M25 junction 28 improvement scheme

TR010029

10.7 Environmental Statement Chapter 9: Landscape and visual Changes 1-4

Regulation 5(2)(a)

Planning Act 2008

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M25 junction 28 scheme
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10.7 ENVIRONMENTAL STATEMENT
CHAPTER 9: LANDSCAPE AND VISUAL CHANGES 1-4

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Executive summary

The Scheme lies within a landscape that is predominantly composed of open pasture and woodland blocks some composed of Ancient Woodland. The M25 as it passes through the study area follows a broad shallow valley, rising to the north and south following the ground level. There is one property (Grove Farm) encircled by the Scheme Development Consent Order (DCO) boundary as well as isolated properties within the study area to the west located adjacent to the Maylands Golf Club. Further afield the settlements of Harold Hill and Harold Park lie adjacent to the Scheme. The Ingrebourne River and Weald Brook flow through the study area passing under the A12 at Putwell Bridge. Overhead electricity pylons run in a north to south direction and are a dominant feature in the landscape. Weald Park, a Grade II Registered Park and Garden located approximately 800 m to the north of junction 28, lies within the study area.

There are areas of tree planting that run along the A12 and M25 these serve to limit the visual impact of these highways on the surrounding area although the from the traffic is always present, disturbing the tranquillity of the area.

The Scheme has been developed to limit as far as possible the impact on the surrounding landscape with the introduction of the proposed loop road and associated slip roads. Despite this there are areas of unavoidable losses to ancient and mature woodland blocks (including veteran trees) and other vegetation associated with the improvements to the highway infrastructure which will have an impact on the landscape. It will also increase the visibility of the roads and traffic leading to increased visual impact for certain receptors particularly during the construction phase. Because of the extent of the ancient and mature woodland blocks, vegetation and landform in the area the adverse impacts are not as significant as they could have been, with the effects largely limited to the immediate area.

The Scheme also includes large areas of mitigation planting to reduce the impact of the Scheme and to offset the losses of vegetation and ancient and mature woodland blocks.

9. Landscape and visual

9.1 Introduction

9.1.1 This chapter considers the likely effects of the proposed M25 junction 28 Scheme (hereafter referred to as 'the Scheme') upon the surrounding landscape and visual receptors.

9.1.2 This chapter describes the findings of the assessment and should be read in conjunction with Appendix 9.1 (application document TR010029/APP/6.3) and Figures 9.1 to 9.8 (application document TR010029/APP/6.2).

9.1.3 The landscape and visual assessment has been carried out following published guidance including Highways England's Interim Advice Note (IAN) 135/10 Landscape and Visual Effects Assessment and DMRB Volume 11, Section 3, Part 5 Landscape effects but also with a consideration to the Landscape Institute's published Guidelines for Landscape and Visual Impact Assessment (GLVIA) 3rd edition. The assessment of landscape and visual effects will be based on a combination of magnitude and sensitivity using the assessment matrix included in IAN 135/10 Landscape and Visual Effects Assessment.

9.2 Competent expert evidence

9.2.1 This landscape and visual chapter has been undertaken by a Chartered Landscape Architect (BA Hons), Diploma LA & CMLIA, who has over 15 years of knowledge and experience within the landscape architecture profession. This knowledge and professional judgement have been used to undertake this assessment.

9.3 Legislative and policy framework

9.3.1 The following table outlines the relevant legislation and policies considered in undertaking this assessment.

Table 9.1: Legislation, regulatory and policy framework for landscape

Scale	Legislation/ policy and regulation	Summary of requirements
National	Countryside and Rights of Way Act 2000 (CRoW)[1]	Regulates all PRoW and ensures access to them. It requires local highway authorities to publish a Rights of Way Improvement Plan (RoWIP), which should be reviewed every 10 years. The Act also obliges the highway authority to recognise the needs of the mobility impaired when undertaking improvements.
	National Policy Statement for National Networks (NPS NN 2014)[2]	Guidance relevant to the landscape and visual effects of the Scheme include the following: 5.143 The landscape and visual effects of proposed projects will vary on a case by case basis according to the type of development, its location and the landscape setting of the proposed development. In this context, references to

[1] UK Legislation (2000) Countryside and Rights of Way Act 2000 http://www.legislation.gov.uk/ukpga/2000/37/contents
[2] Department for Transport, December 2014, National Policy Statement for National Networks

Scale	Legislation/ policy and regulation	Summary of requirements
		landscape should be taken as covering seascape and townscape, where appropriate. 5.144 Where the development is subject to EIA the applicant should undertake an assessment of any likely significant landscape and visual impacts in the environmental impact assessment and describe these in the environmental assessment. A number of guides have been produced to assist in addressing landscape issues. The landscape and visual assessment should include reference to any landscape character assessment and associated studies, as a means of assessing landscape impacts relevant to the proposed project. The applicant's assessment should also take account of any relevant policies based on these assessments in local development documents in England. 5.145 The applicant's assessment should include any significant effects during construction of the project and/or the significant effects of the completed development and its operation on landscape components and landscape character (including historic landscape characterisation). 5.146 The assessment should include the visibility and conspicuousness of the project during construction and of the presence and operation of the project and potential impacts on views and visual amenity. This should include any noise and light pollution effects, including on local amenity, tranquillity and nature conservation. 5.149 Landscape effects depend on the nature of the existing landscape likely to be affected and nature of the effect likely to occur. Both of these factors need to be considered in judging the impact of a project on landscape. Projects need to be designed carefully, taking account of the potential impact on the landscape. Having regard to siting, operational and other relevant constraints, the aim should be to avoid or minimise harm to the landscape, providing reasonable mitigation where possible and appropriate. 5.158 The Secretary of State will have to judge whether the visual effects on sensitive receptors, such as local residents, and other receptors, such as visitors to the local area, outweigh the benefits of the development. Coastal areas are particularly vulnerable to visual intrusion because of the potential high visibility of development on the foreshore, on the skyline and affecting views along stretches of undeveloped coast, especially those defined as Heritage Coast. 5.159 Reducing the scale of a project or making changes to its operation can help to avoid or mitigate the visual and landscape effects of a proposed project. However, reducing the scale or otherwise amending the design or changing the operation of a proposed development may result in a significant operational constraint and reduction in function. There may, be exceptional circumstances, where mitigation could have a very significant benefit and warrant a small reduction in scale or function. In these circumstances, the Secretary of State may decide that the benefits of the mitigation to reduce the landscape effects outweigh the marginal loss of scale or function. 5.160 Adverse landscape and visual effects may be minimised through appropriate siting of infrastructure, design

Scale	Legislation/ policy and regulation	Summary of requirements
		(including choice of materials), and landscaping schemes, depending on the size and type of proposed project. Materials and designs for infrastructure should always be given careful consideration. 5.161 Depending on the topography of the surrounding terrain and areas of population it may be appropriate to undertake landscaping off-site, although if such landscaping was proposed to be consented by the development consent order, it would have to be included within the order limits for that application. For example, filling in gaps in existing tree and hedge lines would mitigate the impact when viewed from a more distant vista. 5.162 Access to high quality open spaces and the countryside and opportunities for sport and recreation can be a means of providing necessary mitigation and/or compensation requirements. Green infrastructure can also enable developments to provide positive environmental and economic benefits. 5.163 The re-use of previously developed land for new development can make a major contribution to sustainable development by reducing the amount of countryside and undeveloped greenfield land that needs to be used. However, this may not be possible for some forms of infrastructure, particularly linear infrastructure such as roads and railway lines. Similarly, for SRFIs, brownfield land may not be economically or commercially feasible. 5.164 Green Belts, defined in a development plan, are situated around certain cities and large built-up areas. The fundamental aim of Green Belt policy is to prevent urban sprawl by keeping land permanently open; the essential characteristics of Green Belts are their openness and their permanence. For further information on the purposes and protection of Green Belt see the National Planning Policy Framework. 5.184 Public rights of way, National Trails, and other rights of access to land (e.g. open access land) are important recreational facilities for walkers, cyclists and equestrians. Applicants are expected to take appropriate mitigation measures to address adverse effects on coastal access, National Trails, other public rights of way and open access land and, where appropriate, to consider what opportunities there may be to improve access. In considering revisions to an existing right of way consideration needs to be given to the use, character, attractiveness and convenience of the right of way. The Secretary of State should consider whether the mitigation measures put forward by an applicant are acceptable and whether requirements in respect of these measures might be attached to any grant of development consent. 5.185 Public rights of way can be extinguished under Section 136 of the Act if the Secretary of State is satisfied that an alternative has been or will be provided or is not required.
	National Planning Policy	The National Planning Policy Framework (NPPF) was updated in February 2019. It is a key part of the Government's reforms which aim to create a less complex and more accessible planning system, to protect the

Scale	Legislation/ policy and regulation	Summary of requirements
	Framework (NPPF) 2019[3]	environment and to promote sustainable growth. The NPPF emphasises that the purpose of planning is to help achieve sustainable development, resulting in positive growth and economic, environmental and social progress. The NPPF is based upon a presumption in favour of sustainable development. The following key policies are applicable to this proposal: Policy 9: Promoting sustainable transport: • The environmental impacts of traffic and transport infrastructure can be identified, assessed and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains. Policy 12: Achieving well-designed places: • Developments are sympathetic to local character and history, including the surrounding built environment and landscape setting, while not preventing or discouraging appropriate innovation or change. Policy 13: Protecting Green Belt land: • The Government attaches great importance to Green Belts. The fundamental aim of Green Belt policy is to prevent urban sprawl by keeping land permanently open; the essential characteristics of Green Belts are their openness and their permanence. Policy 15: Conserving and enhancing the natural environment: • Developments should aim to protect and enhance valued landscapes and recognise the wider benefits of ecosystem services, including trees and woodland.
Local	London Borough of Havering Council Core Strategy and Development Control Policies and Development Plan Document (2008)[4]	Paragraph 10.6 Protection or safeguarding land or features, include: Open space, Green Belt, Listed buildings, Conservation areas, wharves, Trees, Sites of nature conservation importance. Policy CP14 Green Belt Policy CP15 Environmental Management Policy CP16 Biodiversity and Geodiversity Policy CP18 Heritage Policy DP18: Protection of Public Open Spaces Policy DP45: Development in the Green Belt Policy DP56: Light Policy DP23: Biodiversity and Geodiversity Policy DP60: Trees and Woodlands Policy DP68: Conservation Areas Policy DP69: Areas of Special Townscape or Landscape Character Policy DP71: Other Historic Landscapes

[3] Department for Communities and Local Government (2019) National Planning Policy Framework. London: DCLG
[4] London Borough of Havering (2008) Core Strategy and Development control Policies Development Plan Document

Scale	Legislation/ policy and regulation	Summary of requirements
	Havering Local Plan 2016-2031[5]	Policy 26: Green Belt Study 2016 Policy 29: Green Infrastructure
	Development Plan for Brentwood Borough (Draft Local Plan 2013-2033) Issued 2016[6]	Policy 9.1: Historic and Natural Environment and Landscape Character Policy 9.2: Wildlife and Nature Conservation Policy 9.3: Landscape Protection and Woodland Management Policy 9.6: Conservation Areas Policy 9.7: Ancient Monuments and Archaeological remains Policy 9.8: Green Belt Policy 10.6: High Quality Design Principles Policy 10.10 Green Infrastructure
International	European Landscape Convention (Florence, 2000)[7]	Sets out an internationally agreed definition of landscape: “The landscape is part of the land, as perceived by local people or visitors, which evolves through time as a result of being acted upon by natural forces and human beings”. It also sets out the key actions that countries should follow and provides an integrated, holistic approach and international context for landscape, under the headline banner "All Landscapes Matter".

Table Source: Various

9.4 Study area

9.4.1 Following consultation with local authorities the study area was increased from 1.5 km that was presented in the Scoping report (application document TR010029/APP/6.10) to 2 km. The study area has been set at 2 km to encompass all areas where a significant landscape or visual impact could occur. The study area can be seen on Figures 9.4 and 9.5. It was considered that the Scheme would not have a significant effect at a distance greater than 2 km. This conclusion was reached because the nature of the works comprising the Scheme are of a similar nature to the existing junction arrangement, and this therefore reduces the likelihood of significant effects when viewed from a distance greater than 2 km. Beyond 2 km it would be difficult to perceive the changes with the naked eye.

