

# Lower Thames Crossing

## 6.3 Environmental Statement Appendices Appendix 7.2 – Landscape and Visual Assessment Methodology

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## Lower Thames Crossing

### 6.3 Environmental Statement Appendices Appendix 7.2 – Landscape and Visual Assessment Methodology

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# 1 Introduction

- 1.1.1 At the time of preparing the baseline information for the landscape and visual assessments and undertaking consultation with stakeholders, Interim Advice Note (IAN) 135/10 Landscape and visual effects assessment (Highways Agency, 2010) was the principal guidance document being used to prepare the landscape and visual assessment methodology, with the consideration of more recent guidance set out in Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA 3) (Landscape Institute and Institute of Environmental Management and Assessment, 2013).
- 1.1.2 However, at the time of submission, Design Manual for Roads and Bridges LA 107 Landscape and Visual Effects Revision 2 (Highways England, 2020a) (hereafter referred to as 'LA 107') had superseded IAN 135/10. The full assessment document has been re-written to make it compliant with the new National Highways standards, and therefore LA 107 has been considered as the basis for this assessment and determines the methodology.
- 1.1.3 For Chapter 7: Landscape and Visual (Application Document 6.3), the following Project stages have been assessed:
- a. The assessment of construction effects has considered the reasonable worst-case situation whereby construction activity is at its peak and is assumed to occur over a medium-term period of time.
  - b. The assessment of operational effects has considered the following:
    - i. Opening Year – a winter's day in the year that the Project would open to traffic or be fully operational (i.e. with noise/visual screens and false cutting earthworks in place but before any planted mitigation has begun to take effect), with all construction activity completed. This reflects the reasonable worst-case scenario in which the Project is in operation and most visible. This has included assessment of the qualitative changes to the night-time environment.
    - ii. Design Year – a summer day 15 years after opening (i.e. when the planted mitigation measures can be assumed to be substantially effective). A winter day 15 years after opening has also been reported to identify any seasonal variation. The Design Year assessment has included assessment of the qualitative changes to the night-time environment.

## 2 Landscape character and visual amenity

### 2.1 Introduction

- 2.1.1 Landscape character is considered an entity in its own right; being areas and places which have evolved over time with their inherent features providing their distinctive character. Landscape is defined as ‘...an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors’ (Council of Europe, 2000).
- 2.1.2 Landscape character therefore draws upon the distinct and recognisable patterns of elements in the landscape that give a locality its sense of place and which makes it different from its neighbouring areas. Taken together, these patterns of elements form a collective 'landscape character area' which can be used to define the locality. An evaluation of these character areas has been made in the landscape and visual assessment to identify the qualities, values and sensitivities which could potentially be affected by the Project.
- 2.1.3 Visual amenity is a linked but separate resource which considers the views experienced by people within the landscape. These are interrelated but, for the purposes of the assessment, considered separately.

### 2.2 Study area

- 2.2.1 In accordance with LA 107 (Highways England, 2020a), the study area has been identified for the purposes of the assessment of the Project presented in this Environmental Statement, having regard to the following factors:
- The Order Limits (including construction compounds, utility diversion works and temporary land-take)
  - The wider landscape setting within which the Project/related construction activity has the potential to influence
  - The extent of the Project visible from the surrounding area, including representative viewpoints
  - The full extent of adjacent or affected landscape receptors of special value (for example, designated areas) whose setting could be influenced by the Project
  - The extent of adjacent or affected visual receptors and visual amenity of the area that can be influenced by the Project
- 2.2.2 The approach to defining the study area is explained in Chapter 7: Landscape and Visual (Application Document 6.3). Initially, a 5km ‘area of search’ was used for the desk study and Zone of Theoretical Visibility (ZTV) extents, as agreed with stakeholders. This is considered to be proportionate to the geographical extent of landscape and visual effects arising from the Project. Generally, the approach to defining the study area has included:

- a. Establishing the area of search and agreeing with stakeholders
- b. ZTV analysis
- c. Stakeholder consultation
- d. Refinement of study area using professional judgement based on topography, intervening features and proportionality

