south-eastern tip of the LCA in proximity to the A228 corridor and to the north-east of Jeskyns Road. Overall, despite some reductions in noise levels, there would be an increased perception of highway infrastructure and vehicle movements along the A2 corridor and at the M2/A2/A122 Lower Thames Crossing junction, with an associated reduction to existing tranquillity. The reduction to existing tranquillity would be very localised, confined to areas adjoining the existing A2 corridor, including the new M2/A2/A122 Lower Thames Crossing junction adjoining the north-western margin of the AONB, where existing levels of tranquillity are already influenced by vehicle movements. There would be a perceived increase in night-time lighting along the A2 corridor due to the loss of vegetation, and along the western boundary of the AONB due to lighting at the M2/A2/A122 Lower	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						Thames Crossing junction. However, this change would only be perceived in localised areas along the A2 corridor and at the western edge of the AONB, where existing lighting sources are apparent along the A2 and within Gravesend. Existing parts of the AONB that are largely dark in character would be unaffected. *Summary: opening year (winter)* The footprint of the Project focused along the A2 corridor would be proportionally very small in relation to the overall extent of the LCA and effects would be perceived in the context of the existing M2/A2 corridor. The loss of characteristic woodland and the increased prominence and scale of the road corridor and associated highway infrastructure would alter the sense of place close to the Project. However, this change in landscape character would be in the context of the existing highway. Beyond the immediate vicinity of the Project, the overall sense of place would be maintained within the wider character area.	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						Overall, the Project would result in a partial loss of distinctive landscape elements and a noticeable change to the existing landscape character of the West Kent Downs LCA 1A. A moderate adverse magnitude of effect on the West Kent Downs LCA 1A has therefore been assessed. *Justification for significance level where two significance categories are given in LA 104* The significance of effect has been assessed as large rather than very large due to the localised nature of effects. <u>Design year (summer)</u> The establishment of new woodland planting would partially reinstate vegetation lost during construction and reduce the prominence of highway infrastructure. By the design year, the change to existing landscape character resulting from the Project would vary from a very minor change within West Kent Downs (sub area Cobham) to a slight change within West Kent Downs (sub area Shorne).	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						AONB special components, characteristics and qualities Effects on the relevant landscape special components, characteristics and qualities would be as follows: • Dramatic landform and views: there would only be minor changes in landform along the existing A2 corridor, with the dramatic landform in the wider AONB unaffected. Established mitigation planting along the A2 corridor would help to restore some enclosure to views within the AONB. A greater perception of highway infrastructure and vehicle movements would remain in some views along the A2 corridor, for example from the northern periphery of Cobham Hall Grade II* Registered Park and Garden. However, this would be largely localised to the immediate area alongside the existing A2 corridor due to the retention of woodland in the wider AONB, with views already influenced to an extent by existing highway infrastructure and vehicle movements.	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						• Farmed landscape: the farmed landscape of the AONB would be largely unaffected, apart from the conversion of arable fields east of Brewers Wood and north of the A2/M2 corridor to woodland, as part of ancient woodland compensation, and provision of an attenuation basin. In addition, there would be the conversion of a small area of pasture field to woodland and grassland for a nitrogen deposition compensation site east of Randall Wood. Only a small proportion of the farmed landscape would be affected. • Woodland and trees: established mitigation planting along the edges of the A2 corridor would help to reinstate tree cover in the AONB and restore the sense of enclosure. However, increased perceptibility of highway infrastructure and vehicle movements would remain. The loss of ancient woodland in Shorne Woods Country Park would be permanent. Trees and woodland within the wider AONB would be retained. Ancient woodland	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						compensation planting south of Shorne Ridgeway and Bowesden Lane would reduce the perception of the A2/M2 corridor and reinforce the wooded landscape character within this part of the LCA. • Tranquillity and remoteness: Figure 12.8 (Application Document 6.2) indicates a moderate to minor beneficial change (reduction) in noise to the north-east of Thong Lane near the Inn on the Lake Hotel and in isolated pockets further east along the A2 corridor, the majority of which would be within 50m of the north of the A2. There would also be a small area of minor beneficial change (reduction) in noise to the north-east of Jeskyns Community Woodland and no change/negligible change in noise within much of the rest of the LCA, apart from a localised area of moderate to minor adverse change (increase) in noise near the realigned Thong Lane. Overall, despite some reductions in noise levels, an increased perception of highway infrastructure	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						and vehicle movements would remain along the A2 corridor and at the M2/A2/A122 Lower Thames Crossing junction, resulting in a limited perception of reduced tranquillity. This would be very localised to areas adjoining the existing A2 corridor and along the north-western margin of the AONB, where existing levels of tranquillity are already influenced by vehicle movements. Established mitigation planting would provide greater filtering of night-time lighting, although a slight perceived increase in lighting would remain in localised areas along the A2 corridor and at the western margin of the AONB. Existing parts of the AONB that are largely dark in character would remain unaffected. *Summary: design year (summer)* By the design year, the Project would result in a partial loss of distinctive landscape elements and a slight change to the existing landscape character of the West Kent Downs LCA 1A. A minor adverse magnitude of effect on the West	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						Kent Downs LCA 1A has therefore been assessed. *Justification for significance level where two significance categories are given in LA 104* The significance of effect has been assessed as moderate rather than large due to the localised and contained nature of effects.	
Mid Kent Downs (sub area Bredhurst) Key characteristics of relevance to study area (based on Kent Downs AONB Landscape Character Assessment Update 2020 (Kent Downs AONB Unit, revised and published 2023)): • Mosaic of flat to gently rolling	High	Negligible adverse	Moderate beneficial	Neutral effect	Moderate beneficial effect	The Mid Kent Downs (sub area Bredhurst) LLCA lies close to the M2 corridor, south of junction 3 with the A229. The Order Limits include land within this area to accommodate a nitrogen deposition compensation site. A key consideration for proposed planting mitigation has been to reflect the wooded nature of the LLCA, while maintaining key vistas and reducing the effects of overshadowing to residential properties. <u>Opening year (winter)</u> The Project would result in the following main direct effects in the opening year:	Highway Section 1a

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
arable fields and woodland blocks • Woodland provides a backdrop to farmland and contains views • Limited settlement • Notable communications masts and pylons • Noise from the M2 permeates into the landscape, although the motorway is largely screened						• Permanent conversion of arable fields to a mix of establishing woodland with grassland habitat • The potential use of protective guards to establish woodland planting The establishing habitats would not appear out of character within the existing wooded, arable landscape. There would be no indirect effects on this LLCA. *Night-time environment* There would be no change in the night-time environment. *Summary: opening year (winter)* The key characteristics of the landscape would be largely unaffected. Overall, the Project would result in no loss of existing landscape elements and very minor change to the existing landscape character of the Mid Kent Downs (sub area Bredhurst) LLCA. *Justification for alternative significance level to matrix in LA 104* The significance of effect has been assessed as neutral rather than slight,	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						as the establishing planting would not be out of character in the wooded, arable landscape. <u>Design year (summer)</u> Established mitigation planting would increase the amount of woodland within the LLCA and reduce the prominence of communications masts. *Night-time environment* There would be no change in the night-time environment. *Summary: design year (summer)* Established mitigation planting would enhance the existing wooded character of the LLCA. By the design year, the Project would result in a noticeable increase in woodland and a noticeable beneficial change to the existing landscape character of the Mid Kent Downs (sub area Bredhurst) LLCA. *Justification for significance level where two significance categories are given in LA 104* The significance of effect has been assessed as moderate rather than large	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						due to the localised nature of effects within the north-west corner of the LLCA.	
Hollingbourne Scarp and Vale (sub area Boxley Vale) Key characteristics of relevance to study area (based on Kent Downs AONB Landscape Character Assessment Update 2020 (Kent Downs AONB Unit, revised and published 2023)): • Steep wooded escarpment along northern edge, which forms a backdrop to farmland to the south	High	No change	Negligible beneficial	Neutral	Neutral	The Hollingbourne Scarp and Vale (sub area Boxley Vale) LLCA follows the wooded ridgeline between Blue Bell Hill and Detling, south of the M2 corridor. The LLCA is outside of the Order Limits but directly adjacent to an area proposed as a nitrogen deposition compensation site. <u>Opening year (winter)</u> There would be no direct effects on this LLCA. The Project would result in the following main indirect effects in the opening year: • The presence of small trees and shrubs in the adjacent Mid Kent Downs (sub area Bredhurst) LLCA • The potential use of protective guards to establish woodland planting in the adjacent Mid Kent Downs (sub area Bredhurst) LLCA The establishing planting would not appear out of character within the wooded, arable landscape adjacent to	Highway Section 1a

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
• Patchwork of pasture and arable fields, vineyards, tree belts and small woodland blocks at base of escarpment • Limited settlement • North Downs Way and Pilgrims Way follow the escarpment • Influences from HS1, the A229 and pylons						this LLCA. Furthermore, existing woodland and landform along the ridgeline would limit the perception of these features to the northern margin of the LLCA. *Night-time environment* There would be no change in the night-time environment. *Summary: opening year (winter)* The key characteristics of the landscape would be unaffected. Overall, the Project would result in no loss of existing landscape elements and no change to the existing landscape character of the Hollingbourne Scarp and Vale (sub area Boxley Vale) LLCA. <u>Design year (summer)</u> Established mitigation planting in the Mid Kent Downs (sub area Bredhurst) LLCA would increase the amount of woodland within the adjacent landscape and reduce the prominence of communications masts. However, this would only be perceived along the northern margin of the LLCA due to	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						intervening woodland and landform along the ridgeline. *Night-time environment* There would be no change in the night-time environment. *Summary: design year (summer)* The key characteristics of the landscape would be unaffected. By the design year, the Project would result in no loss of existing landscape elements and a very minor beneficial change to the existing landscape character of the Hollingbourne Scarp and Vale (sub area Boxley Vale) LLCA. *Justification for alternative significance level to matrix in LA 104* The significance of effect has been assessed as neutral rather than slight, as the benefit provided by the mitigation planting would be negligible due to intervening landform and woodland along the ridgeline, and the aspect of the LLCA primarily facing southwards away from the nitrogen deposition compensation site.	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
Medway Valley (sub area The Eastern Scarp) Key characteristics of relevance to study area (based on Kent Downs AONB Landscape Character Assessment Update 2020 (Kent Downs AONB Unit, revised and published 2023)): • Steep wooded escarpment, which forms a backdrop to views from the south-west • Intensively managed fields with few hedgerows below the escarpment	High	No change	No change	Neutral	Neutral	The Medway Valley (sub area The Eastern Scarp) LLCA follows a wooded escarpment west of the A229 and north of the village of Burham. The LLCA is outside of the Order Limits but bordering the study area for the proposed Blue Bell Hill nitrogen deposition compensation site. <u>Opening year (winter)</u> There would be no direct or indirect effects on this LLCA during opening year (winter), as the proposed planting at the Blue Bell Hill nitrogen deposition composition site (located within the neighbouring Mid Kent Downs (sub area Bredhurst) LLCA) would not be perceptible due to intervening features in the landscape. *Night-time environment* There would be no change in the night-time environment. *Summary: opening year (winter)* The key characteristics of the landscape would be unaffected. Overall, the Project would result in no loss of existing landscape elements and	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
• Disused chalk quarries and chalk cliffs • Limited settlement • North Downs Way and Pilgrims Way pass through the LLCA • Influences from the M2, A229 and development within the lower River Medway valley						no change to the existing landscape character of the Medway Valley (sub area The Eastern Scarp) LLCA. <u>Design year (summer)</u> The permanent conversion of arable fields to established woodland mitigation planting at the Blue Bell Hill nitrogen deposition compensation site (located within the neighbouring Mid Kent Downs (sub area Bredhurst) LLCA) could be just perceived from the eastern edge of the Medway Valley (sub area The Eastern Scarp) LLCA by the design year (summer). However, the perception of this established woodland at the Blue Bell Hill nitrogen deposition compensation site would be very limited due to intervening topography and vegetation. *Night-time environment* There would be no change in the night-time environment. *Summary: design year (summer)* The key characteristics of the landscape would be unaffected. Overall, the Project would result in no loss of existing landscape elements and	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						no change to the existing landscape character of the Medway Valley (sub area The Eastern Scarp) LLCA.	
For the approach, methodology and assessment of the effects of traffic and noise on the Kent Downs AONB during operation, please refer to Appendix 7.11.							
The setting of the Kent Downs AONB and Green Belt							
Higham Arable Farmland (sub area Gadshill) Key characteristics of relevance to study area (based on Gravesham Landscape Character Assessment (Gravesham Borough Council, 2009), as well as site appraisal and analysis): • Chalk downland dry valley	Medium	Negligible adverse	No change	Slight adverse effect	Neutral effect	Only a very small part of the south-western edge of this LLCA lies within the Order Limits at the existing M2 junction 1. The position of the road corridor in cutting and dense retained roadside planting would preclude effects on the wider LLCA. <u>Opening year (winter)</u> There would only be minimal modifications to the existing road corridor within this LLCA. The Project would result in the following main direct effect in the opening year: • The continued absence of vegetation removed during construction, as outlined in Table 2.3. However, this would not result in a notable change in the landscape character of the LLCA.	Highway Section 1