9.4.2 Views are curtailed by existing ancient and mature woodland and topography of the land surrounding the junction. The low-lying nature of junction 28 means potential views from the north are limited by tree coverage and from the south and east the existing topography limits views.

9.4.3 A Zone of Theoretical Visibility (ZTV) was produced to determine the extent of view of the Scheme, to test the assumed study area. The ZTV shows the theoretical extent of possible views of the site and was produced using GIS data. A value of 1.8 m was used to simulate eye height and an additional 4.0 m was added to the road levels to account for high sided vehicles (refer to Figure 9.4

[5] London Borough of Havering, Havering Local Plan 2016 – 2031
[6] Brentwood Borough Council (2016) Draft Local Plan 2013 – 2033, Local Development Plan for Brentwood Borough
[7] Council of Europe (2000) European Landscape Convention

Zone of Theoretical Visibility (ZTV) Summer and Figure 9.5 Zone of Theoretical Visibility (ZTV) Winter).

9.4.4 The ZTV covers all impacts possible, however slight, and is very much an approximation of the view. Therefore, a site visit was undertaken in February 2017 to assess whether significant adverse effects were likely to those areas beyond 2 km from the Scheme and shown as having views in the ZTV. A second site visit was undertaken in May 2019 to reassess previous findings in light of the time gap between visits.

9.4.5 The site visit confirmed that although the existing M25 and high sided traffic were perceptible in many of the views, they were of a distance and scale such that the proposed changes would not be significant.

9.4.6 Therefore, a study area of 2 km around the Scheme was confirmed to be sufficient to capture any potential landscape and visual significant effects.

9.5 Assessment methodology

9.5.1 A detailed landscape and visual assessment has been undertaken following published guidance including IAN 135/10 Landscape and Visual Effects Assessment and DMRB Volume 11, Section 2, Part 2 HA 202/08 Environmental Impact Assessment but also in accordance with the published Guidelines for Landscape and Visual Impact Assessment (GLVIA) 3rd edition, 2013.

9.5.2 The assessment of significant effects for both landscape and visual effects is based on a combination of magnitude with sensitivity using the assessment matrix included in the guidance IAN 135/10 Landscape and Visual Effects Assessment and DMRB Volume 11 Environmental Impact Assessment.

9.5.3 The assessment of landscape and visual effects was preceded by a review of baseline information to inform the landscape and visual context. This also included analysis of the planning framework and statutory designations. The assessment was undertaken by a Chartered Landscape Architect, who visited the study area in February 2017 (winter assessment) and May 2019 (summer assessment) to verify findings of the desk top studies and inform the assessment of landscape and visual effects. The following resources were utilised to establish the baseline landscape and visual amenity conditions:

- MAGIC: Multi-Agency Geographic Information for the Countryside (http://magic.defra.gov.uk/)
- Ordnance Survey Maps: various scales (https://www.ordnancesurvey.co.uk/osmaps/)
- Google Earth: Aerial Photography (Imagery date: 2015)
- Braintree, Brentwood, Chelmsford, Maldon And Uttlesford Landscape Character Assessment (Chris Blandford Associates, Sept 2006)
- Brentwood Borough Council Local Plan (policies)
- London Borough of Havering Local Plan (policies)
- Natural England National Character Areas

- The Thames Chase Plan (2014)

Landscape sensitivity

9.5.4 The sensitivity of landscape resources/receptors combines judgements of their susceptibility to the type of change or development proposed with the value attached to the landscape as per the GLVIA 3rd edition.

9.5.5 The magnitude of landscape impact is determined by taking into consideration size, scale, geographical extent, duration and reversibility of the improvement's works on the landscape resource.

9.5.6 In accordance with the relevant guidance contained in IAN 135/10, the landscape sensitivity is divided into three categories: High, Moderate and Low and criteria to inform the assessment are included in Table 9.2.

Table 9.2: Landscape sensitivity and typical descriptors and examples

Sensitivity	Typical descriptors and examples
High	Landscapes which by nature of their character would be unable to accommodate change of the type proposed. Typically, these would be: • Of high quality with distinctive elements and features making a positive contribution to character and sense of place. • Likely to be designated, but the aspects which underpin such value may also be present outside designated areas, especially at the local scale. • Areas of special recognised value through use, perception or historic and cultural associations. • Likely to contain features and elements that are rare and could not be replaced.
Moderate	Landscapes which by nature of their character would be able to partly accommodate change of the type proposed. Typically, these would be: • Comprised of commonplace elements and features creating generally unremarkable character but with some sense of place, locally designated, or their value may be expressed through non-statutory local publications. • Containing some features of value through use, perception or historic and cultural associations. • Likely to contain some features and elements that could not be replaced.
Low	Landscapes which by nature of their character would be able to accommodate change of the type proposed. Typically, these would be: • Comprised of some features and elements that are discordant, derelict or in decline, resulting in indistinct character with little or no sense of place. • Not designated. • Containing few, if any, features of value through use, perception or historic and cultural associations. • Likely to contain few, if any, features and elements that could not be replaced.

Table Source: IAN 135/10, Annex 1, Table 2

Visual sensitivity

9.5.7 The sensitivity of the visual receptors (people) combines judgements of their susceptibility to the type of change in views and visual amenity with the value attached to particular views. The assessment is determined using professional judgement, based on the current guidance including IAN 135/10 and GLVIA 3rd edition, 2013.

9.5.8 The following groups of people are considered to be visual receptors:

- Local communities (e.g. villages and settlements) and isolated residential properties - these receptors are generally considered to be **High Sensitivity;** views of residents are particularly susceptible to changes in visual amenity.
- Users of Public Rights of Way or other recreational trails (e.g. National Trails, footpaths, bridleways etc.) are generally considered to be **High Sensitivity** focused on enjoying views and susceptible to changes to visual amenity.
- People engaged in outdoor sport activity at playing fields or pitches, these receptors are generally considered to be **Moderate Sensitivity** as views of people engaged in outdoor sports activities are usually focused on the sports activity which usually does not depend upon appreciation of views into adjacent landscape.
- Road users - these receptors are generally considered to be **Low Sensitivity** as their views are focused mainly on the road corridor whilst views into adjacent landscape are usually transient and glimpsed.
- People in their places of work - these receptors are generally considered to be **Low Sensitivity** as they are orientated primarily on the work activities.

Magnitude of impact

9.5.9 The magnitude of landscape and visual impact, which can be either adverse or beneficial is determined by taking into consideration a degree of change in the composition of the view in comparison to the baseline of the view. In determining the magnitude of landscape and visual impact, the following has been considered whether the receptor is static or moving, including the numbers and type of receptor:

- Scale of change
- Nature of change
- Duration of change
- Distance
- Screening
- Direction and focus of the view
- Removal of vegetation
- Whether the receptor is static or moving
- Numbers and types of receptors potentially affected
- Potential for introduction of environmental design measures or mitigation measures

9.5.10 Where the receptor is moving such as road users and users of PRoW then the sequential impacts on the receptor were assessed.

9.5.11 Tables 9.3 and 9.4 define the magnitude of impact categories and criteria descriptors for landscape and visual receptors.

Table 9.3: Landscape - magnitude and nature of impact and typical descriptors

Magnitude of impact	Typical criteria descriptors
Major adverse	Total loss or large-scale damage to existing character or distinctive features and elements, and/or the addition of new but uncharacteristic conspicuous features and elements.
Moderate adverse	Partial loss or noticeable damage to existing character or distinctive features and elements, and/or the addition of new but uncharacteristic noticeable features and elements.
Minor adverse	Slight loss or damage to existing character or features and elements, and/or the addition of new but uncharacteristic features and elements.
Negligible adverse	Barely noticeable loss or damage to existing character or features and elements, and/or the addition of new but uncharacteristic features and elements.
No change	No noticeable loss, damage or alteration to character or features or elements
Negligible beneficial	Barely noticeable improvement of character by the restoration of existing features and elements, and/or the removal of uncharacteristic features and elements, or by the addition of new characteristic elements.
Minor beneficial	Slight improvement of character by the restoration of existing features and elements, and/or the removal of uncharacteristic features and elements, or by the addition of new characteristic elements.
Moderate beneficial	Partial or noticeable improvement of character by the restoration of existing features and elements, and/or the removal of uncharacteristic and noticeable features and elements, or by the addition of new characteristic features.
Major beneficial	Large scale improvement of character by the restoration of features and elements, and/or the removal of uncharacteristic and conspicuous features and elements, or by the addition of new distinctive features.

Table Source: IAN 135/10, Annex 1, Table 1

Table 9.4: Visual – magnitude of impact and typical descriptors

Magnitude of impact	Typical descriptors of effect
Major	The Scheme, or a part of it, would become the dominant feature or focal point of the view.
Moderate	The Scheme, or a part of it, would form a noticeable feature or element of the view which is readily apparent to the receptor.
Minor	The Scheme, or a part of it, would be perceptible but not alter the overall balance of features and elements that comprise the existing view.
Negligible	Only a very small part of the Scheme would be discernible, or it is at such a distance that it would form a barely noticeable feature or element of the view.
No change	No part of the Scheme, or work activity associated with it, is discernible.

Table Source: : IAN 135/10, Annex 2, Table 4

Significance of effects

9.5.12 The significance of landscape or visual effects (Table 9.5) has been determined using the categories in Tables 9.6 and 9.7 by taking into consideration both the magnitude and sensitivity of landscape resource or visual receptors. The effects can be either adverse, neutral or beneficial. Landscape and visual effects are considered significant if the magnitude of impact is moderate, large or very large adverse.

Table 9.5: Landscape and visual – significance of effects categories

Landscape value (sensitivity)	Magnitude of impact (degree of change)				
	Major	Moderate	Minor	Negligible	No change
High	Large or very large	Moderate or large	Slight or moderate	Slight	Neutral
Moderate	Moderate or large	Moderate	Slight	Neutral or slight	Neutral
Low	Slight or moderate	Slight	Neutral or slight	Neutral or slight	Neutral

Table Source: adapted from IAN 135/10, Annex 1, Table 3

Table 9.6: Landscape - typical descriptors of significance of effect categories

Significance category	Typical descriptors of effect
Very Large Beneficial (positive) effect	The project would: • Greatly enhance the character (including quality and value) of the landscape. • Create an iconic high-quality feature and/or series of elements. • Enable a sense of place to be created or greatly enhanced.
Large Beneficial (positive) effect	The project would: • Enhance the character (including quality and value) of the landscape. • Enable the restoration of characteristic features and elements lost as a result of changes from inappropriate management or development. • Enable a sense of place to be enhanced.
Moderate Beneficial (positive) effect	The project would: • Improve the character (including quality and value) of the landscape. • Enable the restoration of characteristic features and elements partially lost or diminished as a result of changes from inappropriate management or development. • Enable a sense of place to be restored.
Slight Beneficial (positive) effect	The project would: • Complement the character (including quality and value) of the landscape. • Maintain or enhance characteristic features and elements. • Enable some sense of place to be restored.
Neutral effect	The project would: • Maintain the character (including quality and value) of the landscape.

Significance category	Typical descriptors of effect
	• Blend in with characteristic features and elements. • Enable a sense of place to be retained.
Slight Adverse (negative) effect	The project would: • Not quite fit the character (including quality and value) of the landscape. • Be at variance with characteristic features and elements. • Detract from a sense of place.
Moderate Adverse (negative) effect	The project would: • Conflict with the character (including quality and value) of the landscape. • Have an adverse impact on characteristic features or elements. • Diminish a sense of place.
Large Adverse (negative) effect	The project would: • Be at considerable variance with the character (including quality and value) of the landscape. • Degrade or diminish the integrity of a range of characteristic features and elements. • Damage a sense of place.
Very Large Adverse (negative) effect	The project would: • Be at complete variance with the character (including quality and value) of the landscape. • Cause the integrity of characteristic features and elements to be lost. • Cause a sense of place to be lost.