## 2.3 Approach

- 2.3.1 Environmental assessments must, in accordance with Annex IV of the Environmental Impact Assessment (EIA) Directive 2014/52/EU, identify, describe and assess the likely significant effects of a project on the landscape (i.e. the direct and indirect change to the landscape character and the landscape condition), and the visual amenity and visual receptors.
- 2.3.2 The assessment of the likely significant effects on both landscape and visual amenity has been informed by the following:
  - a. The sensitivity of the landscape receptor (value of the receptor combined with susceptibility to specific change) and the magnitude and nature of effects on the landscape (change – scale, extent, duration)
  - b. The sensitivity of the visual receptor (susceptibility to changes in views combined with value of the receptor) and magnitude of visual effects (change – scale, extent, duration)
- 2.3.3 LA 107 requires the establishment of the value attached to each landscape area (Figure 3.17N of LA 107) and to particular views (Figure 3.38 of LA 107). An evaluation of landscape value for each landscape receptor is set out in Chapter 7: Landscape and Visual (Application Document 6.3). An evaluation of the value of views has been incorporated into the assessment of visual sensitivity for each visual receptor in Appendix 7.7: Representative Viewpoint and Visual Receptor Baseline Descriptions and Visual Sensitivity.
- 2.3.4 LA 107 also requires the establishment of the susceptibility of landscape and visual receptors to the proposed change in terms of their ability to accommodate the change without negative consequences. An evaluation of landscape susceptibility for each landscape receptor is set out in Appendix 7.9: Schedule of Landscape Effects. An evaluation of the susceptibility of visual receptors has been incorporated into the assessment of visual sensitivity in Appendix 7.7: Representative Viewpoint and Visual Receptor Baseline Descriptions and Visual Sensitivity.
- 2.3.5 LA 107 sets out descriptions for five levels of sensitivity for both landscape and visual receptors, incorporating descriptors for value and susceptibility.

## 3 Assessment of effects on landscape

### 3.1 Introduction

- 3.1.1 The assessment of landscape effects (including landscape and seascape character) has considered both direct effects as a result of the physical change to the landscape and indirect effects as a result of changes in the adjacent landscape. Specific direct and indirect effects on the Kent Downs Area of Outstanding Natural Beauty (AONB) as a whole, from traffic on the road network related to the Project and resulting changes in noise levels, have been considered separately in Appendix 7.11: Traffic and Noise Effects on the Kent Downs AONB.
- 3.1.2 Effects on component features and elements in the landscape have been considered as part of the assessment of effects on landscape character. LA 107 states that '*landscape character assessment, the key tool to understanding the landscape, shall describe the variation in the landscape's character against the baseline, explaining a project's likely effect on a combination of landscape components*'.

### 3.2 Direct effects

- 3.2.1 For consideration of direct effects, the assessment process included the following stages:
- a. Definition of the study area.
  - b. Collection and evaluation of baseline information on the landscape, including landscape designations, topography, land use, landscape character, natural features such as vegetation, existing and historic human influences including built form and any discordant features, intervisibility, tranquillity (noting background noise levels in key locations), Environmental Lighting Zones (in accordance with Guidance Notes for The Reduction of Obtrusive Light, Guidance Note 01/21 (Institute of Lighting Professionals, 2021)) and existing night-time light sources.
  - c. Classification of the landscape into character areas, using published sources of landscape character, supplemented by site appraisal and analysis. This process included producing a description of the key characteristics of each character area (including key negative features where appropriate) and an appraisal of their condition, with acknowledgement of key elements, features or characteristics that are important or valued within the local context.
  - d. Definition of the character and value of the landscape through consultation and desk study.
  - e. Site surveys to assess landscape character and condition and augment the desk study.

- f. Judgement of the susceptibility to change arising from the Project for the landscape receptor, combined with its value, to confirm its sensitivity.
- g. Assessment of the magnitude and nature of direct and indirect effects likely to arise as a result of the Project, including the consideration of the overall Project (e.g. how well a new highway would fit the existing topography) as well as specific features of the design (e.g. the addition of new signage) including changes in the baseline night-time environment.
- h. Identification and development of mitigation measures as a component of the iterative design process to avoid, reduce and where practicable remedy adverse effects.
- i. Assessment of the significance of the residual landscape effects.

### 3.3 Definition of the landscape value

3.3.1 LA 107 defines landscape value as ‘*Relative value or importance of a landscape’s quality, special qualities including perceptual aspects such as scenic beauty, tranquillity, or wildness, cultural associations or other conservation issues*’. For landscape, this can be broadly described as follows:

- a. Landscapes recognised and valued for their scenic quality, conservation interests, recreational value and/or perceptual qualities (tranquillity)/cultural associations
- b. Key characteristics and features considering their rarity and representativeness, which may be recognised in published landscape character assessments
- c. Landscape condition; the degree to which the landscape is intact and legible

3.3.2 An example of how value can be described at each end of the continuum of negligible to very high is provided in Table 3.1 for landscape receptors.