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
• Dense tree belts along the A289 and junctions • Urban fringe character due to nearby settlements, the M2/A2 corridor and the A289 • Perception of night-time lighting and reduced levels of tranquillity close to road corridors and adjoining urban area • Visually prominent woodland in adjacent Shorne Wooded Slopes LLCA						There would be no notable indirect effects on this LLCA. *Night-time environment* There would be no perceived change in the night-time environment within the LLCA due to the replacement LED luminaires at a reduced height, given the existing lit nature of the existing M2 junction 1. *Summary: opening year (winter)* The key characteristics of the landscape would be largely unaffected. Overall, the Project would result in a very minor loss of existing landscape elements and very minor change to the existing landscape character of the Higham Arable Farmland (sub area Gadshill) LLCA. *Justification for significance level where two significance categories are given in LA 104* The significance of effect has been assessed as slight rather than neutral due to vegetation loss resulting in a minimal increased perception of the Project.	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						Design year (summer) By design year, woodland edge planting would have established, which would replace vegetation lost during construction. *Night-time environment* Night-time effects would not change between opening year and design year, except greater filtering would be provided by established mitigation planting. *Summary: design year (summer)* The key characteristics of the landscape would remain unaffected. By the design year, the Project would result in no change to the existing landscape character of the Higham Arable Farmland (sub area Gadshill) LLCA.	
Shorne Wooded Slopes Key characteristics of relevance to study area (based on Gravesham	High	Negligible adverse	Moderate beneficial	Neutral effect	Moderate beneficial effect	The Order Limits within this LLCA have been solely included for environmental mitigation. These comprise two fields in the southern corner of the LLCA to the north of Bowesden Lane, and a field in the western corner of the LLCA to the south-east of Shorne Ifield Road, for	Highway Section 1

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
Landscape Character Assessment (Gravesham Borough Council, 2009), as well as site appraisal and analysis): • Intimate, elevated landscape with a ridgeline delineated by Pear Tree Lane and associated ribbon development, with Shorne village also occupying high ground to the north • Heavily wooded slopes leading up to the ridgeline, with						ancient woodland compensation planting. In addition, three further areas near Shorne and Shorne Ridgeway have been included for the creation of woodland and grassland habitat at the nitrogen deposition compensation sites. <u>Opening year (winter)</u> The Project would result in the following main direct effects in the opening year: • Permanent conversion of pasture and arable fields to a mix of establishing woodland with grassland habitat • The potential use of protective guards to establish woodland planting The establishing planting would not appear out of character within the wooded, arable/pasture landscape. There would be no indirect effects on this LLCA. *Night-time environment* There would be no perceived change in the night-time environment within this LLCA.	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
some ancient woodland • Existing vegetation limits views out and provides a sense of enclosure • A false cutting and associated planting in the adjacent West Kent Downs (sub area Shorne) LLCA forms a buffer along the A2 corridor, limiting traffic noise • Night-time lighting apparent along the M2/A2 corridor and within suburban and residential areas						*Summary: opening year (winter)* The key characteristics of the landscape would be unaffected. Overall, the Project would result in no loss of existing landscape elements and very minor change to the existing landscape character of the Shorne Wooded Slopes LLCA. *Justification for alternative significance level to matrix in LA 104* The significance of effect has been assessed as neutral rather than slight, as the establishing planting would not be out of character in the wooded, arable/pasture landscape. <u>Design year (summer)</u> Established mitigation planting would increase the amount of woodland within the LLCA and, in some instances, reduce the prominence of telegraph poles and built form within Shorne. *Night-time environment* There would be no perceived change in the night-time environment within this LLCA.	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						Summary: design year (summer) Established mitigation planting would enhance the existing wooded character of the LLCA. By the design year, the Project would result in a noticeable addition of woodland and a noticeable beneficial change to the existing landscape character of the Shorne Wooded Slopes LLCA. *Justification for significance level where two significance categories are given in LA 104* The significance of effect has been assessed as moderate rather than large due to the localised nature of effects on the LLCA.	
Higham Arable Farmland (sub area Thong) Key characteristics of relevance to study area (based on Gravesham Landscape Character Assessment	High	Major adverse	Major adverse	Very large adverse effect	Large adverse effect	The new M2/A2/A122 Lower Thames Crossing junction and associated structures would occupy a substantial proportion of this LLCA. A key consideration for proposed mitigation has been to retain 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	Highway Section 2

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
(Gravesham Borough Council, 2009), as well as site appraisal and analysis): • Open, arable landscape between Gravesend and Shorne Woods Country Park, incorporating Thong village • Flat to gently undulating landform, which generally rises to the east-south-east • Woodland present along the A2 corridor and at Claylane Wood ancient woodland • Association with woodland in the						woodland planting for vegetation removed during construction. <u>Opening year (winter)</u> The Higham Arable Farmland (sub area Thong) LLCA would encompass the proposed M2/A2/A122 Lower Thames Crossing junction and modified A2 corridor. The Project would result in the following main direct effects in the opening year: • Substantial change of agricultural land to a transport corridor within the footprint of the Project route, associated mitigation planting and the new Chalk Park between Gravesend and the proposed junction. • The continued absence of vegetation removed during construction, as outlined in Table 2.3, resulting in limited initial integration of the new M2/A2/A122 Lower Thames Crossing junction into the adjoining landscape. • Substantial change to the landform, comprising the new large-scale embankments, false cutting slopes,	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
AONB, which often forms a backdrop • Prominent OHL • Southern edge influenced by A2 and HS1 corridors, with the perception of lighting along existing A2 corridor and reduced levels of tranquillity						viaduct structures and retaining walls. • Introduction of an uncharacteristic junction into the landscape, changing the character from a predominantly agricultural landscape to a landscape dominated by the new road and associated embankments, structures and highway infrastructure, as well as new vehicle activity. The new junction would bisect the open landscape character between the urban area of Gravesend and Shorne Woods Country Park and the new landform and structures would curtail some views towards the wooded ridgeline within the Kent Downs AONB. • The diverted OHL crossing this LLCA in a broadly north-easterly direction from Claylane Wood would be perceived in the context of the existing OHL within the landscape and would not notably contribute to a change in overall landscape character. However, there would be slight increased visual prominence of	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						the replacement OHL pylon in Claylane Wood due to its increased height compared to the existing pylon. • Figure 12.7 (Application Document 6.2) indicates a range of major to minor adverse change (increase) in noise within the northern part of the M2/A2/A122 Lower Thames Crossing junction and within the central north part of the LLCA along the route of the Lower Thames Crossing, with the greatest adverse change occurring between the Project route and the edges of Gravesend and Thong. Figure 12.7 also indicates a range of major to minor beneficial change (reduction) in noise along the southern edge of the A2 corridor, with the greatest beneficial change occurring within the southern part of the M2/A2/A122 Lower Thames Crossing junction, extending to the southern edge of the LLCA. There would also be a range of major to minor beneficial change (reduction) in noise to the north-east of the false cutting along	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						the Project road southbound to A2 eastbound slip road, and a range of major to minor beneficial change (reduction) in noise to the east of residential properties at Sheldon Heights. Overall, despite some reductions in noise levels, there would be a further reduction to existing tranquillity due to the increased prominence of the M2/A2/A122 Lower Thames Crossing junction and modified A2 corridor, associated vehicle traffic and highway infrastructure. However, this would be experienced in the context of the existing A2 corridor, which already compromises tranquillity in this location. The Project would result in the following main indirect effect in the opening year: • The perception of the elevated Thong Lane green bridge north within the Higham Arable Farmland (sub area Chalk) LLCA to the north *Night-time environment* Overall, there would be a perceived change in the night-time environment	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						due to new sources of lighting (LED luminaires) and vehicle lights at the M2/A2/A122 Lower Thames Crossing junction, in particular on the elevated Project road southbound to A2 westbound viaduct structure. Additional light sources would also be present along Thong Lane and on the Thong Lane green bridge south. The street lighting along the A2 corridor would change to LED luminaires. Installed on lower columns, emitting reduced light spill and skyglow compared with the existing luminaires, the prominence of the new lighting would be limited and perceived in the context of existing lighting. However, due to the widened corridor, the extent of lighting would be increased, with additional lanes of traffic and vehicle lights evident. The perception of lighting would be greatest further north in the LLCA away from existing lighting along the A2 corridor.	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						Summary: opening year (winter) Some of the key characteristics of the landscape would be affected by the Project, in particular changes to the open, flat to gently undulating farmland between Gravesend and Thong village. The open landscape between the settlements would be interrupted by large-scale earthworks and structures. In addition, the continued absence of characteristic woodland would alter the structure of the landscape, as well as increasing perceptibility of the A2 corridor. Overall, the Project would result in the addition of an uncharacteristic and conspicuous new junction into the landscape and large-scale change to the existing landscape character of the Higham Arable Farmland (sub area Thong) LLCA. *Justification for significance level where two significance categories are given in LA 104* The significance of effect has been assessed as very large rather than large	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						due to the large-scale and prominent nature of the Project. Design year (summer) The establishment of new woodland planting within and around the M2/A2/A122 Lower Thames Crossing junction would replace vegetation lost during construction and help to integrate earthworks, structures, highway infrastructure and vehicle movements at the junction into the surrounding landscape. The planting would soften the appearance of these features and help reduce their perceptibility in the wider landscape. Ancient woodland compensation planting adjoining the edge of Gravesend would reduce the perception of the urban edge and reinforce the wooded landscape character. Hedgerow planting above the Thong Lane green bridge north would help to reduce the sense of landscape severance in the relatively narrow gap between the edge of Gravesend and Thong.	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						Figure 12.8 (Application Document 6.2) indicates a range of major to minor adverse change (increase) in noise within the northern part of the M2/A2/A122 Lower Thames Crossing junction and the central north part of the LLCA along the route of the Lower Thames Crossing, albeit the extent of the adverse change along the Project route would be slightly reduced compared with the opening year. Similarly, the extent of the greatest adverse change along the Project route would also have reduced, occurring closer to the Project route. Figure 12.8 also indicates a range of major to minor beneficial change (reduction) in noise along the southern edge of the A2 corridor, with the greatest beneficial change within the southern part of the M2/A2/A122 Lower Thames Crossing junction. There would also be a moderate to minor beneficial change (reduction) in noise to the north-east of the false cutting along the Project road southbound to A2 eastbound slip road, and a minor beneficial change (reduction) in noise to the east of	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						residential properties at Sheldon Heights. Elsewhere in the LLCA there would be no change/negligible change in noise. Overall, despite some reductions in noise levels, a reduction to tranquillity would remain on the LLCA due to the increased prominence of the modified A2 corridor, the M2/A2/A122 Lower Thames Crossing junction and associated vehicle traffic and highway infrastructure, where not screened in cutting or by woodland. However, this would be experienced in the context of the existing A2 corridor, which already compromises tranquillity in this location. *Night-time environment* The establishment of new woodland planting at the M2/A2/A122 Lower Thames Crossing junction would, to some extent, help reduce the effects of new lighting on the night-time environment between opening and design years. *Summary: design year (summer)* Established tree and shrub planting adjacent to Claylane Wood and around the M2/A2/A122 Lower Thames	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						Crossing junction would help to restore characteristic woodland. However, there would be a permanent change in key characteristics, including the open, flat to gently undulating farmland between Gravesend and Thong village, and the interruption of the open landscape between the settlements by the large-scale earthworks and structures of the new junction. By the design year, the Project would result in a large-scale change to the existing landscape character of the Higham Arable Farmland (sub area Thong) LLCA. *Justification for significance level where two significance categories are given in LA 104* The significance of effect has been assessed as large rather than very large due to the establishment of mitigation planting that would help to integrate the Project into the surrounding landscape.	
Istead Arable Farmlands Key characteristics of relevance to study	Medium	Moderate adverse	Minor adverse	Moderate adverse effect	Slight adverse effect	Istead Arable Farmlands LLCA lies largely outside the Order Limits to the south of HS1. Most of the Order Limits	Highway Section 2