Table Source: IAN 135/10, Annex 1, Table 4

Table 9.7: Visual - typical descriptors of significance of effect categories

Significance category	Typical descriptors of effect
Very Large Beneficial (positive) effect	The project would: • Create an iconic view that would greatly enhance the view.
Large Beneficial (positive) effect	The project would: • Lead to a major improvement in view from a highly sensitive receptor
Moderate Beneficial (positive) effect	The project would: • Cause obvious improvement to a view from a moderately sensitive receptor, or perceptible improvement to a view from a more sensitive receptor.
Slight Beneficial (positive) effect	The project would: • Cause limited improvement to a view from a receptor of medium sensitivity or would cause greater improvement to a view from a receptor of low sensitivity.
Neutral effect	No perceptible change in the view.
Slight Adverse (negative) effect	The project would:

Significance category	Typical descriptors of effect
	• Cause limited deterioration to a view from a receptor of medium sensitivity or cause greater deterioration to a view from a receptor of low sensitivity.
Moderate Adverse (negative) effect	The project would: • Cause obvious deterioration to a view from a moderately sensitive receptor, or perceptible damage to a view from a more sensitive receptor.
Large Adverse (negative) effect	The project would: • Cause major deterioration to a view from a highly sensitive receptor and would constitute a major discordant element in the view.
Very Large Adverse (negative) effect	The project would: • Cause the loss of views from a highly sensitive receptor and would constitute a dominant discordant feature in the view.

Table Source: IAN 135/10, Annex 1, Table 4

9.6 Assessment assumptions and limitations

9.6.1 The assessment has been based on the following Scheme design drawings:

- Scheme layout plans (application document TR010029/APP/2.7)
- Preliminary environmental design drawings (Figure 2.2 in application document TR010029/APP/6.2)

9.6.2 The Preliminary environmental design drawings (Figure 2.2) outline the road layout, extent of earthworks, expected positions of gantries and indicative design of the drainage layout. Also indicated is the proposed landscape mitigation proposals, including areas of grassland, ancient and mature woodland and ecological compensation areas.

9.6.3 The extent of vegetation removal and potential impact on landscape character and potential views of the road, associated infrastructure and construction works, have been assessed based on the Preliminary environmental design drawings (Figure 2.2). During the design every effort has been made to retain existing vegetation wherever possible as the retention of vegetation contributes enormously to the integration of the Scheme into the landscape and reducing visual impact. This recognition of the importance of retained vegetation, including vegetation with no environmental designation is proposed to be taken forward into the detail design phase. The retention of vegetation along the highway corridor (A12 and M25) and at Alder Wood are examples of where retaining as much vegetation as possible can make an important contribution to reducing the impact of the Scheme on the landscape and visual receptors.

9.6.4 Winter site visits have been undertaken, assessing the worst-case scenario when the trees have no leaves and views of the road would be at their most apparent. This applies to the baseline scenario of existing views of junction 28 as well as future views of the Scheme.

9.6.5 Views have been assessed by multiple site visits, where visibility is indicated further than 2 km from the Scheme on the zone of theoretical visibility and

excluded from further assessment as changes in view due to the Scheme would not be perceptible. Representative photographic viewpoints have been identified to record the existing view and are shown on Figure 9.8.

9.6.6 Photographs have been taken and assessments have been made from publicly accessible areas only. Where a specific view was not accessible, professional judgement and aerial photographs have been used to assess the potential view.

9.7 Baseline conditions

9.7.1 Baseline information was gathered by both desktop study and two site visits to confirm the existing baseline for both landscape character and the visual amenity and location of visual receptors.

9.7.2 An overview of the landscape baseline within the study area is outlined below. The study area has been sub-divided into national, regional and local landscape character areas and a summary of the key characteristics, value and sensitivity of these areas is included in Tables 9.8, Table 9.9 and Table 9.10. The site assessment sheets for each of these areas is contained within Appendix 9.1.

9.7.3 The nature of the existing view from each of the visual receptors identified was recorded on-site and a description included in the visual receptor table within Appendix 9.1.

Landscape baseline

Existing published landscape character assessments

9.7.4 Local topography and landscape character areas are respectively illustrated by Figures 9.2 and 9.3.

9.7.5 The Scheme area is within Northern Thames Basin National Character Area (111) as defined by Natural England, the eastern part of the Scheme lies within Brentwood Hills (D2), Essex Landscape Character Assessment[8] and within the Weald Wooded Farmland and Great Warley Wooded Farmland landscape character areas as defined by the Braintree, Brentwood, Chelmsford, Maldon And Uttlesford Landscape Character Assessment[9].

9.7.6 In summary, the landscape of the M25 north of junction 28 and the land to the northwest of Brentwood is characterised by:

- Wooded gently to strongly undulating hills/ridges.
- Semi enclosed character due to the presence of numerous small woods, large interlocking blocks of ancient and mature woodland and frequent hedgerow trees.
- Dense linear settlement pattern along major south west to north east road/rail routes.
- Narrow, tree-lined roads.
- Swathes of relatively open commons.

[8] Chris Blandford Associates, 2002, Essex Landscape Character Assessment
[9] Chris Blandford Associates, 2006, Braintree, Brentwood, Chelmsford, Maldon And Uttlesford Landscape Character Assessment

- A sense of tranquillity exists away from main road corridors as illustrated in Figure 9.4.

9.7.7 The M25 south of junction 28 and the land to the southwest of Brentwood is characterised by:

- Strongly undulating wooded farmland/ wooded hills with extensive patches of ancient and mature woodland.
- Small-scale field patterns with mature tree lined field boundaries.
- Narrow, quiet and sinuous rural lanes connecting small-scale settlements.

9.7.8 Noise and movement associated with the M25 and A12 road corridors are apparent, and a strong sense of place and orientation is provided by views towards London, North Kent and across the Thames Chase Community Forest.

Thames Chase Community Forest

9.7.9 The Thames Chase Community Forest is composed of a network of strategic ancient and mature woodlands, habitats and open access. It is defined by the Thames Chase Plan[10] composed of five forest wide programmes of delivery which are aligned to the NPPF and the approach taken by the All London Green Grid Area 3 Framework:

- Forestry
- Landscape regeneration
- Access
- People
- Promotion

9.7.10 The plan contains thirteen strategic opportunity areas of which the study area falls within Number 2 – Thames Chase Mosaic. Which contains the incentive to create a mosaic of woodland and open spaces that might be used for recreation, biomass, orchards for food production, allotments, wet woodlands and screening and improved access to the open countryside.

Local landscape character

9.7.11 The M25 junction 28 is set within blocks of ancient and mature woodland and semi-natural woodland, small-scale pastoral and arable fields bounded by hedgerows with intermittent trees, and by linear woodland belts. Semi-mature woodland belts are largely present along the entry and exit slip roads of the M25, as well as along the A12 east and west of the junction towards the fringes of the built-up areas of Brentwood (approximately 700 m to the northeast of the junction) and Romford (approximately 800 m to the southwest of the junction) respectively.

9.7.12 Between these urban areas, there are some linear settlements along local road corridors, specifically along Nag's Head Lane to the south of the junction, and mixed-use development areas along the A1023/ Brook Street to the east of the

[10] http://www.thameschase.org.uk/uploads/TCP_Full.pdf

junction. Several land uses typically associated with suburban areas are also present, for example Maylands Golf Club (west of the junction) and Thames Water Sewage Works (south of the junction).

9.7.13 Most of the inner perimeter of the junction 28 roundabout is filled with the existing mature woodland, although some localised areas of scrub vegetation are evident.

Landscape sensitivity

9.7.14 Statutory and local designations are present within the landscape, as are features of value such as strongly undulating wooded farmland, and extensive areas of ancient and mature woodland with some narrow rural lanes. Some of these features, such as ancient and mature woodland areas, field patterns, and landform, would be difficult to replace if lost to the Scheme.

9.7.15 The wider landscape character (including areas beyond the DCO boundary) is defined by commonplace landscape elements and features, but maintaining a sense of place, created by rolling hills and slopes, and by more open Commons with occasional long vistas from elevated locations.

9.7.16 The nature of the landscape character is therefore considered able to partly accommodate change of the type proposed by the Scheme and consequently, the sensitivity of the landscape to change is judged to be Moderate.

9.7.17 The M25 junction 28 is set within London's green belt land, which includes blocks of ancient and mature Woodland, small-scale pastoral and arable fields bounded by hedgerows with intermittent trees, and by linear woodland belts. Semi-mature woodland belts are largely present along the entry and exit slip roads of the M25, as well as along the A12, east and west of the junction, towards the fringes of the built-up areas of Brentwood (approximately 700 m to the southeast of the junction) and Romford (approximately 800 m to the southwest of the junction) respectively.

9.7.18 The town of Brentwood has a population of approximately 79,000 people at the last census but is undergoing change with new developments proposed within and around the town. There are a number of proposals for housing developments, for example within the vicinity of Nags Head Lane 125 units are proposed and 180 units are proposed at Honeypot Lane.

9.7.19 To the west of the town are large blocks of ancient and mature woodland and established hedgerows, providing a vegetation buffer between the residential areas and surrounding arable grazing fields.

9.7.20 The landscape generally surrounding Brentwood is characterised by strongly undulating wooded farmland/ wooded hills with extensive patches of ancient and mature woodland, small-scale field patterns with mature tree lined field boundaries, and narrow, quiet and sinuous rural lanes connecting small-scale settlements.

9.7.21 The main train line from London serving the East of England is located approximately 300 m south of junction 28 and runs in east to west direction following a similar route to the A12. The line is generally hidden behind

established linear woodland planting, but intermittent gaps between vegetation existing with views of junction 28.

9.7.22 The land south of the M25 junction 28 and the land to the southwest of Brentwood is characterised by strongly undulating wooded farmland/ wooded hills with extensive patches of ancient and mature woodland, small-scale field patterns with mature tree lined field boundaries, and narrow, quiet and sinuous rural lanes connecting small-scale settlements.

9.7.23 To the southwest of junction 28 there are some linear settlements along local road corridors, specifically along Nag's Head Lane to the south of the junction. Several land uses typically associated with suburban areas are also present, for example Maylands Golf Club (west of the junction) and Thames Water Sewage Works (south of the junction).

9.7.24 The Maylands Golf Club stretches west to north, with fairways located between linear tree belts. Large areas of dense ancient and mature woodland blocks, including Alder Wood, are located at the edge of the Maylands Golf Club and adjacent to the junction.

9.7.25 Overhead electricity pylons run in a north to south direction and are a dominant feature in the landscape.

9.7.26 To the northeast the land rises up and comprises of open countryside set to agriculture, with medium sized fields of a mix of arable and grazing. Large blocks of mature ancient and mature woodland, connecting to Weald Country Park are also characteristic elements in the landscape. The ancient and mature woodland blocks are connected via hedgerows which run around the perimeter of fields.

9.7.27 The outskirt of Romford is to the west of the junction with patches of ancient and mature woodland, small-scale field patterns with mature tree lined field boundaries, running along the A12 (Roman Road) located between the M25 road corridor and the residential properties located off Homeway, Ingreway and Greenway.

National and Regional Character Areas

9.7.28 The extent and location of the national and regional landscape character areas are shown on Figure 9.2. A brief description of these areas is provided for context below.

9.7.29 The sensitivity and impact assessment has been undertaken on the Local Landscape Character Areas (LLCAs) as they are judged to be the most appropriate scale against which to assess the Scheme due to the variation in landscape character within the study area

National landscape character

9.7.30 The study area lies within National Character Area (NCA) 111 Northern Thames Basin as defined by Natural England. Table 9.8 outlines the relevant key characteristics.