**Table 3.1 Landscape – defining landscape value**

Level of value	Typical criteria descriptors
Very high	<ul style="list-style-type: none"> <li>• Designations: international/national importance</li> <li>• Key characteristics and features: features which are dominant within the landscape and fundamental to defining the distinct landscape character of an area</li> <li>• Important characteristics and features recognised as forming intrinsic parts of international/national designated landscapes</li> <li>• Distinctive individual or rare features</li> <li>• Landscape condition: very well-defined landscape structure with strong pattern and intact features</li> <li>• Very limited detractors or uncharacteristic features or elements present</li> </ul>



Level of value	Typical criteria descriptors
High	<ul style="list-style-type: none"> <li>• Designations: national importance</li> <li>• Key characteristics and features: features which are dominant within the landscape and fundamental to defining the distinct landscape character of an area</li> <li>• Important characteristics and features recognised as forming intrinsic parts of nationally designated landscapes</li> <li>• Distinctive individual features</li> <li>• Landscape condition: distinct landscape structure with strong pattern and some intact features</li> <li>• Few detractors or uncharacteristic features or elements present</li> </ul>
Medium	<ul style="list-style-type: none"> <li>• Designations: local/regional importance</li> <li>• Key characteristics and features: locally important and notable features that contribute to the overall character of an area</li> <li>• Features and elements protected by local planning policy</li> <li>• Landscape condition: recognisable structure and characteristic patterns</li> <li>• Some detracting features present</li> </ul>
Low	<ul style="list-style-type: none"> <li>• Designations: non-designated or designated landscapes recognised locally</li> <li>• Key characteristics and features: uncharacteristic features</li> <li>• Landscape condition: degraded landscape structure with fragmented pattern and poor legibility of character</li> <li>• Detracting features notable within the landscape</li> </ul>
Negligible	<ul style="list-style-type: none"> <li>• Designations: non-designated landscapes of very low importance</li> <li>• Key characteristics and features: features that detract from the landscape character of an area</li> <li>• Landscape condition: very degraded landscape structure with fragmented pattern and poor legibility of character</li> <li>• Detracting features are the defining characteristic within the landscape</li> </ul>

### 3.4 Definition of the landscape susceptibility to specific change

3.4.1 LA 107 defines landscape receptor susceptibility as the ‘*Ability of a defined landscape...receptor to accommodate the specific proposed change without negative consequences*’. The assessment of receptor susceptibility has therefore been made on the basis of the specific details of the Project, in relation to the baseline landscape conditions.

3.4.2 An example of how susceptibility can be described at each end of the continuum of negligible to very high is provided in Table 3.2.

**Table 3.2 Landscape – landscape susceptibility to specific change (Derived from LA 107, Table 3.22)**

Degree of susceptibility to specific change	Typical criteria descriptors
Very high	No or very limited ability to accommodate change without substantial loss/gain (relating to landscapes of very high international/national importance)
High	Limited ability to accommodate change without substantial loss/gain (relating to landscapes of high national importance)
Medium	Ability to accommodate some change (relating to landscapes of local or regional recognition of importance)
Low	Ability to accommodate change (relating to landscapes of low to medium importance and of local recognition)
Negligible	Ability to accommodate change (relating to landscapes of very low importance)

### 3.5 Defining the sensitivity of resources and/or receptors

3.5.1 Landscape sensitivity depends on the character of the receiving landscape and the nature of the project proposals. It is derived from the evaluation of the value of the landscape and its ability to accommodate changes arising from a project. Typical descriptors of sensitivity from LA 107 are provided in Table 7.3 of Chapter 7: Landscape and Visual (Application Document 6.3).

### 3.6 Definition of the magnitude and nature of effect

3.6.1 The assessment of likely magnitude and nature of effect on landscape character, including the constituent landscape elements, has been guided by the criteria set out in Table 7.5 of Chapter 7: Landscape and Visual (Application Document 6.3), which are taken from LA 107 and professional judgement. The assessment of magnitude considers the following:

- a. The size and scale of change associated with the addition of new features into the landscape or the removal of existing features (such as trees, woodland or buildings).
- b. The relationship of the Project to the existing ground levels and contours (including mounds, bunds, cuttings and false cuttings). For instance, a new road may be more prominent in a flat, open landscape.
- c. The relationship of the scale, extent and materials of the proposed Project to those in the existing landscape, including side roads, junctions, structures, footpaths, cycleways and ancillary items such as safety barriers, drainage gullies and kerb details.
- d. The impact of traffic, including high-sided vehicles and vehicle lights at night.