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
area (based on Gravesham Landscape Character Assessment (Gravesham Borough Council, 2009)): • Gently undulating landform • Open, arable landscape, with wide views towards Gravesend and HS1 • Minor native woodland clumps, including within Jeskyns Community Woodland • Association with woodland in the AONB, which						within this LLCA have been included for environmental mitigation. Proposed mitigation includes ancient woodland compensation planting, and the creation of woodland and grassland habitat in a nitrogen deposition compensation site, adjoining Jeskyns Community Woodland to the west. The southern extent of the 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. <u>Opening year (winter)</u> By the opening year, establishing woodland within Jeskyns Community Woodland is likely to provide further enclosure to the north-east part of the LLCA. The Istead Arable Farmlands LLCA would encompass the NCN Route 177 diversion alongside Church Road and along existing paths through Jeskyns Community Woodland. The Project would result in the following main direct effects in the opening year:	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
often forms a backdrop • OHL are prominent • Perception of lighting along existing A2 corridor, with reduced levels of tranquillity						• Permanent conversion of arable fields to woodland and grassland habitat • The continued absence of vegetation removed during construction, as outlined in Table 2.3, resulting in the slightly increased prominence of an OHL pylon adjacent to HS1 Some indirect effects on this LLCA would also result from the presence of the M2/A2/A122 Lower Thames Crossing junction in the adjoining Higham Arable Farmland (sub area Thong) LLCA and associated minor modifications to the A2 corridor to the west within the adjoining Gravesend Southern Fringe LLCA, as follows: • The continued absence of vegetation removed during construction within Higham Arable Farmland (sub area Thong) LLCA, as outlined in Table 2.3, resulting in an increased perception of highway infrastructure. • The perception of the new large-scale M2/A2/A122 Lower Thames Crossing junction in the existing landscape, immediately to the north	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						of the LLCA, changing the character of the existing agricultural backdrop beyond the A2 corridor to a landscape dominated by the new junction, associated viaduct structures and highway infrastructure, as well as new vehicle activity. • Perceived increased prominence and scale of highway infrastructure along the A2 corridor to the north. • Slight increased visual prominence of the replacement OHL pylon in Claylane Wood within the adjacent Higham Arable Farmland (sub area Thong) LLCA due to its increased height compared to the existing pylon. • Figure 12.7 (Application Document 6.2) indicates a range of major to minor beneficial change (reduction) in noise on the northern edge of the LLCA near the modified A2 corridor, with no change/negligible change in noise further west near the existing A2 corridor. The greatest beneficial change would be focused on the	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						modified A2 corridor at its junction with the M2/A2/A122 Lower Thames Crossing junction. Figure 12.7 also indicates a moderate to minor adverse change (increase) in noise at the south-eastern edge of the LLCA in proximity to Henhurst Road and Jeskyns Road. Overall, despite some reductions in noise levels, there would be a further reduction to existing tranquillity due to the increased prominence of the modified A2 corridor, associated vehicle traffic and highway infrastructure, and as a result of the new M2/A2/A122 Lower Thames Crossing junction, on the northern edge of the LLCA where tranquillity is already adversely affected by transport infrastructure. There would also be a limited reduction to existing tranquillity at the south-eastern edge of the LLCA. *Night-time environment* Overall, there would be a perceived change in the night-time environment due to the change in street lighting (LED luminaires) along the A2 corridor.	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						Installed on lower columns, emitting reduced light spill and skyglow compared with the existing luminaires, the prominence of new lighting along the A2 would be limited and perceived in the context of existing lighting. However, due to the widened corridor, the extent of lighting would be increased, with additional lanes of traffic and vehicle lights evident. Additional light sources would also be present along the elevated Thong Lane green bridge south and at the M2/A2/A122 Lower Thames Crossing junction, in particular on the elevated Project road southbound to A2 westbound viaduct structure. *Summary: opening year (winter)* The key characteristics of the landscape would be largely unaffected. There would, however, be some indirect effects associated with the continued absence of woodland in the Higham Arable Farmland (sub area Thong) and West Kent Downs (sub area Shorne) LLCAs, which would slightly alter the wooded backdrop to the LLCA.	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						Overall, the Project would result in a noticeable loss of existing landscape elements and introduction of uncharacteristic features in the adjoining LLCA to the north, resulting in a noticeable change to the existing landscape character of the Istead Arable Farmlands LLCA. <u>Design year (summer)</u> The establishment of mitigation planting along the south of the A2 corridor, ancient woodland compensation planting and woodland within the nitrogen deposition compensation site adjacent to Jeskyns Community Woodland, and woodland planting within and around the M2/A2/A122 Lower Thames Crossing junction in the adjacent LLCA, would help to reinstate vegetation lost during construction and aid integration of the new junction into the wider landscape. The planting would soften the appearance of earthworks, structures, highway infrastructure and moving traffic at the junction and help reduce their perceptibility in the wider landscape. However, the taller elements of the junction, including the Project	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						road southbound to A2 westbound viaduct, are likely to remain evident above woodland planting in limited locations. Figure 12.8 (Application Document 6.2) indicates a moderate to minor beneficial change (reduction) in noise focused on the modified A2 corridor at its junction with the M2/A2/A122 Lower Thames Crossing junction, and no change/negligible change in noise along the northern edge of the LLCA further west along the existing A2 corridor. Figure 12.8 also indicates a minor adverse change (increase) in noise at the south-eastern edge of the LLCA in proximity to Henhurst Road and Jeskyns Road, although within a slightly reduced area compared to opening year. Overall, despite some reductions in noise levels, a reduction to tranquillity would remain due to the increased prominence of the modified A2 corridor, the M2/A2/A122 Lower Thames Crossing junction and associated vehicle traffic and highway infrastructure, where not screened by tree and shrub planting. There would also be a limited reduction to tranquillity	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						at the south-eastern edge of the LLCA. However, this would be in an area where tranquillity is already influenced by transport infrastructure. In addition, ancient woodland compensation planting and woodland within the nitrogen deposition compensation site adjacent to Jeskyns Community Woodland would improve tranquillity in part of the LLCA. *Night-time environment* Effects of new lighting would not change between opening and design years. *Summary: design year (summer)* Established woodland in the Higham Arable Farmland (sub area Thong) and West Kent Downs (sub area Shorne) LLCAs would help to restore the wooded backdrop to the LLCA. The key characteristics of the landscape would remain largely unaffected. However, the indirect effects of the proposed M2/A2/A122 Lower Thames Crossing on limited parts of the LLCA would just outweigh the beneficial effects associated with the proposed mitigation and compensation planting.	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						By the design year, the Project would result in a slight change to the existing landscape character of the Istead Arable Farmlands LLCA.	
Gravesend Southern Fringe Key characteristics of relevance to study area (based on Gravesham Landscape Character Assessment (Gravesham Borough Council, 2009)): • Typically linear, urban fringe landscape between Gravesend and HS1, dominated by the A2 corridor • Linear open spaces include rough grassland,	Medium	Minor adverse	Negligible adverse	Slight adverse effect	Neutral effect	<u>Opening year (winter)</u> The Gravesend Southern Fringe LLCA would encompass the western extent of the A2 widening works. Perceptible alterations to the physical fabric of this LLCA and perceived changes in character would be limited to a very small area on the eastern edge of this LLCA. Here, the A2 corridor would be slightly wider, although at a similar elevation to the existing corridor. There would be new gantries, signage, retaining structures, and replacement street lighting columns at a reduced height. There would also be a new attenuation basin east of the Gravesend East junction. The Project would result in the following main direct effects in the opening year: • The continued absence of vegetation removed during construction, as outlined in Table 2.3, resulting in	Highway Section 2

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
tree screening belts, a footway/ cycleway and a park with a BMX track and skatepark • Perception of lighting along existing A2 corridor and within Gravesend, with reduced levels of tranquillity						some increased prominence of highway infrastructure. • Discernible new highway infrastructure would in part replace existing features. • Figure 12.7 (Application Document 6.2) indicates a range of major to minor beneficial change (reduction) in noise along the modified A2 corridor, with no change/negligible change in noise along the existing A2 corridor to the west. The greatest beneficial change would be at the eastern edge of the LLCA, close to residential properties at Sheldon Heights. Overall, despite some reductions in noise levels, there would be a further limited reduction to existing tranquillity due to the increased prominence of highway infrastructure and the removal of screen planting along the road corridor in the vicinity of the Gravesend East junction, although in an area where tranquillity is already compromised by existing transport infrastructure.	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						Some indirect effects on this LLCA would also result from: • The perception of earthworks, structures, vehicle movements and highway infrastructure at the M2/A2/A122 Lower Thames Crossing junction in the adjoining Higham Arable Farmland (sub area Thong) LLCA *Night-time environment* There would be a beneficial overall perceived change in the night-time environment due to the change in street lighting (LED luminaires). Installed on lower columns, emitting reduced light spill and skyglow compared with the existing luminaires, the overall prominence of lighting would reduce. *Summary: opening year (winter)* The key characteristics of the landscape would be largely unaffected. There would be the continued absence of tree planting at the Gravesend East junction, which would slightly increase the prominence of the A2 corridor. Overall, the Project would result in a slight loss of landscape elements and a	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						slight change to the existing landscape character of the Gravesend Southern Fringe LLCA. <u>Design year (summer)</u> The establishment of replacement tree and shrub planting at the Gravesend East junction and an extensive new linear tree and shrub belt along the southern edge of the modified A2 corridor would aid landscape integration. The planting would soften the appearance of earthworks, highway infrastructure and moving traffic and help reduce the perceptibility of these features in the wider landscape and their influence on tranquillity. In addition, Figure 12.8 (Application Document 6.2) indicates a moderate to minor beneficial change (reduction) in noise along the modified A2 corridor, with no change/negligible change in noise along the existing A2 corridor to the west. The greatest beneficial change would be at the eastern edge of the LLCA, close to residential properties at Sheldon Heights. Overall, despite some reductions in noise levels, the level of tranquillity would be similar to existing.	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						Night-time environment Effects on the night-time environment would not change between opening and design years. *Summary: design year (summer)* Established mitigation planting would help to restore characteristic tree belts along the A2 corridor and reduce the perception of highway infrastructure and vehicle movements. The key characteristics of the landscape would remain largely unaffected. By the design year, the Project would result in a very minor change to the existing landscape character of the Gravesend Southern Fringe LLCA. *Justification for significance level where two significance categories are given in LA 104* The significance of effect has been assessed as neutral rather than slight due to the limited nature of effects in the context of the existing A2 corridor.	
Higham Arable Farmland (sub area Chalk)	High	Moderate adverse	Minor adverse	Moderate adverse effect	Slight adverse effect	The Higham Arable Farmland (sub area Chalk) LLCA would encompass the South Portal, the approach cutting	Highway Sections 2 and 3

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
Key characteristics of relevance to study area (based on Gravesham Landscape Character Assessment (Gravesham Borough Council, 2009), as well as site appraisal and analysis): • Gently undulating landscape, rising from north to south • Open, arable fields allow extensive and dramatic views out towards the River Thames • Limited tree cover						slopes, Chalk Park, the Thong Lane green bridge north and restored arable land. A key consideration for proposed mitigation has been to slacken the gradient of the tops of the chalk cutting slopes to soften the transition with adjoining ground levels in conjunction with natural colonisation of the chalk substrate. It is also proposed to locate the new open space on a hilltop landform, in order to capitalise on outward views of the Thames Estuary, a key characteristic of this LLCA, and with woodland planting to reflect other wooded hilltops in the locality. Woodland planting is also proposed to the north of Brummelhill Wood, to reinforce the landscape character of the adjoining Shorne Woods Country Park. <u>Opening year (winter)</u> Noticeable alterations to the physical fabric of this LLCA and perceived changes in character would be focused on the south-west part. The principal changes would be associated with the South Portal cutting slopes	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
• St Marys Church is a local landmark • Few roads • Some tranquillity exists away from the urban edge of Gravesend and the A226 and prominent OHL • Perception of lighting within Gravesend and Tilbury Docks						encompassing the new six-lane carriageway, with the cutting face comprising exposed chalk on the lower slope with a grassed upper slope at a lesser gradient. The South Portal Tunnel Service Building would be set largely within the portal cutting, below proposed ground levels and with a green roof to aid integration. The proposed hilltop landform in the new open space of Chalk Park would maintain panoramic views towards the River Thames and beyond. Arable land used temporarily for construction would be restored with new field-bounding hedgerows. Other new features would include a series of attenuation basins located within the dry shallow valley to the east of the portal cutting, a new access road to the South Portal from the A226 Gravesend Road, a new substation adjacent to the A226 Gravesend Road, and Thong Lane green bridge north. The Project would result in the following main direct effects in the opening year:	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						• Noticeable change of agricultural land to a transport corridor within the footprint of the Project route, the new Chalk Park between Gravesend and the Project route and new woodland habitat. • Bisection and partial severance of this LLCA from the urban edge of Gravesend by the South Portal cutting slopes. • Substantial change to the landform locally, comprising the new large-scale, deep tunnel portal and approach road cutting, and creation of the new hilltop landform at Chalk Park. • Introduction of an uncharacteristic transport corridor and highway infrastructure into the landscape. • Figure 12.7 (Application Document 6.2) indicates a range of major to minor adverse change (increase) in noise between Thong Lane and the South Portal, although this would tend to be localised along the Project route corridor, with the greatest adverse change occurring in a	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						narrow band within approximately 0.1km of the Project route. There would be no change/negligible change in noise elsewhere, apart from some isolated pockets of minor beneficial change (reduction) in noise between the South Portal and the urban edge of Gravesend, and a moderate to minor adverse change (increase) in noise in a localised area along Thong Lane to the north of the recreational grounds near Cascades Leisure Centre. Highway infrastructure would also be prominent where not screened in cutting. Overall, despite some reductions in noise levels, there would be a further reduction to existing tranquillity in the south-western part of the LLCA, which is already influenced by the urban edge of Gravesend, Thong Lane, the A226 Gravesend Road, OHL, and industrial and urban development to the north of the River Thames in the distance. Some indirect effects on this LLCA would also result from the following:	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						• The perception of earthworks, structures, vehicle movements and highway infrastructure at the M2/A2/A122 Lower Thames Crossing junction in the adjoining Higham Arable Farmland (sub area Thong) LLCA. • The perception of the North Portal and structural landscape mounding in the adjoining Tilbury Fields within the Tilbury Marshes LLCA north of the River Thames, and continuation of the Project route to the north, which would feature in some distant, panoramic views from elevated ground. However, these effects would be limited by distance. *Night-time environment* Overall, there would be a perceived change in the night-time environment due to new street lighting (LED luminaires) in the South Portal approach road cutting. This effect would be more apparent in the south-west of the LLCA where the Project cutting becomes gradually shallower and the luminaires would become visible above the top of	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						the cutting. However, the additional lighting would be perceived in the context of existing lighting in the urban area of Gravesend. *Summary: opening year (winter)* Some of the key characteristics of the landscape would be affected by the Project, in particular the open, gently undulating arable farmland, which would be interrupted by the South Portal and approach cutting. There would also be a perceived reduction to tranquillity as a result of the operational road. However, the hilltop landform within Chalk Park would enhance panoramic views across the Thames Estuary, a key characteristic of the landscape. Overall, the Project would result in a slight loss of existing characteristic landscape elements, but noticeable change to the existing landscape character of the Higham Arable Farmland (sub area Chalk) LLCA, to the south of the A226 Gravesend Road. There would be less effect on landscape character to the north of the A226 Gravesend Road.	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						Justification for significance level where two significance categories are given in LA 104 The significance of effect has been assessed as moderate rather than large due to effects being limited to the south-west part of the LLCA. <u>Design year (summer)</u> The establishment of new and restored field-bounding hedgerows, new woodland blocks at Chalk Park and near Thong Lane, ancient woodland compensation planting adjoining Brummelhill Wood, and chalk grassland on the upper cutting slopes of the South Portal approach would help to integrate the Project into the surrounding landscape. The hedgerows would help restore the field pattern adjacent to the Project, with woodland on the hilltop landform softening the appearance of this earthwork and reflecting other wooded hilltops in the locality. Furthermore, establishment of mitigation planting on the Thong Lane green bridge north would help maintain landscape connectivity across this	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						structure, reducing landscape severance. However, the cutting slopes of the South Portal approach and the associated change in the landform and landscape pattern would remain. Figure 12.8 (Application Document 6.2) also indicates a range of major to minor adverse change (increase) in noise between Thong Lane and the South Portal, although within a slightly reduced area compared to opening year. Similarly, the extent of the greatest adverse change would also be reduced, occurring closer to the Project route than in the opening year. A minor adverse change (increase) in noise would also remain in a very localised area along Thong Lane to the north of the recreational grounds near Cascades Leisure Centre. Highway infrastructure would remain evident where not screened in cutting. A reduction to tranquillity would therefore remain in the south-western part of the LLCA, which is already influenced by the urban edge of Gravesend, Thong Lane, the A226 Gravesend Road, OHL and industrial	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						and urban development to the north of the River Thames in the distance. *Night-time environment* Following establishment of woodland planting, the perception of light sources in the night-time environment would be slightly reduced by the design year. *Summary: design year (summer)* The Project would continue to have an adverse impact on the LLCA. However, the establishment of new planting would reduce the effects reported at the opening year. Established woodland and chalk grassland would soften the appearance of earthworks within the open, gently undulating arable farmland. There would be limited effects remaining on the key characteristics, including interruption of the local landform and a reduction in the sense of tranquillity. By the design year, the Project would result in a slight change to the existing landscape character of the Higham Arable Farmland (sub area Chalk) LLCA.	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						Justification for significance level where two significance categories are given in LA 104 The significance of effect has been assessed as slight rather than moderate due to effects being limited to the south-west part of the LLCA.	
Shorne and Higham Marshes Key characteristics of relevance to study area (based on Gravesham Landscape Character Assessment (Gravesham Borough Council, 2009)): • Reclaimed estuarine marsh, divided by ditches and meandering waterways, predominantly used as pasture	Medium	Negligible adverse	No change	Slight adverse effect	Neutral effect	Within this LLCA, the Project route would be entirely below ground in tunnel, with no notable effect on landscape character following reinstatement of land temporarily used for construction, and associated vegetation. Changes would be limited to a localised area of ecology ponds and wet grassland habitat. <u>Opening year (winter)</u> At opening year, following restoration of agricultural land, there would be no notable direct effects on this LLCA. However, some indirect effects on this LLCA would result from: • The perception of the North Portal and structural landscape mounding in the adjoining Tilbury Fields within the Tilbury Marshes LLCA north of the River Thames, and continuation	Highway Section 4