Table 9.8: Relevant key characteristics of National Character Area (NCA) 111 – Northern Thames Basin

Relevant characteristics
Characteristic of the area is a layer of thick clay producing heavy, acidic soils, resulting in retention of considerable areas of Ancient Woodland.
The pattern of woodlands is varied across the area and includes considerable Ancient Woodland and semi-natural woodland.
The field pattern is very varied across the basin reflecting historical activity. Informal patterns of 18th-century or earlier enclosure reflect medieval colonisation of the heaths.
In the Essex heathlands 18th- and 19th-century enclosure of heathlands and commons followed by extensive 20th-century field enlargement is dominant
Market towns have expanded over time as have the London suburbs and commuter settlements

9.7.31 Regional landscape character areas (LCA) identified by Essex County Council (ECC) and defined by the Braintree, Brentwood, Chelmsford, Maldon And Uttlesford Landscape Character Assessment[9] are listed below and shown on Figure 9.2:

- Great Warley Wooded Farmland (LCA)
- Weald Wooded Farmland (LCA)

9.7.32 For areas within the London Borough of Havering the regional LCAs are defined in the Land of the Fanns Landscape Character Assessment[11]. The landscape character areas affected by the Scheme are listed below:

- Brentwood Wooded Hills (LCA)
- Ingrebourne Valley (LCA)
- Havering Wooded Hills (LCA)

9.7.33 The relevant key characteristics for the highlighted regional landscape character areas are summarised in Table 9.9.

Table 9.9: Relevant key characteristics of the regional LCAs

Regional LCAs	Relevant characteristics
i Great Warley Wooded Farmland	• Strongly undulating wooded farmland/wooded hills. • Extensive patches of woodland. • Small-scale field pattern with mature treed field boundaries. • Small-scale settlement pattern comprising small historic farmsteads and hamlets. • Narrow, quiet sinuous rural lanes. • Noise and movement associated with the M25. • Strong sense of place and orientation provided by views across Thames Chase to the west towards London and North Kent.
ii Weald Wooded Farmland	• Swathe of relatively open commons. • Wooded rolling hills and slopes.

[11] Alison Farmer Associates, 2016, Land of the Fanns Landscape Character Assessment

Regional LCAs	Relevant characteristics
	• Narrow, tree-lined roads. • Intricate network of woodland and grassland within Weald Country Park. • Sense of tranquillity away from main road corridors.
iii Brentwood Wooded Hills	• Undulating and in places steeply sloping landform incised by small watercourses. • Upper slopes afford views across valleys to wooded horizons. • Land use comprises notable areas of former parkland now managed as county parks and remnant commons within a rural landscape of pasture and arable. • Historic character reflected in parkland, mature trees, commons and historic villages. • Strong north-south orientation of routes reflecting the former importance of linear parishes. • Settlement comprises dispersed pattern of nucleated villages typical of Medieval Essex in form and layout. • Scenic qualities derived from intact land use patterns, varied topography, woodland blocks, mature trees and varied textures associated with land use.
iv Ingrebourne Valley	• Gently sloping valley sides forming a shallow yet distinctive valley landform. • Upper slopes afford views across and down the valley in places. • Land use comprises pasture on steeper slopes and valley floor with arable on the upper slopes and significant areas of amenity open space and woodland. • Road infrastructure cuts across this landscape and development has encroached down the valley sides in places. • Settlement comprises a dispersed pattern of farmhouses and associated barns • Scenic qualities derived from topography, patchwork of land uses, expansive areas of marsh and reedbed and sense of remoteness despite close proximity to urban areas.
v Havering Wooded Hills	• Strong parkland character derived from former 15th century Havering Palace and deer park and subsequent development of Havering, Bedford and Prygo Parks. • Land use comprises patches of pasture and arable with remnant parklands (now country parks) interspersed with woodland blocks. • Plotlands development and ad hoc development along back lanes has given rise to a fragmented and cluttered landscape in places. • Scenic qualities derived from topography, views and parkland (veteran trees/pasture).

Local landscape character areas (LLCA)

9.7.34 The following LLCA's have been identified by both desk study and site visits following the guidance of IAN 135/10 and An Approach to Landscape Character

Assessment, Natural England 2014[12]. The site visit descriptions are included in Appendix 9.1 and provide more detailed information on the landscape character, the condition and value of each character area, which has been used to inform the assessment of sensitivity to change in Table 9.10. The extents and locations of the LLCAs are shown on Figure 9.2:

- A: Tyler's common
- B: Alder Wood
- C: Maylands Golf Club
- D: A12 Corridor
- E: Urban Fringe of Brentwood
- F: Urban Fringe of Harold Park
- G: South Weald

9.7.35 Table 9.10 provides a summary of the LLCAs and the value and sensitivity of each of the landscape character areas to the Scheme. The criteria value and sensitivity of landscape receptors is defined in the assessment methodology in section 9.4.

Table 9.10: The relevant key characteristics of the LLCAs

LLCAs	Relevant characteristics	Value	Sensitivity to change
A: Tyler's common	• Common land dominated by coarse grass and species rich grassland. • Tree lined boundaries • Some extensive views south and west are possible.	• There are notable aesthetic elements which contribute to a sense of place. • Character is dominated by the extensive areas of grassland with patches of woodland.	**Moderate**
B: Alder Wood	• Deciduous woodland with broad leaved species • Priority habitat with mature trees • Views in and out are limited by landform	There are no local or national designations associated with the area.	**Moderate**
C: Maylands Golf Club	• Views are generally contained by woods and subtle changes of landform. • There are several blocks of mature woodland located between fairways	• The landscape contributes to the sense of place. • Predominately a managed landscape with mown open fairways • There are few detracting features.	**High**
D: A12 Corridor	• Busy road with high amount of noise and movement. • Land-use is largely residential, built up over the 20th century, featuring	Character dominated by road and associated road infrastructure.	**Low**

[12] Natural England, 2014, An Approach to Landscape Character Assessment, Natural England

LLCAs	Relevant characteristics	Value	Sensitivity to change
	quiet residential access roads and cul-de-sac streets.		
E: Urban Fringe of Brentwood	• Strongly undulating wooded farmland/wooded hills. • Extensive patches of woodland. • Small-scale field pattern with mature treed field boundaries. • Small-scale settlement pattern comprising small • historic farmsteads and hamlets. • Narrow, quiet sinuous rural lanes. • Noise and movement associated with the M25 and A127 road corridors. • Strong sense of place and orientation provided by views towards London and Kent	• There are several listed buildings within the townscape including Nags Head Inn and The Bull Inn • Character is dominated by the extensive patches of woodland, scattered amongst a small–scale (predominantly arable) field pattern. • Mature hedgerows delineate fields. • Settlement pattern consists of several dispersed historic farmsteads and the linear hamlet of Great Warley. • Narrow, quiet sinuous rural lanes runs across and along the slopes. • Tranquillity within the area is disturbed in several locations by background noise associated within the M25 and A12 road corridors.	**Moderate**
F: Urban Fringe of Harold Park	Land-use is largely residential, built up over the 20th century, featuring quiet residential access roads and cul-de-sac streets.	Tranquillity within the area is disturbed in several locations by background noise associated within the M25 and A12 road corridors and greater Anglia mainline.	**Low**
G: South Weald	• Swathe of relatively open commons. • Wooded rolling hills and slopes. • Narrow, tree-lined roads. • Intricate network of woodland and grassland within Weald Country Park. • Sense of tranquillity away from main road corridors	Weald Country Park is within the character area and several designated Ancient Woodlands which are distinctive features within the landscape and contribute to the sense of place.	**High**

Relevant designations

9.7.36 The location of environmental designations is shown on the Environmental constraints plan Figure 2.1.

Green Belt

9.7.37 The study area lies within the Green Belt, adopted by the London Borough of Havering and Brentwood Borough Council. Local landscape designations are shown in Figure 9.1.

Community forest

9.7.38 Thames Chase Community Forest, bisected by the M25, lies to the south of junction 28 and abuts the A12 to the west of the junction and the A1023/ Brook Street to the east of the junction.

Local Nature Reserve (LNR)

9.7.39 The Manor LNR is located wholly within the study area across two sites - the smaller site lays approximately 1,000 m directly west of the existing junction, the larger lays approximately 1,300 m to the northwest.

Scheduled Monuments

9.7.40 Two Scheduled Monuments are located within the study area:

- Dagnam Park Farm moated site, Noak Hill, Romford, approximately 1,750 m to the northwest of junction 28.
- Slight univallate hillfort 300 m west of Calcott Hall Farm, approximately 2,400 m to the northeast of junction 28.

Registered Park and Garden and Listed Buildings

9.7.41 Weald Park, a Grade II Registered Park and Garden located approximately 800 m to the north of junction 28, lies within the study area, as do approximately 62 Listed Buildings, of which:

- 5 No. are Grade II* Listed
- 57 No. are Grade II Listed

Ancient Woodland and veteran trees

9.7.42 There are areas of 18 parcels of Ancient Woodland and 15 veteran trees that lie within the study area. The impact on these woodlands and veteran trees is assessed in the Biodiversity chapter (Chapter 7) and the Arboricultural impact assessment (Appendix 7.7 (application document TR010029/APP/6.3)). This chapter will consider the impact on visual amenity and landscape character relating to Ancient Woodland.

Visual baseline

9.7.43 The selection of viewpoint locations (refer to Figure 9.7) to assist the visual assessment was established following consultation with the London Borough of Havering and Brentwood Borough Council.

9.7.44 The visibility towards the location of the Scheme is restricted by a network of intervening hedgerows, tree belts and ancient and mature woodland areas, as well as by the existing approaches to the junction from the A12 and M25.

Visibility is also further restricted by landform around the junction, which broadly slopes down towards the junction from adjacent areas.

9.7.45 There are several blocks of ancient and mature woodlands adjacent to junction 28 and along the road corridors that screen, either fully or partially, views of the junction. The views are additionally screened by the local variations of terrain, the road corridors of the M25 and A12, existing railway line, and by the overlapping network of hedgerows with trees.

9.7.46 Views from the north of the M25 junction 28 and the land to the northwest of Brentwood comprise:

- Open views to wooded horizons.
- Long-distance views across farmland enclosed by patches of ancient and mature woodland.
- Unfolding views, moving through the undulating landscape and patches of ancient and mature woodland.

9.7.47 Views from the south of junction 28 and the land southwest of Brentwood comprise:

- Panoramic, open views across the M25 road corridor over the Thames Chase to London and North Kent.
- Views to wooded horizons.
- Open views to the southern edge/ fringe of the Brentwood urban area.
- Short-distance, framed views within ancient and mature woodland clearings.

Sensitivity of visual receptors

9.7.48 Using the criteria identified in Table 9.2 the sensitivity of each of the visual receptors was determined. The definition of these categories was derived from IAN 135/10, Annex 1, Table 2.

9.7.49 Visual receptors identified as being of high sensitivity were:

- Residents of Boyles Court Farm, Dark Lane, southeast of junction 28 (visual amenity receptor reference number 5)
- Residents of Grove Farm, immediately adjacent to junction 28 (visual amenity reference number 7)
- Residents of Maylands Cottages, to the west of junction 28 (visual amenity reference number 9A)
- Residents of Harold Park, to the west of junction 98 (visual amenity reference number 9B)
- Residents of Oak Farm, west of junction 28 (visual amenity reference number 10)
- Residents of May Cottage and Freeman's Cottage, between the A12 and the A1023/ Brook Street, between junction 28 and the western edge of Brentwood (visual amenity reference number 2E)

- Residents of French's Farm, off Wigley Bush Lane east of junction 28 (visual amenity reference number 11)
- Residents of properties along Spital Lane, Wingrave Crescent, and Leonard Way, Brentwood (visual amenity reference number 12)
- Residents of properties along Nags Head Lane, south of junction 28 (visual amenity reference number 4)
- Users of the bridleway (a linear receptor with significant changes in elevation and view along its length) following Nag's Head Lane and along the crest of the M25 cutting, south of junction 28 (visual amenity reference number 6B)
- Users of open access land, including Tyler's Common to the south of Tyler's Hall Farm and open access land near Harold Court (visual amenity reference number 1)
- Patrons of Maylands Golf Club to the northwest of junction 28 (visual amenity reference number 8)
- Users of the bridleway adjacent to the northbound carriageway of the M25, north of Jermains Wood (visual amenity reference number 6A)
- Residents of St Vincent's Hamlet (visual amenity reference letter A)
- Users of Weald Country Park, Lincoln Lane (visual amenity reference letter B)
- Users of the Byway open to all traffic connecting St Vincent's hamlet to Weald Country Park (visual amenity reference letter C)
- Users of Dagnam Park (visual amenity reference letter D)
- Residents of Sheffield Drive and Mawbery Grove, Harold Hill (visual amenity reference letter E)

9.7.50 Visual receptors identified as being of low sensitivity were:

- Employees and users of businesses between the A12 and the A1023/ Brook Street, between junction 28 and the western edge of Brentwood, comprising:
  - The Holiday Inn hotel, including conference/spa facilities (visual amenity reference number 2A and 2B)
  - The Brentwood Garden Centre (visual amenity reference number 2C)
  - The Mizu restaurant (visual amenity reference number 2F)
  - Users of the A12 dual carriageway to the west of junction 28 (visual amenity reference number 14)

9.8 Potential impacts

9.8.1 This section provides an overview of potential impacts that could result from the Scheme during its construction and operational phases.