- e. The height, scale, form (and lighting) of any gantries and road signs, together with other operational elements associated with the Project such as service areas, laybys, treatment lagoons, noise barriers, etc.
- f. Temporary construction elements associated with the Project such as extraction areas, borrow pits and site compounds, etc.
- g. The geographical extent of the landscape affected by the Project.
- h. The duration of change and whether it is permanent or temporary, and to what extent it would reduce over time as mitigation planting matures. Change has been categorised as short term (i.e. less than five years), medium term (between five to ten years,) or long term (lasting more than ten years). Change may also be reversible (e.g. an arable field may be lost in the short to medium term during construction but subsequently replaced and therefore considered reversible).
- i. Lighting, both as a permanent visual fixture during the day and as a potentially intrusive element at night. Daytime effects could arise from intrusion on the skyline, colour contrast with the background and the equipment itself (i.e. lighting arrangement, column height and shape, brackets and luminaire type). Night-time effects could arise from the visibility of the new light sources and the illumination of moving traffic.

3.6.2 Assessment of effects on the designated landscape of the Kent Downs AONB has considered effects on its special components, characteristics and qualities, as well as landscape character.

## **3.7 Evaluation of significance of landscape effect**

3.7.1 Significance of effect is determined using the matrix approach shown in Table 4.3 of Chapter 4: EIA Methodology (Application Document 6.3). Professional judgement has been applied to determine the appropriate significance of effect where the significance could be one of two options in the matrix. Justification for the reporting of a single significance category is provided in the assessment commentary in Appendix 7.9: Schedule of Landscape Effects.

3.7.2 In accordance with LA 107 paragraph 3.27, the assessment in Chapter 7: Landscape and Visual (Application Document 6.3) states the likely significant effects arising from the Project and the significance of the effect. Effects are considered to be significant where the significance of effect is concluded to be moderate or above.

3.7.3 Typical descriptors of the significance of effect categories in the matrix are provided in Table 3.3.

**Table 3.3 Landscape – typical descriptors for significance of effect categories – landscape resource (LA 104, Table 3.7 (Highways England, 2020b))**

<b>Significance of effect</b>	<b>Typical criteria descriptors</b>
Very large (adverse/beneficial)	Effects at this level are material in the decision-making process.
Large (adverse/beneficial)	Effects at this level are likely to be material in the decision-making process.
Moderate (adverse/beneficial)	Effects at this level can be considered to be material decision-making factors.
Slight (adverse/beneficial)	Effects at this level are not material in the decision-making process.
Neutral	No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

## 4 Assessment of effects on visual amenity

### 4.1 Introduction

4.1.1 The assessment process for effects on visual amenity has considered direct effects as a result of the changes in the composition of the view experienced by visual receptors (people). Specific traffic and noise effects on the Kent Downs AONB as a whole, are considered separately in Appendix 7.11: Traffic and Noise Effects on the Kent Downs AONB.

### 4.2 Direct effects

4.2.1 For consideration of direct effects, the assessment process included the following stages:

- a. Determining the extent of visibility of the proposals through a combination of computer analysis and site surveys to define the ZTV and study area. (The basis of the area of search from which the study area has been defined is set out in detail in Appendix 7.3: Area of Search and ZTV. The approach to refining the study area is explained in Chapter 7: Landscape and Visual (Application Document 6.3)).
- b. Collecting and evaluating information on the visual context of the Project.
- c. Identifying receptors within the study area as detailed in Appendix 7.10: Schedule of Visual Effects.
- d. Agreeing the selection of Representative Viewpoint locations with stakeholders and undertaking baseline photography in accordance with the methodology in Appendix 7.8: Technical Methodologies.
- e. Evaluating visual sensitivity of visual receptors.
- f. Describing the magnitude (change) of visual effect arising from the proposals, including qualitative changes in the baseline night-time environment.
- g. Identifying and developing mitigation measures as a component of the iterative design process to avoid, reduce and where practicable remedy adverse effects.
- h. Assessing the significance of the residual visual effects.

### 4.3 Defining the visual sensitivity of the visual receptor

4.3.1 Visual sensitivity depends on the location, context and expectations of the viewer (e.g. the occupier of a residential property with open views would be more sensitive, whereas an office worker within an urban context would be less so). The identification of various categories of visual receptor (viewer), and the assumed visual sensitivity of each, forms part of the visual baseline against

which the change in the view brought about by a project can be assessed. Table 7.4 of Chapter 7: Landscape and Visual (Application Document 6.3) identifies typical examples of visual receptors and their associated sensitivities.