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
and mostly designated as SSSI and Ramsar site • Milton Rifle Range, with intrusive fencing • Away from the housing area in Chalk and the rifle range there are no roads, with the landscape largely tranquil as a result • Flat landform and absence of trees and hedgerows result in open, wide views • Distinct character with a strong sense of place and remoteness						of the Project route to the north. However, these effects would be limited by distance. • The perception of the new hilltop landform in Chalk Park within the Higham Arable Farmland (sub area Chalk) LLCA. Due to its position in deep cutting, the Project route would not be discernible within the Higham Arable Farmland (sub area Chalk) LLCA to the south. There would not be a discernible change in the level of tranquillity as a result of the Project, which is a characteristic feature of this LLCA, especially within the low-lying, remote areas of the marshes adjoining the River Thames to the north. *Night-time environment* There would not be a notable perceived change in the night-time environment within this LLCA. *Summary: opening year (winter)* The key characteristics of the landscape would be largely unaffected.	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
away from the settlement edge • Cultural association with Charles Dickens' Great Expectations • Perception of lighting within Gravesend and Tilbury Docks						Overall, the Project would result in a very minor change to the existing landscape character of the Shorne and Higham Marshes LLCA. *Justification for significance level where two significance categories are given in LA 104* The significance of effect has been assessed as slight rather than neutral due to the indirect effects arising from the Project in the adjoining LLCAs of Higham Arable Farmland (sub area Chalk) and Tilbury Marshes. Design year (summer) By the design year, landscape reinstatement would have established, effectively resulting in no notable direct or indirect effects on landscape character. Furthermore, establishment of planting within the Tilbury Marshes LLCA north of the River Thames and within the Higham Arable Farmland (sub area Chalk) LLCA to the south would reduce the perception of the Project.	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						Night-time environment There would not be a notable perceived change in the night-time environment within this LLCA. *Summary: design year (summer)* The key characteristics of the landscape would be unaffected. By the design year, the Project would not result in a noticeable change to the existing landscape character of the Shorne and Higham Marshes LLCA.	
Mucking Marshes Key characteristics of relevance to study area (based on Thurrock Landscape Capacity Study (Thurrock Council, 2005)): • Estuarine, low-lying, flat, exposed and windswept reclaimed marsh	Medium	Negligible adverse	No change	Neutral effect	Neutral effect	The Project is located on the southern edge of the Mucking Marshes LLCA, with changes limited to the ecological translocation of acid grassland and the creation of ecology receptor sites for translocated species, comprising ecology ponds and open mosaic and wet grassland habitats. <u>Opening year (winter)</u> There would be no notable direct effects on the landscape character of this LLCA resulting from creation of the ecology habitat. However, some limited indirect effects on this LLCA would result from the new	Highway Section 9

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
area, partially used for pasture • Limited settlement, including East Tilbury • Coal House Battery and Coalhouse Fort scheduled monuments • Open, wide views • Tranquillity reduced by East Tilbury settlement and large landfill site • Perception of lighting within East Tilbury, as well as skyglow within Tilbury and Chadwell St Mary						large-scale scrapes within the water vole habitat creation area in the adjoining Tilbury Marshes LLCA. *Night-time environment* There would not be a notable perceived change in the night-time environment within this LLCA. *Summary: opening year (winter)* The key characteristics of the landscape would be largely unaffected. Overall, the Project would result in a very minor change to the existing landscape character of the Mucking Marshes LLCA. *Justification for significance level where two significance categories are given in LA 104* The significance of effect has been assessed as neutral rather than slight due to the limited nature of indirect effects arising from the scrapes proposed for ecology mitigation in the neighbouring Tilbury Marshes LLCA. <u>Design year (summer)</u> By the design year, there would be no notable direct or indirect effects on	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						landscape character, following the establishment and integration of the water vole habitat in the adjoining Tilbury Marshes LLCA. *Night-time environment* There would not be a notable perceived change in the night-time environment within this LLCA. *Summary: design year (summer)* The key characteristics of the landscape would be unaffected. By the design year, the Project would not result in a noticeable change to the existing landscape character of the Mucking Marshes LLCA.	
Tilbury Marshes Key characteristics of relevance to study area (based on Thurrock Landscape Capacity Study (Thurrock Council, 2005)): • Large-scale, open, flat, low-	Low	Moderate adverse	Moderate adverse	Slight adverse effect	Slight adverse effect	The Tilbury Marshes LLCA would encompass the North Portal and approach road, the North Portal operational access bridge, and sculptural landscape mounding at Tilbury Fields around the North Portal and adjoining the River Thames. A key consideration for proposed mitigation has been the design of the new Tilbury Fields open space around the North Portal, with the landform	Highway Section 9

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
lying, exposed reclaimed marsh • Arable farmland and areas used for landfill, with pockets of pasture • Irregular pattern of ditches and dykes to the east • Tilbury Fort juxtaposed with Tilbury Sewage Treatment Works, OHL, raised landfill areas and the expanding Tilbury2 • Some tranquil pockets away from the urban edge and landfill areas • Perception of lighting at Tilbury Docks						reflecting the geometry of fortification and defence sites within the locality, and the elevated mounds providing viewpoints across the River Thames and a visual relationship with the militarily related Coalhouse Fort to the east. North of the tunnel portal, the aim has been to limit proposed planting to retain the existing open character of the landscape. At the North Portal operational access bridge, woodland and woodland edge planting has been proposed to provide integration and screening. <u>Opening year (winter)</u> The principal changes in this LLCA would comprise the North Portal, the Tunnel Service Building with its green roof, and the six-lane highway emerging from the tunnel in cutting, with associated highway infrastructure including signs and street lighting. The North Portal would be enclosed by structural landscape mounding within Tilbury Fields. North of the portal, the North Portal operational access bridge would comprise two roundabouts, associated roads and attenuation ponds,	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
and within Tilbury, as well as in Gravesend south of the River Thames						beyond which the Project route would transition onto embankment with elevated gantries and signs. The Project would result in the following main direct effects in the opening year: • Noticeable change of agricultural land and marshland to a transport corridor within the footprint of the Project route, and ecological habitat. • The continued absence of vegetation removed during construction, as outlined in Table 2.3, resulting in limited initial integration of the Project. • Noticeable change to the landform, comprising the uncharacteristic embankments along the Project route and at the North Portal operational access bridge, and the structural landscape mounding at Tilbury Fields in the otherwise typically flat landscape. However, the sculptural landscape mounding within Tilbury Fields would help to limit the perception of the North Portal and part of the adjoining	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						Project route in the surrounding landscape. • Bisection of the LLCA into two parts by the Project, with connectivity maintained at Tilbury Fields adjoining the River Thames. • Introduction of an uncharacteristic transport corridor and highway infrastructure into the landscape. • Removal of a section of OHL that detracts from the existing landscape character. • Figure 12.7 (Application Document 6.2) indicates a range of major to minor adverse change (increase) in noise to the north of the North Portal, between West Tilbury and East Tilbury. The greatest adverse change would occur within approximately 0.8km of the Project route to the west and approximately 0.3km of the Project route to the east. Combined with the prominence of the North Portal, embankments along the Project route and at the North Portal operational access bridge and associated vehicle traffic	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						and highway infrastructure, this would result in a further reduction to existing tranquillity within the eastern part of the LLCA. However, this would be in the context of existing industrial land uses, which already compromise tranquillity in this location. Some indirect effects on this LLCA would also result from the following: • The continued absence of vegetation removed during construction on the northern boundary of the LLCA within the adjacent Chadwell Escarpment Urban Fringe and West Tilbury Urban Fringe LLCAs, as outlined in Table 2.3, resulting in increased perception of the Project route to the north • The perception of the elevated Tilbury Viaduct and adjacent embankment slopes in the Chadwell Escarpment Urban Fringe and West Tilbury Urban Fringe LLCAs *Night-time environment* There would be a slight perceived change in the night-time environment	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						due to a short stretch of new street lighting (LED luminaires) near the North Portal. *Summary: opening year (winter)* Some of the key characteristics of the landscape would be affected by the Project, in particular, the flat, open, low-lying land and associated pattern of ditches and dykes, which would be interrupted by the Project route and the sculptural landscape mounding around the North Portal. Overall, the Project would result in a slight loss of existing characteristic landscape elements but noticeable change to the existing landscape character of the Tilbury Marshes LLCA. <u>Design year (summer)</u> The establishment of scattered scrub alongside watercourses to the east and west would help to integrate the Project into the surrounding landscape, by punctuating the conspicuous linear form of the route. Established mitigation planting around the North Portal operational access bridge would help to integrate	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						earthworks, structures, highway infrastructure and vehicle movements at the bridge and along the Project route into the surrounding landscape. Woodland planting within the adjacent Chadwell Escarpment Urban Fringe LLCA would help to replace vegetation removed during construction and reduce the perceptibility of the Project route to the north. Figure 12.8 (Application Document 6.2) indicates a range of major to minor adverse change (increase) in noise to the north of the North Portal, between West Tilbury and East Tilbury, although this adverse change would be within a slightly reduced area compared to the opening year. Similarly, the extent of the greatest adverse change would have reduced, occurring closer to the Project route. A reduction to tranquillity would therefore remain within the eastern part of the LLCA, particularly when the adverse change in noise is considered in combination with the presence of moving traffic and highway infrastructure along the Project route. However, this would be in the context of existing	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						industrial land uses, which already compromise tranquillity in this location. *Night-time environment* Effects on the night-time environment would not change between opening and design years. *Summary: design year (summer)* The Project would continue to have a similar level of effect on the existing landscape character of this LLCA. Effects on the key characteristics of the landscape would be as described for opening year. By the design year, the Project would result in a noticeable change to the existing landscape character of the Tilbury Marshes LLCA.	
Chadwell Escarpment Urban Fringe Key characteristics of relevance to study area (based on Thurrock Landscape Capacity Study	Medium	Minor adverse	Minor adverse	Slight adverse effect	Slight adverse effect	Only a very small part of the Project is located on the eastern edge of the Chadwell Escarpment Urban Fringe LLCA. A key consideration for proposed planting mitigation has been to reinstate the wooded ridgeline character of the escarpment and to help integrate the	Highway Section 9