9.8.2 The Scheme has the potential to affect landscape and visual receptors, both during construction and during operation. The location of the potential visual receptors are shown on Figure 9.8 and detailed assessments of the effects on them are given in Appendix 9.1.

Construction

Landscape

9.8.3 The key landscape effects are expected to occur during construction. These include the loss of vegetation, alteration to the landform, the presence of construction machinery as well as the introduction of man-made features.

9.8.4 It is expected that the greatest potential construction impact will occur in the area between Grove Farm and Maylands Golf Club, where the loop road and the overbridge at the A12 eastbound exit road would be introduced. It is expected that widening of the existing road corridors and the introduction of entry and exit slip roads would be less visible due to a sequential progress of construction works.

9.8.5 The alteration to the landform in ~~two areas~~one area ~~-~~located to the south west of the proposed loop road and south east~~-east~~ of Maylands Golf Club for the ~~deposition of surplus construction material~~formation of an environmental bund will create a disturbance during its construction ~~creation~~ that will alter the existing rural setting of the landscape character. This would be a temporary adverse impact during the construction phase.

Visual

9.8.6 The visual receptors may also be affected by views of heavy goods vehicle (HGVs), temporary construction lighting and other tall machinery used within the construction site. However, the potential visual effects of construction activities would be temporary, short-term, and reversible.

9.8.7 Temporary impacts to visual receptors during construction are likely to result from:

- The removal of trees and screening vegetation
- The formation of temporary spoil areas
- The formation/construction of roads and structures including utilities diversions
- Movements of construction vehicles
- The creation of new earthworks including the ~~deposit of surplus construction material~~environmental bund
- Creation and operation of site compounds

Operation

Landscape

9.8.8 It is expected that the scale of the Scheme would not result in significant effects for landscape character at a national or regional level. The potential effects on the local landscape character would be focused around Grove Farm, Alder Wood and Maylands Golf Club. The Scheme would introduce new built elements which would encroach upon the landscape setting of Maylands Golf Club resulting in a reduction to its rural setting.

9.8.9 Changes to the existing landform as a consequence of the formation of the environmental banddeposition of surplus construction material will introduce an alteration to ground levels in two areas that is uncharacteristic to its locality. Consideration has been given to the placement and extents of this banddispersal and these elements will be profiled and planted to enable them to be integrated into the surrounding landscape and reduce potential adverse impacts. Any landscape or visual impacts would will be experienced on a localised level, therefore it isthey are not expected to result in significant adverse effects.

9.8.10 The area around the junction has undulating topography; therefore, the introduction of entry and exit slip roads is likely to result in landform alteration as earthworks balancing cut and fill will be required. The field pattern may be altered between Grove Farm and the Maylands Golf Club.

9.8.11 The potential landscape effects expected from implementation of the Scheme are loss of vegetation, alteration to the landform and field pattern, as well as the introduction of associated road infrastructure. The Scheme will directly affect Alder Wood as the alignment cuts through a section of this ancient woodland, and it is expected that there will be a considerable loss of trees along the entry and exit slip roads to both the M25 and the A12.

9.8.12 The Scheme may also affect the existing levels of tranquillity in the wider local area. All these changes combined may potentially affect the local landscape character.

9.8.13 The potential effects of the Scheme on the local landscape character has been considered. It is expected that the Scheme would not result in a large magnitude of change on landscape character at a national or regional level but there would be noticeable changes at a local level.

Visual

9.8.14 The operational visual impacts of the Scheme are most likely to be long-term and permanent, although it is expected that the proposed mitigation planting will mature gradually following the construction phase. The potential visual impacts of the Scheme are summarised below in table 9.11 and described in more detail in Table 1.1 in Appendix 9.1.

Magnitude of visual impacts

9.8.15 Judgements have been made regarding the impact that the Scheme would likely have on visual receptors in terms of the degree of change (i.e. the magnitude of the impact) likely to be experienced in views. A summary is provided in Table 9.11.

Table 9.11: Summary of the magnitude of visual impacts during construction and operation

Receptor number	Visual receptor(s)	Magnitude of construction phase impacts	Magnitude of operational phase impacts (pre establishment of mitigation)
1	Users of open access land, including Tyler's Common to the south of Tyler's Hall Farm and open access land near Harold Court	Negligible	Negligible
2A & 2B	Employees and users of the Holiday Inn hotel, including conference/ spa facilities	Moderate	Negligible
2C	Employees and users of the Brentwood Garden Centre	Minor	Negligible
2E	Residents of May Cottage and Freeman's Cottage, Brook Street	Minor	Negligible
2F	Employees and users of the Mizu restaurant	Minor	Minor
4	Residents of properties along Nags Head Lane	Negligible	Negligible
5	Residents of Boyles Court Farm	Negligible	Negligible
6A	PRoW to M25 north of Jermains Wood	Moderate	Moderate
6B	Users of the bridleway following Nag's Head Lane and along the crest of the M25 cutting	Moderate	Moderate
7	Residents of Grove Farm	Major	Major
8	Patrons of Maylands Golf Club	Major	M~~ajor~~oderate
9A	Residents of Maylands Cottages	Major	Moderate~~ajor~~
9B	Residents of Johns Terrace, Harold Park	Moderate	Moderate
10	Residents of Oak Farm	Minor	Minor
11	Residents of French's Farm, Wigley Bush Lane	Negligible	Negligible
12	Residents of properties along Spital Lane, Wingrave Crescent, and Leonard Way	Negligible	Negligible
14	Users of the A12 dual carriageway to the west of junction 28	Major	Moderate
A	Residents of St Vincent's Hamlet, Weald Road	Negligible	Negligible
B	Users of Weald Country Park, Lincolns Lane	Negligible	Negligible

Receptor number	Visual receptor(s)	Magnitude of construction phase impacts	Magnitude of operational phase impacts (pre establishment of mitigation)
C	Users of the Byway Open to All Traffic connecting ST Vincent's Hamlet to Weald Country Park, Lincolns Lane	Negligible	Negligible
D	Users of Dagnam Park	Negligible	Negligible
E	Residents of Sheffield Drive and Mawbery Grove, Harold Hill	Negligible	Negligible

9.9 Design, mitigation and enhancement measures

9.9.1 A set of Preliminary environmental design drawings has been prepared for the Scheme (Figure 2.2).

9.9.2 The mitigation proposed encompasses mitigation requirements and potential enhancements for the ecology and landscape assets. The potential proposed mitigation focuses on the following principles, which have also formed part of the iterative design process for the Scheme:

- Retaining and protecting existing mature trees and hedges wherever possible, maintaining important visual screening and biodiversity habitat.
- Replacing any habitat losses as a minimum to ensure no net loss of biodiversity.
- Retaining natural character and planting local native species.
- Proposed tree planting to provide screening to sensitive receptors.
- Proposed earth ~~contouring~~ environmental bund and integrated planting.
- ~~to i~~Integrate relocated golf course hole through planting and earthworks .

9.9.3 An area to the west of the proposed loop road has been identified as a suitable area to provide woodland mitigation planting (to compensate for the loss of woodland across the Scheme during the construction works). The design of this woodland belt would include sufficient planting to provide a robust and future proofed vegetative screen for the residents at Maylands Cottages and the properties on the eastern edge of Harold Hill (Woodstock Avenue). Where possible, steps would be taken to establish the vegetative screen as early as possible by including larger plants such as of whips and feathered trees (1 m to 2 m high) as well as transplants (young trees or shrubs 0.4 m – 0.6 m high) in the native planting design.

9.9.4 Other landscape and ecological mitigation and enhancement measures may include:

- Flood compensation
- Scrub and scattered trees

- Ecology compensation areas
- Newt ponds
- Native hedgerow planting

9.9.5 Proposed mitigation planting and alterations to landform will be incorporated within the proposals for the remodelled hole 2 of Maylands Golf Club. These will aid in the offsetting of anticipated impacts upon the landscape character from the Scheme.

9.9.6 Where possible subject to slope gradients and construction build up, embankments could be planted with native trees and shrubs to replace vegetation lost during construction and to disguise the engineered form of the earthworks.

9.9.7 Where areas of surplus topsoil, alluvium and subsoil are to be placed within mitigation areas these will be incorporated into the surrounding landscape through considered grading of slopes and planting.

9.9.8 Where mitigation planting is proposed beneath existing overhead electricity lines only low growing species would be used and the statutory safety clearances maintained.

9.9.9 Industry guidelines will be followed to ensure that appropriate vegetation clearance zones are created adjacent to utility corridors.

9.10 Assessment of effects

9.10.1 The findings of the predicted landscape and visual effects should be read in conjunction with Ffigures 9.15 to 9.34 summer photomontages (AS-002 to AS-006) and Figures 9.35 to– 9.54 winter photomontages (REP1-018 to REP1-022) as well as the updated summer and winter photomontages for Viewpoint D (application document TR010029/EXAM/10.12). These demonstrate the predicted view from five locations (viewpoints A-E) (refer to Figure 9.14 photomontage location plan (AS-007) at opening year, year one and year 15 post opening.

Significant effects

Landscape effects on statutory designated sites

~~9.10.1~~9.10.2 No significant effects on the country parks within the study area either from loss of characteristic elements within the parks or their setting, nor from the introduction of new infrastructure are considered likely to arise. Weald Country Park lies 800 m to the north of the Scheme and due to the dense wooded nature of the park and surrounding topography, the Scheme would not be visible.

Landscape effects during construction

A: Tyler's Common

~~9.10.2~~9.10.3 The Scheme would have a Neutral landscape effect on this landscape character, this is as a consequence of the distance the landscape character lies from the Scheme.

B: Alder Wood

~~9.10.3~~9.10.4 The Scheme would have a Large Adverse landscape effect on this landscape character area during construction as a consequence of the introduction of the proposed loop road. The works will require the removal of existing ancient woodland and other vegetation. The removal of these elements will result in a noticeable change on the landscape character in the immediate vicinity of the junction.

C: Maylands Golf Club

~~9.10.4~~9.10.5 The Scheme would have a Large Adverse landscape effect on this landscape character area during construction as a consequence of the introduction of the proposed loop road. The works will require the removal of existing vegetation. The removal of these elements will result in a noticeable change on the landscape character in the immediate vicinity of the junction. The proposed loop road will bring the built elements of the road network closer to this receptor. The ~~deposition of surplus construction materials in both locations~~creation of the environmental bund would also have an adverse effect during its~~their creation period~~construction.

D: A12 Corridor

~~9.10.5~~9.10.6 The Scheme would have a Large Adverse landscape effect on this landscape character area during construction as a consequence of the introduction of the proposed loop road and associated slip roads. The works will require the removal of existing vegetation, including veteran trees. The removal of these elements will result in a noticeable change on the landscape character in the immediate vicinity of the junction. The proposed loop road will bring the built elements of the road network closer to this receptor.

E: Urban fringe of Brentwood

~~9.10.6~~9.10.7 The Scheme would have a Slight Adverse landscape effect on this landscape character area as a consequence of the enlargement and encroachment of the road network.

F: Urban fringe of Harold Park

~~9.10.7~~9.10.8 The Scheme would have a Slight Adverse landscape effect on this landscape character area as a consequence of the enlargement and encroachment of the road network.