- 4.3.2 In addition to the typical examples and sensitivities in Table 7.4, professional judgement has been used to evaluate the view and the susceptibility of the viewer to the nature of the proposed change. For example, with reference to Viewpoint S-04, Table 7.4 suggests that recreational receptors at this viewpoint should be very high or high sensitivity due to their location within the nationally recognised AONB. However, existing views are already affected by the A2 corridor, therefore the actual susceptibility to change is considered to be lower than the typical descriptor suggests. As a result, the sensitivity of receptors at Viewpoint S-04 has been assessed as high.

## 4.4 Definition of the magnitude and nature of visual effect

- 4.4.1 The assessment of likely magnitude of visual effect has used professional judgement, considering the following:

- a. Scale of change – the scale of the change arising from the Project in the form of new features added into the view or the removal of existing features (such as trees, woodland or buildings) and the resulting change in the composition of the view, including how much of the Project is visible.
- b. Nature of change – the extent to which a given change is out of character within the existing view. For example, it is likely that the introduction of a new road into a view already containing other busy roads would be more in keeping with the existing character than the introduction of the same road into a presently rural view with few signs of development.
- c. Duration of change – whether the change is permanent or temporary, and to what extent it would reduce over time as mitigation planting matures. Change has been categorised as short term (i.e. less than five years), medium term (between five to ten years), or long term (lasting more than ten years). Change may also be considered reversible (i.e. an arable field may be lost in the short to medium term during construction but subsequently replaced; therefore, the loss is considered reversible).
- d. Distance – the magnitude of any change generally decreases with distance.
- e. Screening – intervening features such as buildings and vegetation may block the view completely (in which case there would be no change) or there may be a partial screen (in which case the magnitude of change would be lower than in a more open view). The screening provided by vegetation may also change with the seasons and this has been taken into account where appropriate.
- f. The direction and focus of the view – if the change occurs in the focus of the view rather than on the periphery, change is likely to be perceived to be greater. This is especially relevant in the context of views from within

houses (which are effectively framed by their windows), gardens (where views are often framed by vegetation) and from promoted or locally valued viewpoints.

- g. Removal of existing vegetation – consideration has been given to the removal of existing vegetation and the associated change in views.
- h. Whether the receptor is static or moving – if the receptor is static (for example an occupier of a residential property) then the change in view towards the Project could be apparent for much of the time. If the receptor is moving (for example along a Public Right of Way) then the view would change along the route and the Project may only be visible for part of the time. Generally, the effects on views from Public Rights of Way have been assessed at locations considered to be worst case in terms of change associated with the Project.
- i. Lighting, both as a permanent visual fixture during the day and as a potentially intrusive element at night. Daytime effects could arise from intrusion on the skyline, colour contrast with the background and the equipment itself (i.e. lighting arrangement, column height and shape, brackets and luminaire type). Night-time effects could arise from the visibility of the new light sources and the illumination of moving traffic.

4.4.2 The magnitude of visual effect is guided by the criteria set out in Table 7.6 of Chapter 7: Landscape and Visual (Application Document 6.3).

## **4.5 Evaluation of significance of effect on visual amenity**

4.5.1 Significance of effect is determined using the matrix approach shown in Table 4.3 of Chapter 4: EIA Methodology (Application Document 6.3). Professional judgement has been applied to determine the appropriate significance of effect where the significance could be one of two options in the matrix. Justification for the reporting of a single significance category is provided in the assessment commentary in Appendix 7.10: Schedule of Visual Effects.

4.5.2 In accordance with LA 107 paragraph 3.27, the assessment in Chapter 7: Landscape and Visual (Application Document 6.3) states the likely significant effects arising from the Project and the significance of the effect. Effects are considered to be significant where they are assessed as moderate or above.

4.5.3 Typical descriptors of the significance of effect categories in the matrix are provided in Table 4.1.

**Table 4.1 Visual – typical descriptors for significance of effect categories – visual amenity (LA 104, Table 3.7 (Highways England, 2020b))**

<b>Significance of effect</b>	<b>Typical criteria descriptors</b>
Very large (adverse/beneficial)	Effects at this level are material in the decision-making process.
Large (adverse/beneficial)	Effects at this level are likely to be material in the decision-making process.
Moderate (adverse/beneficial)	Effects at this level can be considered to be material decision-making factors.
Slight (adverse/beneficial)	Effects at this level are not material in the decision-making process.
Neutral	No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.



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