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
(Thurrock Council, 2005)): • Steep-sided, south-facing sand and gravel escarpment, indented by small dry valleys • Low in height but contrasts with reclaimed marsh area to south • Small-scale and intimate landscape with copses, scrub and irregular pasture and arable fields • Urban fringe landscape where OHL, the Tilbury Loop railway line and housing around Chadwell St						southern end of the proposed Tilbury Viaduct into the adjoining landscape. <u>Opening year (winter)</u> This LLCA would encompass the Project route on embankment as it approaches Tilbury Viaduct in the adjacent West Tilbury Urban Fringe LLCA to the north. This part of the new highway includes a new gantry and a small attenuation basin. The new road between the North Portal operational access bridge and Station Road also crosses the LLCA parallel to the Project route. The Project would result in the following main direct effects in the opening year: • Small-scale change of pastoral and arable farmland to a transport corridor within the footprint of the Project route. • The continued absence of vegetation removed during construction, as outlined in Table 2.3, resulting in limited initial integration of the Project. • Noticeable change to the landform, comprising the uncharacteristic highway embankment at the eastern	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
Mary influence character • Varying degrees of tranquillity, influenced by built development • Perception of skyglow from urban and industrial areas, including Tilbury Docks						end of the escarpment in the LLCA, which would provide strong definition to the northern edge of the flat and open Tilbury Marshes to the south. • Introduction of an uncharacteristic transport corridor and highway infrastructure into the landscape. • Removal of a section of OHL that detracts from the existing landscape character. • Figure 12.7 (Application Document 6.2) indicates a range of major to minor adverse change (increase) in noise within the LLCA south-east of West Tilbury. The greatest adverse change would occur within approximately 0.7km of the Project route to the west and approximately 0.2km of the Project route to the east. Combined with the prominence of embankments along the Project route, the nearby Tilbury Viaduct and associated vehicle traffic and highway infrastructure, this would result in a further reduction to existing tranquillity within the eastern part of the LLCA. However, this	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						would be experienced in the context of existing OHL and the Tilbury Loop railway line, which already compromise tranquillity in this location. Some indirect effects on this LLCA would also result from: • The perception of the Project route, North Portal operational access bridge and North Portal in the Tilbury Marshes LLCA to the south • The perception of the elevated Tilbury Viaduct in the West Tilbury Urban Fringe LLCA to the north *Night-time environment* There would be a slight perceived change in the night-time environment within the immediate vicinity of the Project due to new lighting along Station Road, experienced in the context of existing lighting in the nearby Readmans Industrial Estate. *Summary: opening year (winter)* Some key characteristics of the landscape would be affected, including the landform along the eastern end of the escarpment due to new earthworks.	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						The new road corridor would contrast with the small-scale, intimate nature of the landscape, and there would be the continued absence of characteristic copses and scrub. Given the very small geographical extent of the affected part of this LLCA, the Project would result in a slight loss of existing landscape elements and slight change to the existing landscape character of the Chadwell Escarpment Urban Fringe LLCA. <u>Design year (summer)</u> The establishment of woodland planting would soften the highway embankments and reinstate woodland at the eastern end of the escarpment in the LLCA. However, Tilbury Viaduct in the West Tilbury Urban Fringe LLCA to the north, and vehicle movements along the highway embankment would continue to detract from the existing landscape character at the eastern end of this LLCA. Figure 12.8 (Application Document 6.2) indicates a range of major to minor adverse change (increase) in noise	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						within the LLCA south-east of West Tilbury, although this adverse change would be within a slightly reduced area compared to the opening year. Similarly, the extent of the greatest adverse change would have reduced, occurring closer to the Project route. A reduction to tranquillity would therefore remain within this part of the LLCA, particularly when the adverse change in noise is considered in combination with the presence of the nearby Tilbury Viaduct and moving traffic and highway infrastructure along the Project route, where not screened by tree and shrub planting. However, this would be experienced in the context of existing OHL and the Tilbury Loop railway line, which already compromise tranquillity in this location. *Night-time environment* Effects on the night-time environment would not change between opening and design years. *Summary: design year (summer)* Established tree and shrub planting along the Project route would help	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						restore characteristic woodland. There would be limited effects remaining on the key characteristics, including the escarpment landform and the intimate, small-scale character. By the design year, the Project would result in a slight loss of existing landscape elements and slight change to the existing landscape character of the Chadwell Escarpment Urban Fringe LLCA.	
Green Belt/areas beyond the setting of the Kent Downs AONB							
Dartford and Gravesend Fringe Key characteristics of relevance to study area (based on The Landscape Assessment of Kent (Kent County Council, 2004)): • Industrial and residential urban edge between	Low	No change	No change	Neutral effect	Neutral effect	Only a very small part of the Project is located within this LLCA and there would be no change to the existing landscape character of the Dartford and Gravesend Fringe LLCA in either the opening year or design year, including the night-time environment.	N/A

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
Gravesend and Swanscombe • Pockets of undeveloped land, including semi-natural heathland and grassland and regenerating woodland • Urban fringe character especially due to influence of urban and suburban edge • Low levels of tranquillity							
West Tilbury Urban Fringe Key characteristics of relevance to study area (based on Thurrock Landscape Capacity Study	Medium	Major adverse	Moderate adverse	Large adverse effect	Moderate adverse effect	The Project route would bisect the West Tilbury Urban Fringe LLCA on a broadly north-north-east alignment. A key consideration for proposed planting mitigation has been to reflect the open character of the existing landscape north and south of Muckingford Road. Further north, the linearity of the Project route has been	Highway Sections 9 and 10

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
(Thurrock Council, 2005)): • Urban fringe, open, large-scale, gently undulating and mostly arable farmland • Boundaries defined by escarpments and abrupt urban edges • Limited tree cover, with localised small copses and hedgerows along field boundaries and historic lanes, including Hoford Road Protected Lane • Scattered farmsteads linked by lanes						broken down by proposed 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. <u>Opening year (winter)</u> The West Tilbury Urban Fringe LLCA would encompass Tilbury Viaduct and the new carriageway along the Project route, with associated highway infrastructure including signage and gantries. The six-lane carriageway would be flanked on both sides by false cuttings, where not on viaduct. The Project would also include the Muckingford Road green bridge and a large attenuation basin to the west of Linford. The Project would result in the following main direct effects in the opening year: • Noticeable change of arable land to a transport corridor within the footprint of the Project route and associated new landform and ecological habitat.	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
• Prominent OHL crossing the landscape • Varying degrees of tranquillity, influenced by built development • Perception of skyglow from London Gateway Port, East Tilbury, Tilbury and Chadwell St Mary						• The continued absence of vegetation removed during construction, as outlined in Table 2.3, resulting in limited initial integration of the Project and increased perception of Readmans Industrial Estate. • Noticeable change to the landform, comprising the uncharacteristic linear false cuttings and embankments at the bridges. • Loss of a small part of Hoford Road Protected Lane and alteration to the intimate character as a result of its realignment and associated vegetation loss. • Introduction of an uncharacteristic transport corridor into the landscape, together with Tilbury Viaduct and associated highway infrastructure, perceived in the context of several OHL. • Removal of a section of existing OHL that detract from the existing landscape character. • Figure 12.7 (Application Document 6.2) indicates a range of major to minor adverse change (increase) in	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						noise within much of the LLCA. The greatest adverse change would occur within approximately 0.7km of the Project route south of Muckingford Road and within approximately 0.8km of the Project route north of Muckingford Road. There would also be a range of major to minor beneficial change (reduction) in noise, and no change/negligible change in noise, within a narrow band along Muckingford Road, with the greatest beneficial change occurring within approximately 0.3km of the Project route. Overall, despite some reductions in noise levels, the introduction of the new road, Tilbury Viaduct and associated vehicle traffic and highway infrastructure into the landscape would contribute further to a reduction to existing tranquillity within much of the LLCA. However, this would be experienced in the context of existing OHL and the urban edges of East Tilbury, Chadwell St Mary and Linford, which	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						already compromise tranquillity in this location. Some indirect effects on this LLCA would also result from the following: • The perception of the Project route on embankment within the Chadwell Escarpment Urban Fringe and Tilbury Marshes LLCAs to the south • The perception of the Project route within false cutting slopes and the elevated Brentwood Road overbridge within the White Croft/Orsett Heath Urban Fringe LLCA to the west *Night-time environment* There would be a perceived change in the night-time environment near Tilbury Viaduct due to the lights of vehicles crossing the viaduct, with vehicle lights apparent elsewhere along the Project route where not screened by cutting or false cutting. There would also be localised lighting associated with new gantries. *Summary: opening year (winter)* Some of the key characteristics of the landscape would be affected by the	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						Project, in particular the open, gently undulating, arable farmland, which would be interrupted by Tilbury Viaduct and false cuttings along the Project route. The western part of Hoford Road leading up to the Hoford Road green bridge would be in cutting and flanked by replacement hedgerow planting to help maintain the sunken and enclosed nature of the Protected Lane. Overall, the Project would result in a partial loss of existing landscape elements and large-scale change to the existing landscape character of the West Tilbury Urban Fringe LLCA, as a result of the introduction of the uncharacteristic and conspicuous new road corridor. *Justification for significance level where two significance categories are given in LA 104* The significance of effect has been assessed as large rather than moderate due to the large-scale and conspicuous nature of the Project within the LLCA, including Tilbury Viaduct.	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						Design year (summer) The establishment of mitigation planting on and adjacent to the false cutting slopes would aid integration of the new road into the surrounding landscape. Where present, the planting would soften the appearance of the earthworks, highway infrastructure and moving traffic and punctuate the conspicuous linear form of the Project route. Mitigation planting along an existing watercourse to the west of the Project route (within this LLCA and the adjoining Linford/Buckingham Hill Urban Fringe LLCA) would also help integrate the road corridor. Tilbury Viaduct would remain a prominent feature, although in the context of existing built development at Readmans Industrial Estate and the Tilbury Loop railway line. Figure 12.8 (Application Document 6.2) indicates a range of major to minor adverse change (increase) in noise within a substantial proportion of the LLCA, although this adverse change would be within a slightly reduced area compared to the opening year. Similarly, the extent of the greatest adverse	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						change would have reduced, occurring closer to the Project route. There would also be a moderate to minor beneficial change (reduction) in noise, and no change/negligible change in noise, along Muckingford Road, with the greatest beneficial change occurring within approximately 0.3km of the Project route. Overall, despite some reductions in noise levels, a widespread reduction to tranquillity would therefore remain within the LLCA, due to the combination of the adverse noise levels and the presence of Tilbury Viaduct, earthworks, highway infrastructure and moving traffic in the landscape, where not screened by tree and shrub planting. However, this would be experienced in the context of existing OHL and the urban edges of East Tilbury, Chadwell St Mary and Linford, which already compromise tranquillity in this location. *Night-time environment* Effects on the night-time environment would not change between opening and design years.	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						Summary: design year (summer) The establishment of new planting would reduce the effects of the Project on the existing landscape character of this LLCA. Established hedgerows along Hoford Road would help restore the character of the Protected Lane. There would be limited effects remaining on the key characteristics, including interruption of the gently undulating, open, arable farmland. By the design year, the Project would result in a noticeable change to the existing landscape character of the West Tilbury Urban Fringe LLCA.	
Linford/Buckingham Hill Urban Fringe Key characteristics of relevance to study area (based on Thurrock Landscape Capacity Study (Thurrock Council, 2005)):	Low	Minor adverse	Negligible adverse	Slight adverse effect	Neutral effect	Only a small part of the Project route is located on the south-western edge of the Linford/Buckingham Hill Urban Fringe LLCA, which would encompass the highway in cutting, as well as the Hoford Road green bridge, which is proposed to help maintain the character of Hoford Road Protected Lane across the new road. Proposed scrub woodland planting has been proposed within this LLCA to reinforce the small-scale river	Highway Section 10