G: South Weald

~~9.10.8~~9.10.9 The Scheme would have a Slight Adverse landscape effect on this landscape character area as a consequence of the enlargement and encroachment of the road network.

Landscape effects during operation

A: Tyler's Common

~~9.10.9~~9.10.10 The Scheme would have a Neutral landscape effect on this landscape character, this is as a consequence of the distance this receptor lies from the

Scheme and the retained landscape features located between these two points by year 15 the effect will remain Neutral.

B: Alder Wood

~~9.10.10~~9.10.11 The Scheme would have a Large Adverse landscape effect on this landscape character area during operation, due to existing mature vegetation being lost during construction. There is an increase in size and influence of the new road infrastructure. By year 15 when the mitigation planting matures, the effect on the landscape would be Moderate Adverse.

C: Maylands Golf Club

~~9.10.11~~9.10.12 The Scheme would have a Large Adverse landscape effect on this landscape character area during operation due to existing mature vegetation lost during construction. There is an increase in size and influence of the new road infrastructure. The creation of ~~earth mounds as a consequence of the deposition of surplus construction materials~~an environmental bund ~~in both locations~~ would create additional elements within the landscape character area. By year 15 when the mitigation planting matures, the effect on the landscape would be Moderate Adverse.

D: A12 Corridor

~~9.10.12~~9.10.13 The Scheme would have a Large Adverse landscape effect on this landscape character area during operation due to existing mature vegetation lost during construction. There is an increase in size and influence of the new road infrastructure. By year 15 when the mitigation planting matures, the effect on the landscape would be Moderate Adverse.

E: Urban fringe of Brentwood

~~9.10.13~~9.10.14 The Scheme would have a Slight Adverse landscape effect on this landscape character area during operation due to the increased proximity of the road infrastructure. By year 15 when the mitigation planting matures, the effect on the landscape would be Neutral.

F: Urban fringe of Harold Park

~~9.10.14~~9.10.15 The Scheme would have a Slight Adverse landscape effect on this landscape character area during operation due to the increased proximity of the road infrastructure. By year 15 when the mitigation planting matures, the effect on the landscape would be Neutral.

G: South Weald

~~9.10.15~~9.10.16 The Scheme would have a Slight Adverse landscape effect on this landscape character area during operation due to the increased proximity of the road infrastructure. By year 15 when the mitigation planting matures, the effect on the landscape would be Neutral.

Significance of landscape effects

~~9.10.16~~9.10.17 A summary of the effects set out above is provided in Table 9.12.

Table 9.12: Summary of landscape significance of effects

Significance of effect	LCAs affected during construction	LCAs affected during operation year 1	LCAs affected during operation year 15
Very large adverse	0	0	0
Large adverse	3	3	0
Moderate adverse	0	0	3
Slight adverse	3	3	0
Neutral	1	1	4
Slight beneficial	0	0	0

Visual effects during construction

Residential receptors

9.10.18 The Scheme would have Very Large Adverse visual effects on residential properties at Grove Farm and Maylands Cottages where they have direct open views towards the junction. The removal of mature vegetation would increase the visibility of the road infrastructure. The ~~deposition of surplus construction materials in both locations~~ formation of the environmental bund would also create a visible element~~s~~ during its~~their~~ creation period.

9.10.19 Residential receptors at Johns Terrace (Harold Park) would experience Moderate Adverse visual effects.

~~9.10.17~~9.10.20 Residential receptors at May/Freemans Cottage, Oak Farm and French's Farm would experience Slight Adverse visual effects.

Residential receptors

9.10.21 The Scheme would have Moderate Adverse visual effects on patrons of Maylands Golf Club where they have direct open views towards the Scheme.

~~9.10.18~~9.10.22 The Scheme would have Moderate Adverse visual effects on PRoW users to Bridleway 272_186 and Byway 272_151, where they have elevated views towards the junction. This would be due to the disruption caused during construction of the loop and slip roads, including the removal of mature vegetation.

~~9.10.19~~9.10.23 The Scheme would have Slight Adverse visual effects on the recreational facility of Holiday Inn Hotel. The hotel has open views towards the road corridor and the removal of mature vegetation to accommodate the works will increase the presence of the Scheme. ~~Residential receptors at May/Freemans Cottage and French's Farm would also experience Slight Adverse visual effects.~~

~~9.10.20~~9.10.24 These impacts would be as a result of construction activities being a prominent feature within the view. Users of the A12 and M25 will experience

disturbances from construction activities including the movement of plant and machinery.

Visual effects during operation (year 1)

Residential receptors

9.10.25 The Scheme would have Very Large Adverse visual effects on the residential property~~ies~~ at Grove Farm ~~and Large Adverse visual effects on Maylands Cottages~~ where it~~they~~ has~~ve~~ direct open views towards the junction.

9.10.26 The Scheme would have Large Adverse visual effects on Maylands Cottages. The~~se~~ open views towards the completed Scheme from Maylands Cottages would ~~-~~includ~~e~~ing the ~~earth mounds~~environmental bund ~~in both locations created from the deposition of surplus construction materials~~ within the foreground. The proposed height of the bund would assist with screening the views of passing vehicles on the western portion of the loop road~~,~~. As ~~prior to~~ the ~~-~~mitigation planting becomes~~ing~~ established, a ~~would introduce~~ greater visual screening would be provided to the~~increased visibility of~~ users of other parts of the road network.

9.10.27 Residential receptors at Johns Terrace (Harold Park) would experience Moderate Adverse visual effects.

Recreational receptors

9.10.28 The Scheme would have Moderate Adverse visual effects on patrons of Maylands Golf Club where they have direct open views towards the Scheme. These open views towards the completed Scheme would include the visibility of passing vehicles and built elements. The visibility of these elements would be reduced as the mitigation planting becomes established.

~~9.10.21~~9.10.29 The Scheme would have Moderate Adverse visual effects on PRoW users to Bridleway 272_186 and Byway 272_151, where they have elevated views towards the junction. These views towards the completed Scheme prior to mitigation planting becoming established would introduce increased visibility of users of the road network.

~~9.10.22~~9.10.30 The Scheme would have Slight Adverse visual effects on the ~~recreational facility of Holiday Inn Hotel,~~ residential receptors at Oak Farm, May/Freemans Cottage and French's Farm would also experience Slight Adverse visual effects. These views towards the completed Scheme prior to mitigation planting becoming established would introduce increased visibility of users of the road network.

~~9.10.23~~9.10.31 The Scheme would have Slight Adverse visual effects on the ~~U~~users of the A12 and M25 who will experience an increased view of the road network. Proposed mitigation planting will only have a limited effect upon these receptors due to their proximity to the Scheme.

Visual effects during operation (year 15)

Residential receptors

~~9.10.24~~9.10.32 The Scheme would have Large Adverse visual effects on the residential property at Grove Farm where they have direct open views towards the junction. These open views towards the completed Scheme, ~~including the two earth mounds created to accommodate surplus construction material,~~ will be reduced by the maturing mitigation planting as well as the proposed height of the environmental bund which ~~will reduce the likely visibility of portions of the junction.~~ would assist with screening the views of passing vehicles on the western portion of the loop road.

9.10.33 The Scheme would have Slight~~Moderate~~ Adverse visual effects on the following residential receptors:

- ~~patrons of Maylands Golf Club and~~ Maylands Cottages
- ~~and residents of~~ May Cottages
- Freemans Cottages
- Oak Farm
- ~~-~~John's Terrace. ~~where they have elevated direct open views towards the junction where they have direct open views towards the junction.~~

9.10.34 These open views towards the completed Scheme will be reduced by the maturing mitigation planting, which will reduce the likely visibility of the junction.

Recreational receptors

~~9.10.25~~9.10.35 The Scheme would have Slight Adverse visual effects on patrons of Maylands Golf Club where they have direct open views towards the junction. These open views towards the completed Scheme will be reduced by the maturing mitigation planting which will reduce the likely visibility of the junction.

~~9.10.26~~9.10.36 The Scheme would have Slight Adverse visual effects on PRoW users to Bridleway 272_186 and Byway 272_151, users of the A12.~~,~~ ~~residents of May/Freemans Cottages and John's Terrace where they have elevated views towards the junction.~~ These elevated views towards the completed Scheme will be reduced by the maturing mitigation planting which will reduce the likely visibility of the junction.

Significance of visual effects

~~9.10.27~~9.10.37 Visual effects significance is determined by assessing the sensitivity of receptors against the magnitude or degree of change of view resulting from the Scheme. A summary is provided in Table 9.13.

Table 9.13: Summary of visual effects significance

Receptor number	Visual receptor(s)	Significance of construction phase effects	Significance of operational phase effect (year 1 winter)	Significance of operational phase effects (year 15 summer)
1	Users of open access land, including Tyler's Common to the south of Tyler's Hall Farm and open access land near Harold Court	Neutral	Neutral	Neutral
2A & 2B	Employees and users of the Holiday Inn hotel, including conference/ spa facilities	Slight Adverse	Neutral	Neutral
2C	Employees and users of the Brentwood Garden Centre	Neutral	Neutral	Neutral
2E	Residents of May Cottage and Freeman's Cottage, Brook Street	Slight Adverse	Slight Adverse	Slight Adverse
2F	Employees and users of the Mizu restaurant	Neutral	Neutral	Neutral
4	Residents of properties along Nags Head Lane	Neutral	Neutral	Neutral
5	Residents of Boyles Court Farm	Neutral	Neutral	Neutral
6A	PRoW to M25 north of Jermains Wood	Moderate Adverse	Moderate Adverse	Slight Adverse
6B	Users of the bridleway following Nag's Head Lane and along the crest of the M25 cutting	Moderate Adverse	Moderate Adverse	Slight Adverse
7	Residents of Grove Farm	Very Large Adverse	Very Large Adverse	Large Adverse
8	Patrons of Maylands Golf Club	~~Very~~ Moderate~~Large~~ Adverse	~~Large~~ Moderate Adverse	~~Moderate~~ Slight Adverse
9A	Residents of Maylands Cottages	Very Large Adverse	~~Very~~ Large Adverse	Slight~~Moderate~~ Adverse

Receptor number	Visual receptor(s)	Significance of construction phase effects	Significance of operational phase effect (year 1 winter)	Significance of operational phase effects (year 15 summer)
9B	Residents of Johns Terrace, Harold Park	Moderate Adverse	Moderate Adverse	Slight Adverse
10	Residents of Oak Farm	Slight Adverse	Slight Adverse	Slight Adverse
11	Residents of French's Farm, Wigley Bush Lane	Slight Adverse	Neutral	Neutral
12	Residents of properties along Spital Lane, Wingrave Crescent, and Leonard Way	Neutral	Neutral	Neutral
14	Users of the A12 dual carriageway to the west of junction 28	Slight Adverse	Slight Adverse	Slight Adverse
A	Residents of St Vincent's Hamlet, Weald Road	Neutral	Neutral	Neutral
B	Users of Weald Country Park, Lincolns Lane	Neutral	Neutral	Neutral
C	Users of the Byway Open to All Traffic connecting ST Vincent's Hamlet to Weald Country Park, Lincolns Lane	Neutral	Neutral	Neutral
D	Users of Dagnam Park	Neutral	Neutral	Neutral
E	Residents of Sheffield Drive and Mawbery Grove, Harold Hill	Neutral	Neutral	Neutral

~~9.10.28~~9.10.38 A summary of the effects set out above is provided in Table 9.14.

Table 9.14: Summary of visual significance of effects – Residential receptors

Significance of Effect	Number of visual receptors affected during construction	Number of visual receptors affected in year 1	Number of visual receptors affected in year 15
Very large adverse	2	~~1~~2	0
Large adverse	0	~~1~~0	1
Moderate adverse	1	~~0~~1~~1~~	~~0~~1
Slight adverse	3	~~3~~2~~2~~	~~4~~3
Neutral	5	6	6
Slight beneficial	0	0	0

Users of public rights of way and recreational receptors

Visual effects during construction

~~9.10.29~~9.10.39 The following PRoW and recreational receptors would be likely to experience Moderate Adverse visual effects:

- PRoW 272_186 (north)
- PRoW 272_186 (south)
- Maylands Golf Club

~~9.10.30~~9.10.40 The following PRoW and recreational receptors would be likely to experience Slight Adverse visual effects:

- ~~Tylers Common~~
- Holiday Inn

~~9.10.31~~9.10.41 The following PRoW and recreational receptors would be likely to experience Neutral visual effects:

- Mizu restaurant
- Weald Country Park
- Byway 272_151
- Dagnam Park
- Brentwood Garden Centre
- Tylers Common

Visual effects during operation – year 1

~~9.10.32~~9.10.42 The following PRoW and recreational receptors would be likely to experience Moderate Adverse visual effects:

- PRoW 272_186 (north)

- PRoW 272_186 (south)
- Maylands Golf Club

~~9.10.33~~9.10.43 The following PRoW and recreational receptors would be likely to experience Neutral visual effects:

- Tylers Common
- Holiday Inn
- Brentwood Garden Centre
- Mizu restaurant
- Weald Country Park
- Byway 272_151
- Dagnam Park

Visual effects during operation – year 15

~~9.10.34~~9.10.44 The following PRoW and recreational receptors would be likely to experience Slight Adverse visual effects:

- PRoW 272_186 (north)
- PRoW 272_186 (south)
- Maylands Golf Club

~~9.10.35~~9.10.45 The following PRoW and recreational receptors would be likely to experience Neutral visual effects:

- Tylers Common
- Holiday Inn
- Brentwood Garden Centre
- Mizu restaurant
- Weald Country Park
- Byway 272_151
- Dagnam Park

~~9.10.36~~9.10.46 A summary of the effects set out above is provided in Table 9.15.

Table 9.15: Summary of visual significance of effects – Users of Public Rights of Way and recreational receptors

Significance of Effect	Number of visual receptors affected during construction	Number of visual receptors affected in year 1	Number of visual receptors affected in year 15
Very large adverse	0	0	0
Large adverse	0	0	0
Moderate adverse	3	3	0
Slight adverse	~~2~~1	0	3
Neutral	~~5~~6	7	7
Slight beneficial	0	0	0

Users of roads

Visual effects during Construction

~~9.10.37~~9.10.47 The following road users will experience a Slight Adverse visual effect:

- Users of A12

Visual effects during Operation – year 1

~~9.10.38~~9.10.48 The following road users will experience a Slight Adverse visual effect:

- Users of A12

Visual effects during Operation – year 15

~~9.10.39~~9.10.49 The following road users will experience a Slight Adverse visual effect:

- Users of A12

~~9.10.40~~9.10.50 A summary of the impacts set out above is provided in Table 9.16.

Table 9.16: Summary of visual significance of effects – Road users

Significance of Effect	Number of visual receptors affected during construction	Number of visual receptors affected in year 1	Number of visual receptors affected in year 15
Very large adverse	0	0	0
Large adverse	0	0	0
Moderate adverse	0	0	0
Slight adverse	1	1	1
Neutral	0	0	0
Slight beneficial	0	0	0

Residual effects

~~9.10.41~~9.10.51 Residual effects refer to those environmental effects predicted to remain after the application of mitigation and enhancement measures outlined in each environmental topic.

~~9.10.42~~9.10.52 The predicted residual effects are considered for each phase of the Scheme (construction and operation). In accordance with the criteria established in section 9.5 significance has been determined for each residual adverse effect, with no significance rating established for positive residual effects.

~~9.10.43~~9.10.53 In relation to this Scheme and identified mitigation measures, there would be significant residual effects upon ~~three~~ one residential receptor~~s~~ which include~~s~~ residents of Grove Farm ~~and Maylands Cottages and patrons of Maylands Golf Club~~ by year 15 of the operational period.

9.11 Cumulative effects

9.11.1 The criteria for the selection of developments to be included in the cumulative assessment is set out in the Assessment of Cumulative Effects chapter (Chapter 15). The developments assessed in Table 9.17 are based on the developments identified in the shortlist of Other Developments see Table 15.4.

9.11.2 In relation to this Scheme, it is assessed, based on the current status of other schemes identified and the information available, that there is unlikely to be any significant cumulative effects upon the identified receptors as a consequence of other developments by year 15 of the operational period.

Table 9.17: Cumulative effects

Other schemes	Cumulative impact on assets affected by the Scheme	Additional significant construction effects	Additional significant operation effects
Small, medium, large wind development sites	None anticipated	As the small, medium and large wind development sites are theoretical in nature, there is insufficient information to determine whether there would be any cumulative effects resulting from construction of the proposals. Presently, there is insufficient information to determine the cumulative effects during construction.	The extent of the cumulative impact of multiple potential variable-scale wind developments in conjunction with the Scheme is likely to not lead to a significant cumulative effect. The extent of this significance is indeterminable due to insufficient information regarding the likelihood of these proposals going ahead and the exact proposals for the wind development sites. The impacts upon visual receptors are indeterminable with the current level of information, however it is likely that there would be significant

Other schemes	Cumulative impact on assets affected by the Scheme	Additional significant construction effects	Additional significant operation effects
			adverse effects upon sensitive receptors in proximity or with prominent inter-visibility of the proposals.
Lower Thames Crossing	The Scheme may impact road users (visual receptors) this would be seen within the context of the highway corridor. No cumulative impacts are anticipated.	As the construction periods between the Lower Thames Crossing will coincide with the end of the construction works of the Scheme, there is the potential for there to be some adverse cumulative construction effects if the construction works are phased such that they are in close proximity to one another, in this instance there may be a degree of inter-visibility and therefore a greater significance of effect. If this worst case scenario were to be realised, then it is possible that there would be Slight adverse and not significant cumulative effects.	On a regional scale, adverse effects will result from the proposed development and the Scheme, which will have led to further urbanisation along the M25 corridor and severance of agricultural land and landscape elements, further urbanising the local environment and the regional landscape character. However, due to the nature of the works of the Scheme relative to the Lower Thames Crossing proposals, once the proposals are in operation, there is unlikely to be any significant effects regarding inter-visibility, as the proposed works in this area are not significantly different to the existing situation, and therefore, once the mitigation planting has sufficiently established the proposals will likely be of Neutral and not significant effect in this localised area adjacent to Foxburrow Wood.
Cycleway Proposals	None anticipated	The exact nature of the proposed development would be required to determine the significance of the effects in conjunction with the Scheme.	Due to the nature of the proposed works, once the projects are operational, there is unlikely to be any significant cumulative effects resulting from the proposed development and the Scheme
Boyles Court Farm, Dark Lane	None anticipated	Given the distance of the proposed development from the Scheme, it is unlikely that there would be any degree of intervisibility between the two projects during construction.	Due to the nature of the proposed works, once the projects are operational, there is unlikely to be any significant cumulative effects resulting from the proposed development and the Scheme.

Other schemes	Cumulative impact on assets affected by the Scheme	Additional significant construction effects	Additional significant operation effects
Ford Offices, Eagle Way	None anticipated	Given the distance of the proposed development from the Scheme, it is unlikely that there would be any degree of intervisibility between the two projects during construction.	Due to the nature of the proposed works, once the projects are operational, there is unlikely to be any significant cumulative effects resulting from the proposed development and the Scheme.
Brentwood Enterprise Park	None anticipated	Given the distance of the proposed development from the Scheme, it is unlikely that there would be any degree of intervisibility between the two projects during construction.	Due to the nature of the proposed works, once the projects are operational, there is unlikely to be any significant cumulative effects resulting from the proposed development and the Scheme.
Gallows Corner	None anticipated, proposed works would be of a sufficient distance away from the Scheme and of a small scale to not have any potential impacts on receptors either directly or indirectly.	Given the distance of the proposed development from the Scheme, it is unlikely that there would be any degree of intervisibility between the two projects during construction. Confirmation of the exact construction period for Gallows Corner would be required – as it may be that the two projects do not have any degree of overlap in their programmes. There may be some significant effects to users of the A12 as they travel along this route if construction works were to occur simultaneously – however, due to the low sensitivity of this receptor – the effects are likely to be Slight adverse and not significant overall.	Due to the nature of the proposed works, once the projects are operational, there is unlikely to be any significant cumulative effects resulting from the proposed development and the Scheme, this is because the works to Gallows Corner would largely maintain the character of the baseline conditions and would blend in with the characteristics features and elements of that location, therefore cumulative effects resulting from the proposed development and the Scheme would likely be Neutral.
The Caravan Park, Putwell Bridge	The Scheme may impact road users (visual receptors) this would be seen within the context of the highway corridor. No cumulative	The exact nature of the proposed development would be required to determine the significance of the effects in conjunction with the Scheme and whether any mitigation measures are proposed so as to screen the development from any receptors in proximity to it. It is not known whether the	Presently, the site for the proposed development adjoining the M25 is already fairly urban and slightly degraded in nature with urbanising, variable-colour steel palisade fencing, caravans, hardstanding and storage containers. If the site were to be developed to provide space for additional

Other schemes	Cumulative impact on assets affected by the Scheme	Additional significant construction effects	Additional significant operation effects
	impacts are anticipated.	construction periods would overlap and therefore, presently, there is insufficient information to determine the significance of cumulative effects during construction.	caravans there is potential for further degradation of this site, however, there is also opportunity to mitigate against this through the provision of screening planting and appropriate/sensitive selection of materials for boundary fencing etc. Without detailed information regarding the proposed development it is not possible to determine whether the cumulative effects resulting from the proposed development and the Scheme during operation would be significant or slightly beneficial in nature.
Land east of Nags Head Lane	The Scheme may impact road users (visual receptors) this would be seen within the context of the highway corridor. No cumulative impacts are anticipated.	Presently there is insufficient information available to determine whether there would be any significant cumulative construction effects between the proposed development and the Scheme.	It is possible that there would be a degree of intervisibility between the proposed development and the Scheme, however, due to the insufficient information available regarding the design of the proposed development it is unclear whether there would be any suitable mitigation measures to limit such intervisibility. As the works to the Scheme in proximity to the development are fairly minor in nature, it is unlikely that the Scheme will have any significant effects to the landscape character or to visual receptors within this area. However, the proposed development will further encroach upon the rural landscape – with the loss of additional agricultural land, leading to an expansion of the urban edge of Brentwood, this in conjunction with the expansion of the M25 in proximity to this location will lead to a Slight adverse but not significant cumulative effect.

Other schemes	Cumulative impact on assets affected by the Scheme	Additional significant construction effects	Additional significant operation effects
Westbury Road Car Park	None anticipated	Presently there is insufficient information available to determine whether there would be any significant cumulative construction effects between the proposed development and the Scheme. There would be no degree of intervisibility between the proposed development and the Scheme, however, there may be disruption to local road users if the construction works were to occur simultaneously.	There would be no degree of intervisibility between the proposed development and the Scheme. The proposed development is within an urban area of Brentwood – with existing residential properties opposite and adjacent to the existing car park. The change of use of the car park to provide additional housing is unlikely in conjunction with the Scheme to lead to any significant cumulative effects – therefore cumulative effects for the operational stage are Neutral.
Chatham Way/ Crown Street Car Park	None anticipated	Presently there is insufficient information available to determine whether there would be any significant cumulative construction effects between the proposed development and the Scheme. There would be no degree of intervisibility between the proposed development and the Scheme, however, there may be disruption to local road users if the construction works were to occur simultaneously.	There would be no degree of intervisibility between the proposed development and the Scheme. The proposed development is within an urban area of Brentwood – with existing residential properties opposite and adjacent to the existing car park. The change of use of the car park to provide additional housing is unlikely in conjunction with the Scheme to lead to any significant cumulative effects – therefore cumulative effects for the operational stage are Neutral.
Land at Hunter House	None anticipated	Presently there is insufficient information available to determine whether there would be any significant cumulative construction effects between the proposed development and the Scheme. There would be no degree of intervisibility between the proposed development and the Scheme, however, there may be disruption to local road users if the construction works were to occur simultaneously.	There would be no degree of intervisibility between the proposed development and the Scheme. The proposed development is within an urban area of Brentwood – with existing residential properties including flats and houses within proximity of the development. The addition of more dwellings within this location is unlikely in conjunction with the Scheme to lead to any significant cumulative effects – therefore cumulative effects for the