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
• Elevated landform, comprising a broad, flat to undulating, rounded ridge plateau, which is the principal unifying feature of the LLCA • Urban fringe character, with diverse land uses including mixed arable and pasture fields, mineral extraction, industry, landfill and a golf course • Concentration of woodland around existing Tarmac plant, with ancient woodland at Rainbow Wood						valley near Hoford Road. Compensatory planting for the partial loss of Rainbow Wood ancient woodland has also been proposed at the south-western edge of the LLCA, adjoining the retained portion of the ancient woodland. Order Limits have been included within this LLCA for nitrogen deposition compensation sites. These comprise fields south of Orsett Golf Club and a reclaimed raised landfill area along Buckingham Hill Road for the creation of woodland, scrub and grassland habitat. <u>Opening year (winter)</u> The Project would result in the following main direct effects in the opening year: • Partial permanent change of arable farmland to a transport corridor within the footprint of the Project route, and woodland and grassland habitat. • The continued absence of vegetation removed during construction, as outlined in Table 2.3, resulting in limited initial integration of the Project.	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
adjacent to the historic Hoford Road Protected Lane • OHL are prominent • Extensive views north and south • Levels of tranquillity influenced by industry and extraction activities • Perception of skyglow from London Gateway Port, Tilbury and Chadwell St Mary						• Partial loss of Hoford Road Protected Lane and alteration to the intimate character as a result of its diversion across Hoford Road green bridge and associated vegetation loss. • Introduction of an uncharacteristic transport corridor and highway infrastructure into the landscape, perceived in the context of several OHL. • Figure 12.7 (Application Document 6.2) indicates a range of major to minor adverse change (increase) in noise within the south-western part of the LLCA to the west of East Tilbury Road/Buckingham Hill Road. The greatest adverse change would occur within approximately 0.3km of the Project route south of Hoford Road and within approximately 0.5km of the Project route north of Hoford Road. Combined with the presence of the Project route and associated vehicle traffic and highway infrastructure along the southern edge of the LLCA, this would result in a further reduction to	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						existing tranquillity within the south-western part of the LLCA. However, this would be in the context of the existing Tarmac plant and OHL, which already compromise tranquillity in this location. Some indirect effects on this LLCA would also result from: • The perception of the new road crossing the gentle valley in the adjoining White Croft/Orsett Heath Urban Fringe LLCA to the west, although these effects would be limited by distance *Night-time environment* In the opening year, vehicle lights could be evident on Hoford Road green bridge. *Summary: opening year (winter)* Some of the key characteristics of the landscape would be affected by the Project, including the flat to undulating landform, which would be altered by a cutting and false cutting on the south-west edge of the LLCA. The eastern part of Hoford Road leading up to the Hoford Road green bridge would be in cutting	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						and flanked by replacement hedgerow and tree planting to help maintain the sunken and enclosed nature of the Protected Lane. Given the small geographical extent of the affected part of this LLCA, and adjacent woodland restricting intervisibility with the wider LLCA, the Project would result in a slight loss of existing landscape elements and slight change to the existing landscape character of the Linford/Buckingham Hill LLCA. *Justification for significance level where two significance categories are given in LA 104* The significance of effect has been assessed as slight rather than neutral due to the perception of the Project route at the edge of the LLCA and in the adjacent White Croft/Orsett Heath Urban Fringe LLCA. <u>Design year (summer)</u> The establishment of mitigation planting would help to integrate the new road into the surrounding landscape, by softening the appearance of earthworks along the	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						Project route and at the base of Hoford Road green bridge. Mitigation planting along an existing watercourse to the south-west of the Project route would also help integrate the road corridor, as well as connecting with adjoining retained woodland and reinforcing the existing landscape pattern. The perception of the Project route would reduce, although the character of the landscape along the south-western edge of the LLCA would become more contained by established mitigation planting. Established mitigation planting south of Orsett Golf Club would increase the amount of woodland within the LLCA and soften the appearance of the quarry along Hoford Road and the adjacent Tarmac plant. The nitrogen deposition compensation site along Buckingham Hill Road is likely to appear similar in character to existing. Figure 12.8 (Application Document 6.2) indicates a range of major to minor adverse change (increase) in noise within the south-western part of the LLCA, although this adverse change	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						would be within a slightly reduced area compared to the opening year. Similarly, the extent of the greatest adverse change would have reduced, occurring closer to the Project route. A localised reduction to tranquillity would therefore remain within this part of the LLCA, particularly due to the presence of moving traffic and highway infrastructure along the Project route, where not screened by false cutting or woodland. However, this would be in the context of the existing Tarmac plant and OHL, which already compromise tranquillity in this location, and would only be experienced within a small part of the overall LLCA. *Night-time environment* By the design year, the establishment of hedgerows on Hoford Road green bridge would limit any increased perception of lighting. *Summary: design year (summer)* The key characteristics of the landscape would be largely unaffected. Established tree and shrub planting along the Project route would soften the appearance of	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						earthworks, although there would be a permanent change in the flat to undulating landform on the south-west edge of the LLCA. Established hedgerows along Hoford Road and planting along the green bridge would help restore the character of the Protected Lane. By the design year, the Project would result in a very minor change to the existing landscape character of the Linford/Buckingham Hill Urban Fringe LLCA. *Justification for significance level where two significance categories are given in LA 104* The significance of effect has been assessed as neutral rather than slight due to established mitigation planting integrating the road into the landscape.	
White Croft/Orsett Heath Urban Fringe Key characteristics of relevance to study area (based on Thurrock Landscape	Medium	Major adverse	Moderate adverse	Large adverse effect	Moderate adverse effect	The Project would pass through much of the White Croft/Orsett Heath Urban Fringe LLCA. The LLCA would encompass the Project route as it follows two parallel existing OHL. A false cutting would typically flank the Project route on both sides, until nearing the	Highway Sections 10 and 11

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
Capacity Study (Thurrock Council, 2005)): • Gently undulating, urban fringe, medium- to large-scale farmland strongly influenced by transport corridors and OHL. • A sense of the former historic rural landscape remains near the hedgerow-lined Hornsby Lane and Heath Place. • Scattered farmsteads are linked by minor hedgerow-lined lanes, with larger settlement apparent at the						A13/A1089/A122 Lower Thames Crossing junction where it enters cutting. To the east of the Project route, up to the Orsett Cock roundabout with the A13, there would be major alterations to the A13 corridor, including multiple slip roads, structures and overbridges. The new Brentwood Road overbridge and FP79 WCH bridge would also be located within this LLCA, as well as overbridges, viaducts, earthworks, landscape mounds and highway infrastructure associated with the southern part of the A13/A1089/A122 Lower Thames Crossing junction. A key consideration for proposed planting mitigation has been to retain the existing open landscape character and reinforce the hedgerow pattern, along with provision 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 is proposed to reinstate the existing wooded ridgeline character along the A13 corridor and help integrate the new A13/A1089/A122	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
edges of the LLCA. • Tranquillity is strongly influenced by the A13 and urban edge of Chadwell St Mary and Grays. • Perception of skyglow from adjacent settlements.						Lower Thames Crossing junction and slip roads into the landscape. Order Limits have been included within this LLCA for a nitrogen deposition compensation site in fields south of Orsett Golf Club for the creation of woodland and grassland habitat. <u>Opening year (winter)</u> The Project would result in the following main direct effects in the opening year: • Noticeable, permanent change of arable farmland to a transport corridor within the footprint of the Project route and associated landform, and ecological habitat. • The continued absence of vegetation removed during construction, as outlined in Table 2.3, resulting in increased perception of highway infrastructure. • Noticeable change to the landform, comprising cutting/false cutting slopes, embankments, landscape mounds and bridge abutments. • Expansion of the existing A13/A1089 junction to connect with the Project	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						route would result in a further localised urbanisation of the landscape. • Away from the existing A13 corridor, the introduction of an uncharacteristic transport corridor and highway infrastructure, which would interrupt the existing open, arable landscape pattern. • Modification and repositioning of the existing OHL adjoining the Project route to the south, although this would not notably change the existing landscape character. • Figure 12.7 (Application Document 6.2) indicates a range of major to minor adverse change (increase) in noise along the Project route and slip roads within the southern part of the A13/A1089/A122 Lower Thames Crossing junction and within the south-eastern part of the LLCA to the north of Chadwell St Mary. The greatest adverse change to the north of Chadwell St Mary would occur within approximately 0.6km of the Project route east of Brentwood	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						Road and within approximately 0.4km of the Project route west of Brentwood Road. Figure 12.7 also indicates a range of major to minor beneficial change (reduction) in noise within the northern and central parts of the LLCA adjoining the south of the A13 corridor. The greatest beneficial change would occur to the south-west of the new A13/A1089/A122 Lower Thames Crossing junction near Grays. There would also be a range of major to minor beneficial change (reduction) in noise, and no change/negligible change in noise, within a narrow band along Brentwood Road, with the greatest beneficial change occurring within approximately 0.3km of the Project route. Overall, despite some reductions in noise levels, there would be a further reduction to existing tranquillity within the LLCA due to the increased prominence of the modified A13 corridor and A13/A1089/A122 Lower Thames Crossing junction, the new Project route and associated vehicle	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						traffic and highway infrastructure, and the removal of some existing screen planting. However, this would be experienced in the context of the existing road corridors, the urban edge of Chadwell St Mary and OHL, which already compromise tranquillity in this location. Some indirect effects on this LLCA would also result from: • The perception of the northern part of the new A13/A1089/A122 Lower Thames Crossing junction in the adjoining Orsett Lowland Farmland LLCA, with associated overbridges, slip roads, earthworks and highway infrastructure *Night-time environment* There would be a perceived change in the night-time environment due to new road lighting (LED luminaires) and vehicle lights within an increased area of this LLCA. This lighting would mostly be perceived in the context of existing lighting along the A13 and surrounding settlement edges. Additional light sources would also be present on the	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						elevated structures within the A13/A1089/A122 Lower Thames Crossing junction. In addition, the replacement of existing lighting on the A13 would be more evident due to the removal of existing vegetation. *Summary: opening year (winter)* Some of the key characteristics of the landscape would be affected by the Project, in particular the gently undulating farmland, which would be interrupted by false cutting and embankment slopes. Hornsby Lane, a characteristic feature of the former historic landscape, would be crossed and partially closed. Overall, the Project would result in a large-scale loss of existing landscape elements and large-scale change to the existing landscape character of the White Croft/Orsett Heath Urban Fringe LLCA. However, this change in landscape character would, to some extent, be perceived in the context of the existing A13 and A1089 Dock Approach Road corridors and OHL, which characterise the landscape of this LLCA.	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						Justification for significance level where two significance categories are given in LA 104 The significance of effect has been assessed as large rather than moderate due to the large-scale and conspicuous nature of the Project in the LLCA. <u>Design year (summer)</u> The establishment of extensive mitigation planting, in particular within the A13/A1089/A122 Lower Thames Crossing junction, would aid landscape integration, as well as replacing woodland removed during construction. The planting would soften the appearance of earthworks, structures, highway infrastructure and moving traffic and help reduce their perceptibility in the wider landscape. However, the elevated slip roads on viaducts and overbridges, with associated gantries, street lighting and vehicle movements, would continue to be evident above mitigation planting. Established hedgerows at the edge of the Project route would help reinforce the adjacent field pattern.	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						Established mitigation planting south of Orsett Golf Club and ancient woodland compensation planting would increase the amount of woodland within the south-east corner of the LLCA and further integrate the Project route into the surrounding landscape. Figure 12.8 (Application Document 6.2) indicates a range of major to minor adverse change (increase) in noise along the Project route and slip roads within the southern part of the A13/A1089/A122 Lower Thames Crossing junction and within the south-eastern part of the LLCA to the north of Chadwell St Mary, although this adverse change would be within a slightly reduced area compared to the opening year. Similarly, the extent of the greatest adverse change would have reduced, occurring closer to the Project route. Figure 12.8 also indicates a moderate to minor beneficial change (reduction) or no change/negligible change in noise within the northern and central parts of the LLCA near the south of the A13 corridor, with the greatest beneficial change occurring to the south-west of	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						the new A13/A1089/A122 Lower Thames Crossing junction near Grays. There would also be a moderate to minor beneficial change (reduction) in noise, and no change/negligible change in noise, along Brentwood Road, with the greatest beneficial change occurring within approximately 0.3km to the south of the Project route. Overall, despite some reductions in noise levels, a reduction to tranquillity would remain within the LLCA due to the increased prominence of the modified A13 corridor and the A13/A1089/A122 Lower Thames Crossing junction, and the presence of moving traffic and highway infrastructure along the Project route, where not screened by false cutting, woodland or hedgerows. However, this would be experienced in the context of the existing highway corridors, the urban edge of Chadwell St Mary and OHL, which already compromise tranquillity in this location. *Night-time environment* The establishment of mitigation planting would, to some extent, help reduce the effects of new lighting on the night-time	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						environment between opening and design years. *Summary: design year (summer)* Established mitigation planting would help to soften earthworks along the Project route. There would be limited effects remaining on the key characteristics, including on the gently undulating farmland and as a result of the permanent partial closure of Hornsby Lane. By the design year, the Project would result in a noticeable change to the existing landscape character of the White Croft/Orsett Heath Urban Fringe LLCA.	
Orsett Lowland Farmland Key characteristics of relevance to study area (based on Land of the Fanns Landscape Character Assessment (Lands of the Fanns	Medium	Moderate adverse	Minor adverse	Moderate adverse effect	Slight adverse effect	A small part of the Project is located on the western edge of the Orsett Lowland Farmland LLCA, which would encompass the northern part of the A13/A1089/A122 Lower Thames Crossing junction, the A13 slip roads and the continuation of the Project route to the north within cutting or false cutting. The A13 modifications to the east of the junction would include the new Rectory Road bridge to the south of	Highway Section 11

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
Landscape Partnership, 2016)): • Low-lying, gently undulating fen edge landscape • Small- to large-scale pasture and arable fields surround the historic settlement of Orsett • Pattern of small woodland blocks, mature hedgerows and hedgerow trees • Some extensive views north • Considerable time depth and long history of occupation • Prominent OHL to west of Baker						Orsett. Elements at the junction would include new gantries, signage, lighting, overbridges, earthworks and retaining walls. There would also be a large landscape mound along the Project route north of Stifford Clays Road. A key consideration for proposed planting mitigation has been to integrate 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. <u>Opening year (winter)</u> The Project would result in the following main direct effects in the opening year: • Noticeable change of agricultural land to a transport corridor within the footprint of the Project route and associated woodland planting. • The continued absence of vegetation removed during construction, as outlined in Table 2.3, resulting in increased perception of highway infrastructure.	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
Street and east of the A128 • Tranquillity is influenced by the A13 corridor • Perception of skyglow from adjacent settlements and the A13						• Noticeable change to the landform, comprising cutting/false cutting slopes, embankments, a large landscape mound and bridge abutments. • Expansion of the existing A13/A1089 junction to connect with the Project route would result in localised urbanisation of the landscape. • Away from the existing A13 corridor, the introduction of an uncharacteristic transport corridor and highway infrastructure, which would interrupt the open, arable landscape pattern. • Figure 12.7 (Application Document 6.2) indicates a range of major to minor adverse change (increase) in noise within the western part of the LLCA along the Project route and slip roads within the northern part of the A13/A1089/A122 Lower Thames Crossing junction and to the north-west of Baker Street. There would also be a range of major to minor adverse change (increase) in noise within a narrow band along the	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						south-western edge of Orsett. The greatest adverse change would occur within approximately 0.1km of the Project route along its western side and approximately within 0.5km along its eastern side. Figure 12.7 also indicates a range of major to minor beneficial change (reduction) in noise within the western part of the LLCA between the A13, Baker Street and Orsett, and a minor beneficial change (reduction) in noise north of the A13 along Stifford Clays Road. There would also be a moderate to minor beneficial change (reduction) in noise along High Road in Orsett. The greatest beneficial change would occur between the Project route and Baker Street. Overall, despite some reductions in noise levels, there would be a further reduction to existing tranquillity due to the Project route crossing the LLCA with associated vehicle traffic and highway infrastructure, the presence of the A13/A1089/A122 Lower Thames Crossing junction, and the removal of some existing	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						screen planting. However, this would be experienced in the context of the existing A13 and OHL, which already compromise tranquillity in this location. Some indirect effects on this LLCA would also result from: • The perception of the southern part of the new A13/A1089/A122 Lower Thames Crossing junction in the adjoining White Croft/Orsett Heath Urban Fringe LLCA, with associated bridges, slip roads, earthworks and highway infrastructure *Night-time environment* There would be a perceived change in the night-time environment due to new road lighting (LED luminaires) and vehicle lights within an increased area of this LLCA. This lighting would mostly be perceived in the context of existing lighting along the A13 and the settlement edge of Baker Street. Additional light sources would also be present on the elevated structures within the new A13/A1089/A122 Lower Thames Crossing junction. In addition,	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						the replacement of existing lighting on the A13 would be more apparent due to the removal of existing roadside vegetation. *Summary: opening year (winter)* Some of the key characteristics of the landscape would be affected by the Project, including the low-lying fenland landform and associated fields, which would be interrupted by earthworks for the A13/A1089/A122 Lower Thames Crossing junction and Project route. There would also be the continued absence of characteristic mature hedgerows along the realigned sections of Stifford Clays Road and Green Lane. Overall, the Project would result in a partial loss of existing landscape elements and noticeable change to the existing landscape character of the Orsett Lowland Farmland LLCA. <u>Design year (summer)</u> The establishment of extensive mitigation planting at the new A13/A1089/A122 Lower Thames Crossing junction would aid integration of the Project into the surrounding	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						landscape and replace vegetation removed during construction. The planting would soften the appearance of earthworks, structures, highway infrastructure and moving traffic and help reduce their perceptibility in the wider landscape. Figure 12.8 (Application Document 6.2) indicates a range of major to minor adverse change (increase) in noise within the western part of the LLCA along the Project route and slip roads within the northern part of the A13/A1089/A122 Lower Thames Crossing junction and to the north-west of Baker Street, although this adverse change would be within a slightly reduced area compared to the opening year. Similarly, the extent of the greatest adverse change would have reduced, occurring closer to the Project route. There would also be a moderate to minor adverse change (increase) in noise within a narrow band along the south-western edge of Orsett and in an isolated pocket along Prince Charles Avenue in Orsett. Figure 12.8 also indicates a moderate to minor beneficial	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						change (reduction) or no change/negligible change in noise between the A13, Baker Street and Orsett, with the greatest beneficial change occurring between the Project route and Baker Street. Overall, despite some reductions in noise levels, a reduction to tranquillity would remain within the LLCA due to the increased prominence of moving traffic and highway infrastructure along the Project route and at the A13/A1089/A122 Lower Thames Crossing junction, where not screened by false cutting or woodland. However, this would be experienced in the context of the existing A13 and OHL, which already compromise tranquillity in this location. *Night-time environment* The establishment of mitigation planting would, to some extent, help reduce the effects of new lighting on the night-time environment between opening and design years. *Summary: design year (summer)* Established mitigation planting would help to soften earthworks and new	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						highway infrastructure at the A13/A1089/A122 Lower Thames Crossing junction, and restore some vegetation cover along Green Lane and Stifford Clays Road. There would be limited effects remaining on the key characteristics, including on the low-lying fenland landform and associated fields. By the design year, the Project would result in a slight change to the existing landscape character of the Orsett Lowland Farmland LLCA.	
Thurrock Reclaimed Fen (sub area Mardyke) Key characteristics of relevance to study area (based on Land of the Fanns Landscape Character Assessment (Lands of the Fanns Landscape Partnership, 2016),	High	Major adverse	Major adverse	Very large adverse effect	Large adverse effect	The Project would be located within the relatively open, large-scale, arable farmland landscape. The Project route would cross the south-western part of the Thurrock Reclaimed Fen (sub area Mardyke) LLCA primarily on embankment and on the Mardyke and Orsett Fen Viaducts, with short sections at grade, within cutting and within false cutting. There would also be associated highway infrastructure. This section of the route would also include the Green Lane green bridge and the FP136 bridge. Other Project	Highway Sections 11, 12, 13 and 14

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
as well as site appraisal and analysis): • Flat, low-lying, inland basin associated with the Mardyke • Expansive views • Sparsely settled, large-scale, open and remote arable landscape, with a strong sense of place • Rectilinear field boundaries of open ditches, fen causeways and gappy hedgerows • Infrequent woodland blocks • OHL, a landfill near South Ockendon and the M25 locally						features would include large attenuation basins and lowered ground levels for extensive flood compensation areas adjacent to the Mardyke. Ecological mitigation would also be provided within the flood compensation areas. A key consideration for proposed planting mitigation has been to maintain the existing open landscape character and maintain views beneath the two proposed viaducts crossing the former fenland. To help integrate the Orsett Fen Viaduct into the landscape, rectangular blocks of woodland planting are proposed 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 would help restore the historic fenland character, including reinforcement of the riparian character along watercourses. The northern embankment slopes of Green Lane green bridge would be slackened from a standard gradient to 1:10 gradient, to help integrate the bridge into the flat landscape. A linear form to the proposed	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
contrast with the rural landscape • High levels of tranquillity due to sparsely settled nature • Largely dark night-time character, with some perception of light sources at Chadwell St Mary and Grays and along the M25						attenuation basins is proposed to help limit the width of the Project footprint crossing the former fen landscape. <u>Opening year (winter)</u> The Project would result in the following main direct effects in the opening year: • Noticeable change of agricultural land to a transport corridor within the footprint of the Project route and associated planting and ecological habitat. • The continued absence of vegetation removed during construction, as outlined in Table 2.3, resulting in limited initial integration of the Project and increased perception of highway infrastructure. • Substantial change to the flat and open reclaimed fen landscape, due to the introduction of an uncharacteristic transport corridor, linear road embankments and viaduct structures, together with two overbridges and associated embankments. • Introduction of new landscape features in keeping with the historic	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						fenland character, including a combination of wet grassland, wet woodland and new water bodies within the flood compensation areas. • Figure 12.7 (Application Document 6.2) indicates a range of major to minor adverse change (increase) in noise within the LLCA to the north-east of South Ockendon. The greatest adverse change would occur within approximately 0.8km of the Project route along its south-western side and within approximately 0.7km of the Project route along its north-eastern side. Figure 12.7 also indicates a range of major to minor beneficial change (reduction) in noise adjoining the edge of the M25 corridor, with the greatest beneficial change within approximately 0.1km of the M25. There would also be a minor beneficial change (reduction) in noise north of the A13 near Stifford Clays Road, along the A128 north of Bulphan and along Lower Dunton Road at the eastern edge of the LLCA. Overall, despite some	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						reductions in noise levels, there would be a notable reduction to existing tranquillity within this relatively remote and open LLCA due to the prominence of the embankments and viaducts along the Project route and associated elevated vehicle traffic and highway infrastructure. There would also be a slight further reduction to existing tranquillity within the north-western part of the LLCA due to the increased prominence of the modified M25 corridor, associated vehicle traffic and highway infrastructure as a result of the removal of existing screen planting, although this would be experienced in the context of the existing M25 corridor, which already compromises tranquillity in this location. Some indirect effects on this LLCA would also result from: • The perception of the widened M25 corridor in the adjoining Thurrock Reclaimed Fen (sub area Thames Chase) LLCA, including removal of	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						screen planting along the west of the motorway *Night-time environment* There would be a perceived change in the night-time environment due to vehicle lights crossing the southern part of this LLCA, which is typically unlit and intrinsically dark in nature. There is also likely to be increased perception of replacement LED lighting along the M25 corridor, due to removal of existing roadside planting. *Summary: opening year (winter)* Some of the key characteristics of the landscape would be affected by the Project, in particular the flat, low-lying landform, rectilinear field boundaries and views, which would be interrupted by raised earthworks and the Mardyke and Orsett Fen Viaducts. There would also be a perceived reduction to tranquillity, remoteness and sense of place as a result of the operational road in the largely tranquil, rural landscape. Some characteristic views would be retained through the viaduct structures.	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						Overall, the Project would result in a partial loss of existing characteristic landscape elements and large-scale change to the existing landscape character of the Thurrock Reclaimed Fen (sub area Mardyke) LLCA. *Justification for significance level where two significance categories are given in LA 104* The significance of effect has been assessed as very large rather than large due to the prominent nature of the Project. <u>Design year (summer)</u> The establishment of mitigation planting along parts of the Project route and the eastern edge of the M25 would aid integration of the new road into the surrounding landscape, as well as restoring screening of the motorway. Established woodland edge planting would help to replace the southern part of The Wilderness woodland block removed during construction, although there would remain an overall reduction in the area of this woodland.	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						The rectangular blocks of woodland within the former fenland landscape would punctuate the conspicuous linear form of the Project route and, where present, would soften the appearance of earthworks and moving traffic. The establishment of wet woodland and wet grassland in the flood compensation areas would also strengthen the former characteristics of this fenland landscape. However, the new embankments, Mardyke and Orsett Fen Viaducts and associated highway infrastructure and traffic movement would remain prominent features interrupting the open former fenland landscape character, with some features visible against the skyline. Figure 12.8 (Application Document 6.2) indicates a range of major to minor adverse change (increase) in noise to the north-east of South Ockendon, although the extent of the major adverse change would be within a reduced area compared to the opening year. Figure 12.8 also indicates a moderate to minor beneficial change (reduction) or no change/negligible change in noise along	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						the M25 corridor, and a minor beneficial change (reduction) in noise along Lower Dunton Road at the eastern edge of the LLCA. Overall, despite some reductions in noise levels, a notable reduction to tranquillity would remain within the LLCA due to the prominent embankments, viaducts and associated elevated moving traffic and highway infrastructure crossing the relatively remote and open landscape, where these features are not screened by woodland blocks. The level of tranquillity would be similar to existing along the M25 corridor, following the establishment of mitigation planting. *Night-time environment* Effects on the night-time environment would not change between the opening and design years. *Summary: design year (summer)* Established woodland and wetland habitats would help to soften and integrate the Project into the surrounding landscape, with the rectangular woodland blocks reflecting the existing landscape pattern. However, there would be a permanent	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						change in key characteristics, including severance of the flat, low-lying, landform and the perceived reduction to tranquillity, remoteness and sense of place. By the design year, the Project would continue to result in a large-scale change to the existing landscape character of the Thurrock Reclaimed Fen (sub area Mardyke) LLCA. *Justification for significance level where two significance categories are given in LA 104* The significance of effect has been assessed as large rather than very large due to established mitigation planting providing some landscape integration of the Project.	
Thurrock Reclaimed Fen (sub area Thames Chase) Key characteristics of relevance to study area (based on Land of the Fanns	Medium	Moderate adverse	Minor adverse	Moderate adverse effect	Slight adverse effect	The Thurrock Reclaimed Fen LLCA (sub area Thames Chase) would encompass the northern part of the Project road northbound slip road, the A122 to M25 junction 29 link road and the M25 widening on the eastern edge of the LLCA. The M25 widening would include replacement street lighting (LED	Highway Sections 13 and 14