Other schemes	Cumulative impact on assets affected by the Scheme	Additional significant construction effects	Additional significant operation effects
			operational stage are Neutral.
William Hunter Way Car Park	None anticipated	Presently there is insufficient information available to determine whether there would be any significant cumulative construction effects between the proposed development and the Scheme. There would be no degree of intervisibility between the proposed development and the Scheme, however, there may be disruption to local road users if the construction works were to occur simultaneously.	There would be no degree of intervisibility between the proposed development and the Scheme. The proposed development is within an urban area of Brentwood – with existing residential properties opposite and adjacent to the existing car park. The change of use of the car park to provide additional housing is unlikely in conjunction with the Scheme to lead to any significant cumulative effects – therefore cumulative effects for the operational stage are Neutral
Dunton Hills Garden Village	None anticipated	Presently there is insufficient information available to determine whether there would be any significant cumulative construction effects between the proposed development and the Scheme, due to lack of information regarding the construction programme for the proposed development. There would be no degree of intervisibility between the proposed development and the Scheme.	Without a definitive masterplan for the Dunton Hills Garden Village it is difficult to determine the likely impact of the Scheme, however, it is reassuring to see that the eastern section and areas within the scheme will be set aside for landscape / habitat allocation. However, this is a significant residential scheme that will essentially lead to further urban expansion of the town of Basildon, encroaching on agricultural land and important habitats / landscape elements. Although there is no degree of intervisibility between the proposed development and the Scheme, on the regional landscape there are likely to be some significant cumulative effects on the wider landscape due to the loss of green belt. At a local scale the cumulative effects are likely to be Slight adverse but not significant as the two proposals have no degree of intervisibility

Other schemes	Cumulative impact on assets affected by the Scheme	Additional significant construction effects	Additional significant operation effects
			and are not in close proximity.
Gardens of Peace (formerly known as Land at Oak Farm)	None anticipated	With the construction programme for the proposed development unknown, it is not possible to determine whether there will be any significant cumulative effects resulting from the proposed development and the Scheme. However, if the construction programmes were to occur simultaneously it is likely that there may be some significant cumulative effects to local road users and residents whilst the works are undertaken.	The proposed development proposals are sensitive to the surrounding context and to residential receptors and road users adjacent or in proximity to the site. Once the proposed development and the Scheme are in operation and all mitigation planting has been established, there are unlikely to be any significant cumulative effects resulting from the two proposals - therefore, cumulative effects for the operational stage are Neutral.
Former Harold Wood Hospital	None anticipated	The proposed development is currently under construction and this period is likely to run until 2021 – therefore it is likely that there will be some degree of overlap between the proposed development and the Scheme. There is no degree of intervisibility between the development and the Scheme, however, there are likely to be some Slight adverse but not significant cumulative effects to local road users as a result of the two proposals. These effects would be short-term and temporary in nature.	Once the proposed development and the Scheme are operational it is unlikely that there would be any adverse significant cumulative effects resulting from the two proposals. The proposed development is already in a built-up area adjacent to industrial units and when combined with the Scheme is unlikely to result in any adverse or significant cumulative effects, therefore, cumulative effects for the operational stage are Neutral.
Regent House (A)	None anticipated	With overlapping construction programmes, it is possible that there may be an increase in construction traffic using the local road network and therefore there may be some Slight adverse but not significant cumulative effects resulting from the overlapping construction programmes. However, there is no intervisibility between the proposals and	There is no degree of intervisibility between the two proposals. Given the nature of the proposed development (conversion of an office building to residential) – there will be no significant cumulative effects, therefore, cumulative effects for the operational stage are Neutral.

Other schemes	Cumulative impact on assets affected by the Scheme	Additional significant construction effects	Additional significant operation effects
		therefore cumulative effects are unlikely to be of significance.	
Regent House (B)	None anticipated	The proposed development's planning status is currently 'pending construction'. Therefore there is insufficient information available to determine whether there would be any significant cumulative construction effects between the proposed development and the Scheme. There would be no degree of intervisibility between the proposals, however, if the construction programmes were to occur simultaneously there may be some significant cumulative effects to local road users.	There would be no degree of intervisibility between the two proposals. The proposed development is likely to lead to some enhancements to the existing site through conversion of the carpark into a new residential building and landscaping improvements, these measures would not be out of keeping with the surrounding built-up area. There would be no significant cumulative effects, therefore, cumulative effects for the operational stage are Neutral
Essex Police & La Plata House	None anticipated	Potential for overlapping construction programmes, it is possible that there may be an increase in construction traffic using the local road network and therefore there may be some Slight adverse but not significant cumulative effects resulting from the proposals. However, there is no degree of intervisibility between the proposals and therefore cumulative effects are unlikely to be of significance.	There is no degree of intervisibility between the two proposals. The proposed development is situated within an existing built-up area comprised of residential properties and therefore would not be out of keeping with the existing situation. There will be no significant operational cumulative effects, therefore, cumulative effects for the operational stage are Neutral
141 to 147 High Street	None anticipated	Potential for overlapping construction programmes, it is possible that there may be an increase in construction traffic using the local road network and therefore there may be some Slight adverse but not significant cumulative effects resulting from the proposals. However, there is no degree of intervisibility between the proposals and therefore cumulative effects	There is no degree of intervisibility between the two proposals. The proposed development is situated within an existing built-up area comprised of mixed-use buildings including buildings of a similar height, and therefore would not be out of keeping with the existing situation. There will be no significant operational cumulative effects, therefore,

Other schemes	Cumulative impact on assets affected by the Scheme	Additional significant construction effects	Additional significant operation effects
		are unlikely to be of significance	cumulative effects for the operational stage are Neutral
Kings House 101 – 135 Kings Road	None anticipated	Potential for overlapping construction programmes, it is possible that there may be an increase in construction traffic using the local road network and therefore there may be some Slight adverse but not significant cumulative effects resulting from the proposals. However, there is no degree of intervisibility between the proposals and therefore cumulative effects are overall unlikely to be of significance	There is no degree of intervisibility between the two proposals. The proposed development is situated within an existing built-up area comprised of mixed-use buildings including buildings of a similar height, and therefore would not be out of keeping with the existing situation. There will be no significant cumulative operational effects, therefore, cumulative effects for the operational stage are Neutral
Land Formerly Known As NV Tools	None anticipated	Potential for overlapping construction programmes, it is possible that there may be an increase in construction traffic using the local road network and therefore there may be some Slight adverse but not significant cumulative effects resulting from the proposals. However, there is no degree of intervisibility between the proposals and therefore cumulative effects are overall unlikely to be of significance.	There is no degree of intervisibility between the two proposals. The proposed development is situated within an existing built-up area comprised of residential and industrial units, and therefore would not be out of keeping with the existing situation. There will be no significant cumulative operational effects, therefore, cumulative effects for the operational stage are Neutral.

9.12 NPS NN compliance

9.12.1 The assessment for this Scheme has considered potential impacts as set out in paragraphs 5.143 to 5.146, 5.149, 5.158 to 5.164 and 5.184 to 5.185 of the National Policy Statement for National Networks (NPS NN).

9.12.2 This chapter of the ES provides an assessment of the significance of effects of the Scheme on landscape and visual receptors.

9.12.3 It is considered that the potential mitigation and compensation options being proposed for this Scheme demonstrate a strong effort to provide opportunities to conserve and advance landscape value. Effort has been made to conserve as much of the landscape features that offer landscape value as possible, for example avoiding unnecessary loss of ancient woodland areas and veteran

trees. Where the landscape value has been degraded then potential mitigation measures have been proposed that aim to either replace or replicate features lost as a consequence of the Scheme.

9.12.4 In addition, it is considered that the potential mitigation and compensation options being proposed both during and post construction activities for this Scheme comply with the points listed in paragraphs 5.144, 5.145 and 5.146.

9.12.5 In accordance with the NPS NN (paragraph 5.32), the loss of Ancient Woodland has been avoided, and loss of veteran trees has been minimised to the unavoidable loss of two veteran trees. The Technical Note regarding Veteran Trees provided at Appendix C to the Case for the Scheme (application document TR010029/APP/7.1) explains why the loss of two veteran trees is considered unavoidable.

9.13 Monitoring

Construction

9.13.1 The Outline Construction Environmental Management Plan (Outline CEMP) (application reference TR010029/APP/7.2) sets out the monitoring requirements and procedures to be implemented to reduce or eliminate impacts on the environment during the construction phase of works. The CEMP must be substantially in accordance with the Outline CEMP. An Environmental Clerk of Works or Site Environmental Manager will be appointed to ensure that objectives of the CEMP are achieved. The Environmental Clerk of Works or Site Environmental manager will be required to monitor construction activities that would cause likely significant effects including:

- The effectiveness and suitability of root protection fencing ensuring no impacts to trees that are to be retained. The areas of most concern are areas covered by TPO's and veteran trees as outlined in the Arboriculture Impact Assessment (Appendix 7.7).
- Working hours of operation of the main works and in site compounds which may produce visual, noise or lighting impacts in particular on adjacent residential receptors.
- The angle and direction of night time lighting, to ensure that it is not directly focussed on adjacent residential receptors.

Operation

9.13.2 In order to enable the proposed planting regime to establish and mature to fulfil its environmental, landscape and visual function it will be necessary to ensure that an appropriate management regime is undertaken. The specification for this Scheme will identify a 5-year maintenance regime to ensure the establishment and maintenance of the landscape design A further period of management will be proposed to ensure the continued successful establishment of the proposals with details set out in a Landscape and Ecological Management and Monitoring Plan (LEMP) to be secured by requirement 5 of the DCO (application document TR010029/APP/3.1) (see the Outline LEMP in Appendix 7.16 (application document TR010029/APP/6.3). These would be funded by Highways England as part of the Scheme. A programme of monitoring visits and reports would be

carried out during the maintenance and management periods. Remedial operations identified by the monitoring required to ensure the success of the planting and management proposals would be carried out.

9.13.3 A Handover Environmental Management Plan forms part of Highways England's package of documents required for every project and would be prepared at the end of the maintenance and management periods, to identify and stipulate the appropriate long-term management goals and requirements for the planting and managed woodlands to achieve the objectives.

9.14 Summary

9.14.1 The Scheme is surrounded by areas of ancient and mature woodland, agricultural land, golf course and un-managed fields. The published landscape character assessments referenced within this chapter reflect these features.

9.14.2 The A12 and M25 are dominant elements in the landscape which detract from the attractiveness of the area. They create significant visual impact on the area, although this is ameliorated to some degree by the surrounding vegetation and they create noise impacts on the area which also make the area less appealing for visitors and residents.

9.14.3 The Scheme has been designed to avoid or reduce, as far as practicable, the adverse effects associated with improvements to this major highway interchange. Adverse effects are however unavoidable and to enable the Scheme to be built it would require the loss of areas of ancient and mature woodland and other vegetation. This would include two veteran trees. These losses would lead to a significant adverse impact on the existing landcover which would only be mitigated or compensated for in the medium to long-term as the new planting establishes. There would be relatively little impact on the landform of the area with mostly small scale earthworks and extensive use of retaining walls to limit the extent of land take and impact on the surrounding area.

9.14.4 The loss of planting and the construction of the Scheme would affect the character of the area. The influence of the M25 and A12 does notably detract from the area both visually and audibly and these highways now form an intrinsic part of the character of the area. As such the effects of the highway works on landscape character would not be as significant as they would if there were no existing highways in the location.

9.14.5 The Scheme design also includes planting and habitat creation required to reduce impacts on biodiversity recourses, particularly loss of land within Ingrebourne Valley Site of Metropolitan Importance for Nature Conservation and impacts on priority and protected species. This includes area of grassland, woodland and scrub. Habitats within land permanently acquired for the Scheme would be managed and monitored as part of a long-term management plan.

9.14.6 The adverse effects of the Scheme on visual receptors during the operational phase at opening would likely be significant to ~~nine~~six visual receptors. With implantation and establishment of the mitigation and compensation measures that form an integral part of the Scheme these adverse effects would reduce for the majority of visual receptors down to ~~three~~one experiencing significant impacts in the fifteenth year after opening.

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