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
Landscape Character Assessment (Lands of the Fanns Landscape Partnership, 2016), as well as site appraisal and analysis): • Typically wooded in nature • Diverse land uses including Thames Chase Forest Centre, a golf course, arable and pasture fields, a solar farm and recreational green spaces on the urban edge • Influenced by the Upminster urban area and existing M25						luminaires), and new gantries, road embankments and retaining walls. A key consideration for proposed planting mitigation has been reinstatement and reinforcement of the existing woodland character of the Thames Chase Forest Centre and reinstatement of the existing roadside screen planting along the M25 to the north. <u>Opening year (winter)</u> The Project would result in the following main direct effects in the opening year: • Small-scale reduction of recreational land within Thames Chase Forest Centre for the increased width of transport corridor. • The continued absence of vegetation removed during construction, as outlined in Table 2.3, resulting in increased prominence of vehicle movements and highway infrastructure. • Localised expansion of the existing M25 motorway corridor to accommodate the A122 Lower	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
corridor, including the perception of night-time lighting and reduced tranquillity						Thames Crossing/M25 junction slip roads. • Figure 12.7 (Application Document 6.2) indicates a range of major to minor beneficial change (reduction) in noise along the eastern edge of the LLCA, with the greatest beneficial change occurring around the Thames Chase Forest Centre and Franks Farm near the Upminster to Basildon railway line. There would also be a range of major to minor adverse change (increase) in noise along the A122 Lower Thames Crossing/M25 junction slip roads in the south-eastern corner of the LLCA. Overall, despite some reductions in noise levels, there would be a further reduction to existing tranquillity due to the increased prominence of the modified M25 corridor as a result of the removal of existing screen planting and expansion of the existing motorway corridor, although this would be experienced in the context of the existing M25 corridor,	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						which already compromises tranquillity in this location. Some indirect effects on this LLCA would also result from: • The perception of the widened M25 corridor in the adjoining Thurrock Reclaimed Fen (sub area Mardyke) LLCA, including removal of screen planting along the east of the motorway • The perception of the new A127 WCH bridge west over the A127 in the adjoining Brentwood Wooded Hills LLCA *Night-time environment* There would be a limited perceived change in the night-time environment due to vegetation removal along the M25 corridor. However, the change in street lighting to LED luminaires, emitting reduced light spill and skyglow compared with the existing luminaires, would reduce the prominence of new lighting, which would also be perceived in the context of existing lighting.	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						Summary: opening year (winter) There would be some effects on the key characteristics of the landscape due to the continued absence of roadside screen planting removed during construction, resulting in a slight alteration to the typically wooded landscape and an increased perception of the M25 corridor. Overall, the Project would result in a noticeable loss of existing landscape elements and noticeable change to the existing landscape character of the Thurrock Reclaimed Fen (sub area Thames Chase) LLCA. <u>Design year (summer)</u> The establishment of replacement mitigation planting along the M25 corridor would restore the existing screen planting and help integrate the widened corridor into the adjoining landscape. The planting would soften the appearance of earthworks and reduce the perceptibility of highway infrastructure and moving traffic in the wider landscape.	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						Figure 12.8 (Application Document 6.2) indicates a range of major to minor beneficial change (reduction) or no change/negligible change in noise along the eastern edge of the LLCA. The greatest beneficial change would have reduced to a localised area near the Thames Chase Forest Centre. There would also be a moderate to minor adverse change (increase) in noise along the A122 Lower Thames Crossing/M25 junction slip roads in the south-eastern corner of the LLCA. Overall, despite some reductions in noise levels, a very limited reduction to tranquillity would remain due to the increased prominence of the modified M25 corridor and associated vehicle traffic and highway infrastructure, where not screened by tree and shrub planting. However, this would be experienced in the context of the existing M25 corridor, which already compromises tranquillity in this location. *Night-time environment* The establishment of mitigation planting would to some extent help reduce the effects of new lighting on the night-time	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						environment between opening and design years. *Summary: design year (summer)* Established mitigation planting along the M25 corridor would help restore characteristic woodland vegetation removed during construction. The key characteristics of the landscape would be largely unaffected. By the design year, the Project would result in a slight change to the existing landscape character of the Thurrock Reclaimed Fen (sub area Thames Chase) LLCA.	
Belhus Lowland Quarry Farmland Key characteristics of relevance to study area (based on Land of the Fanns Landscape Character Assessment (Lands of the Fanns	Medium	Moderate adverse	Minor adverse	Moderate adverse effect	Slight adverse effect	The Belhus Lowland Quarry Farmland LLCA encompasses the Project route in cutting and false cutting, and the A122 Lower Thames Crossing/M25 junction with associated highway infrastructure including new gantries, signage and lighting, in the north-eastern part of the LLCA. There would also be replacement street lighting (LED luminaires) and new gantries along the existing M25, and landscape mounds between the M25 and the Project road northbound slip road and along the south-western edge	Highway Section 13

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
Landscape Partnership, 2016)): • Low-lying, predominantly flat, mixed arable and pasture landscape, with historic quarrying and landfill evident from lakes and structural tree planting • Numerous tree belts and woodland blocks, with some ancient woodland • Heritage assets such as Cranham Hall and former parkland at Belhus Woods Country Park						of the Project route, east of the junction. Project features would also include the North Road green bridge and the FP252 WCH bridges east and west. A key consideration for proposed planting mitigation has been to help punctuate the conspicuous form of the Project route and reinforce existing landscape character, with characteristic blocks of woodland planting to the south of the new road. New screen planting would also help to integrate modifications to the existing M25 corridor and the new A122 Lower Thames Crossing/M25 junction. <u>Opening year (winter)</u> The Project would result in the following main direct effects in the opening year: • Change of agricultural land to a transport corridor within the footprint of the Project route and associated woodland planting. • The continued absence of vegetation removed during construction, as outlined in Table 2.3, resulting in an increased perception of highway infrastructure.	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
often associated with established mature vegetation • Tranquillity influenced by M25 corridor, with associated perception of night-time lighting						• Noticeable change to the landform, comprising cutting/false cutting slopes, embankments, landscape mounds and bridge abutments. • Introduction of an uncharacteristic transport corridor and highway infrastructure into the landscape east of the M25, together with new overbridges. • Figure 12.7 (Application Document 6.2) indicates a range of major to minor adverse change (increase) in noise along the Project route and A122 Lower Thames Crossing/M25 junction slip roads and within the north-eastern part of the LLCA between North Ockendon and South Ockendon. The greatest adverse change would occur within approximately 0.6km of the Project route to the north and approximately 0.2km of the Project route to the south. Figure 12.7 also indicates a range of major to minor beneficial change (reduction) in noise within the central part of the LLCA along the M25 corridor. There would also be a localised area of major to minor	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						beneficial change (reduction) in noise to the south-west of the North Road green bridge and no change/negligible change in noise along the North Road corridor. Overall, despite some reductions in noise levels, there would be a further reduction to existing tranquillity due to the presence of the new Project route and associated vehicle traffic and highway infrastructure, the increased prominence of the modified road corridor at the A122 Lower Thames Crossing/M25 junction and the removal of some existing screen planting. However, this would be experienced in the context of the existing M25 motorway corridor, which already compromises tranquillity in this location. There would be no notable indirect effects on this LLCA. *Night-time environment* At opening year, the perception of replacement lighting (LED luminaires) along the M25 corridor would, in some locations, be increased due to removal	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						of existing roadside planting. There would also be a perceived change in the night-time environment due to vehicle lights along the Project route where not screened in cutting or by false cutting slopes, and new lighting at the A122 Lower Thames Crossing/M25 junction. In a localised part of the LLCA, vehicle lights would be perceived in the typically unlit landscape north of South Ockendon. However, the change in street lighting to LED luminaires along the M25 corridor, emitting reduced light spill and skyglow compared with the existing luminaires, would reduce the prominence of new lighting, which would also be perceived in the context of existing lighting. *Summary: opening year (winter)* There would be limited effects on the key characteristics of the landscape including the presence of the false cutting earthworks and landscape mounds in the low-lying, mixed arable and pasture landscape, and the continued absence of some hedgerows	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						and woodland, which would alter the structure of the landscape slightly. Overall, the Project would result in a partial loss of existing landscape elements and noticeable change to the existing landscape character of the Belhus Lowland Quarry Farmland LLCA. <u>Design year (summer)</u> The establishment of mitigation planting along the Project route and at the new A122 Lower Thames Crossing/M25 junction would help to integrate new earthworks, structures, highway infrastructure and moving vehicles into the surrounding landscape, as well as softening the linear form of the road and reducing the perception of highway infrastructure and moving traffic in the wider landscape. The establishment of replacement mitigation planting along the M25 corridor would restore the existing screen planting. Figure 12.8 (Application Document 6.2) indicates a range of major to minor adverse change (increase) in noise along the Project route and A122 Lower	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						Thames Crossing/M25 junction slip roads and within the north-eastern part of the LLCA between North Ockendon and South Ockendon, although the extent of the major adverse change would be within a reduced area compared to the opening year. Figure 12.8 also indicates a moderate to minor beneficial change (reduction) or no change/negligible change in noise within the central part of the LLCA along the M25 corridor. There would also be a localised area of minor beneficial change (reduction) in noise to the south-west of the North Road green bridge and no change/negligible change in noise along the North Road corridor. Overall, despite some reductions in noise levels, a reduction to tranquillity would remain within the LLCA due to the presence of moving traffic and highway infrastructure along the Project route and the increased prominence of the modified M25, where not screened by false cutting or tree and shrub planting. However, this would be in the context of the existing M25 corridor, which already compromises tranquillity in this location.	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						Night-time environment The establishment of mitigation planting would to some extent help reduce the effects of new lighting on the night-time environment between opening and design years. *Summary: design year (summer)* Established mitigation planting would help to soften earthworks and restore characteristic hedgerows and woodland blocks. There would be limited effects remaining on the key characteristics, including the low-lying, mixed arable and pasture landscape. By the design year, the Project would result in a slight change to the existing landscape character of the Belhus Lowland Quarry Farmland LLCA.	
Brentwood Wooded Hills Key characteristics of relevance to study area (based on Land of the Fanns Landscape	Medium	Negligible adverse	Minor beneficial	Neutral effect	Slight beneficial	The Brentwood Wooded Hills LLCA would encompass modifications to the existing M25 junction 29 with the A127, and widening of the M25 to the north, with associated upgrades to highway infrastructure. Project features would also include new A127 WCH bridges east and west along the A127 to the east and west of junction 29.	Highway Section 14

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
Character Assessment (Lands of the Fanns Landscape Partnership, 2016)): • Undulating, rural pasture and arable landscape generally rising to the north • Frequent areas of woodland, including several areas of ancient woodland • Frequent dense hedgerow boundaries • Local ridgeline north of M25 junction 29, with extensive views south across the Thurrock Reclaimed Fen						The LLCA is partially influenced by the presence of the existing M25 corridor and A127, although these are set within a wooded landscape and generally experienced either very close to the motorway or from the elevated ridgeline, which affords wide views to the south, including those of the Thurrock Reclaimed Fen landscape. A key consideration for this LLCA has been the proposed Hole Farm Community Woodland to enhance the existing wooded character. <u>Opening year (winter)</u> The Project would result in the following main direct effects in the opening year: • Permanent conversion of arable fields to woodland and grassland habitat. • The continued absence of vegetation removed during construction, as outlined in Table 2.3, resulting in increased perception of highway infrastructure and vehicle movements. • North of M25 junction 29, there would be some increase in the	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
• Scattered settlement pattern, with heritage features at the village of Great Warley • Influenced by existing M25 corridor, including perceptible night-time lighting and reduced tranquillity						prominence of the existing motorway due to carriageway widening, new gantries, signage, retaining structures and replacement street lighting. • Along the A127, there would be a very minor increase in the prominence of the existing highway corridor due to the new A127 WCH bridges east and west. • Figure 12.7 (Application Document 6.2) indicates a moderate to minor beneficial change (reduction) in noise through the centre of the LLCA along the existing M25 corridor. However, despite some reductions in noise levels, there would be a further limited reduction to existing tranquillity in proximity to the A127 junction due to the increased prominence of moving traffic and highway infrastructure as a result of vegetation removal. This would be in the context of the existing M25 corridor, which already compromises tranquillity in this area.	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						There would be no notable indirect effects on this LLCA. *Night-time environment* There would be a beneficial overall perceived change in the night-time environment due to the change in street lighting (LED luminaires). As the street lighting would emit reduced light spill and skyglow compared with the existing luminaires, the overall prominence of lighting would reduce. *Summary: opening year (winter)* There would be limited effects on the key characteristics of the landscape due to the continued absence of roadside woodland at M25 junction 29 and trees on the edge of Codham Hall Wood ancient woodland, which would slightly reduce the characteristic wooded nature of the landscape in limited locations adjoining the M25 corridor. Overall, the Project would result in a partial loss of existing landscape elements and very minor change to the existing landscape character of the Brentwood Wooded Hills LLCA, with	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						effects limited to the existing M25 and A127 corridors and motorway junction. *Justification for significance level where two significance categories are given in LA 104* The significance of effect has been assessed as neutral rather than slight due to the limited nature of effects perceived in the context of the existing M25 and A127 road corridors. <u>Design year (summer)</u> The establishment of replacement mitigation planting along the M25 corridor would help to replace vegetation removed during construction, as well as softening the appearance of highway infrastructure and moving traffic. Established mitigation planting at Hole Farm would increase the amount of characteristic woodland within the LLCA and further integrate the M25 corridor, as well as softening the appearance of buildings at Codham Hall Farm. Figure 12.8 (Application Document 6.2) indicates a minor beneficial change (reduction) or no change/negligible change in noise through the centre of	

Receptor (LLCA)	Landscape sensitivity	Magnitude and nature of effect		Significance of effect		Commentary	Environmental Masterplan references (Application Document 6.2, Figure 2.4)
		Opening year (winter)	Design year (summer)	Opening year (winter)	Design year (summer)		
						the LLCA along the M25 corridor. In addition, established mitigation planting is likely to reduce the perception of moving vehicles and highway infrastructure. The level of tranquillity is anticipated to be similar to the baseline level along the M25, except to the east of the M25 where there would be an improvement due to woodland planting. *Night-time environment* Effects on the night-time environment would not change between opening and design years. *Summary: design year (summer)* Established mitigation planting would help restore characteristic woodland removed during construction and increase the extent of woodland within the landscape. The key characteristics of the landscape would be enhanced. By the design year, the Project would result in a slight beneficial change to the existing landscape character of the Brentwood Wooded Hills LLCA.	

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