

A47 North Tuddenham to Easton Dualling

Scheme Number: TR010038

Volume 6

6.1 Environmental Statement **Chapter 7 - Landscape and Visual Effects**

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The A47 North Tuddenham to Easton
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**ENVIRONMENTAL STATEMENT CHAPTER 7
LANDSCAPE AND VISUAL EFFECTS**

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7. Landscape and visual effects

7.1. Introduction

- 7.1.1. Highways England (the Applicant) has submitted an application for an order to grant a development consent order (DCO) for the North Tuddenham to Easton Dualling Scheme (hereafter referred to as ‘the Proposed Scheme’). The Proposed Scheme comprises the dualling of a section of the A47 between North Tuddenham and Easton, including the creation of two grade separated junctions (Wood Lane junction and Norwich Road junction), associated side road alterations and walking, cycling and horse-riding connections. This section of A47 road is currently unable to cope with the high traffic volume and there are limited opportunities to overtake slower moving vehicles on the single carriageway. This section of the A47 also has a poor safety record. The Proposed Scheme aims to reduce congestion related delay, improve safety, improve journey time reliability and increase the overall capacity of the A47. Full details of the Proposed Scheme are provided in Environmental Statement Chapter 2 (The Proposed Scheme) (**TR010038/APP/6.1**).
- 7.1.2. Under the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, the Proposed Scheme is an Environmental Impact Assessment (EIA) development and as such requires submission of an Environmental Statement (ES) presenting the likely significant environmental effects of the Proposed Scheme.
- 7.1.3. As part of the EIA process, this ES chapter presents the findings of the Landscape and Visual Impact Assessment (LVIA). This assessment includes a review of the existing baseline conditions, consideration of the potential effects of the Proposed Scheme upon surrounding landscape and visual receptors and identification of appropriate mitigation and enhancement.
- 7.1.4. The approach to this assessment follows the Scoping Report (September 2019) (**TR010038/APP/6.5**) and subsequent Scoping Opinion (November 2019) for the Proposed Scheme (**TR010038/APP/6.6**), in combination with the most up to date requirements in the Design Manual for Roads and Bridges (DMRB), LA 107 Landscape and Visual Effects.
- 7.1.5. The main chapter text is supported by Appendices 7.1 to 7.6 (**TR010038/APP/6.3**), which contain:
- a summary of relevant local planning policy
 - the viewpoint visualisation methodology
 - detailed assessment of the effects on landscape and views

- an arboricultural survey and impact assessment (AIA)

- 7.1.6. A set of figures which provide illustrative information in relation to this chapter are provided (**TR010038/APP/6.2**).
- 7.1.7. The assessment considers the effect of the Proposed Scheme on the surrounding landscape character including its effect on existing vegetation and other elements and features located either side of the highway. The term 'landscape' is used throughout the assessment to refer to both 'landscape' and 'townscape' effects.
- 7.1.8. Landscape and visual effects are interrelated but distinct. Landscape effects relate to changes in the physical components or character of the area irrespective of their visibility (effects on the landscape or townscape resource) while visual effects refer to the change in view experienced by people in specific locations.

7.2. Competent expert evidence

- 7.2.1. Drawing on published standards and guidance, landscape and visual assessment relies on an element of reasoned professional judgement. This assessment has been undertaken by Chartered Members of the Landscape Institute (CMLI) with experience of assessing the landscape and visual effects of large-scale infrastructure developments, including highway schemes.
- 7.2.2. The landscape competent expert holds a master's degree in landscape architecture and CMLI status. The competent expert has 16 years' experience working in the field of landscape assessment and design and has worked on numerous large-scale infrastructure projects across the UK, including several highway schemes. The competent expert has also represented landscape and visual issues at topic hearings as part of the nationally significant infrastructure project application process.

7.3. Legislation and policy framework

- 7.3.1. The detail on legislation and policy context is included in ES Chapter 1 (Introduction) (**TR010038/APP/6.1**). Landscape related policy is set out in detail within Appendix 7.1 (Planning Policy Context) (**TR010038/APP/6.3**).
- 7.3.2. With a focus on the National Policy Statement for National Networks (NPS NN), the Breckland Council Local Plan (2019) and the Joint Core Strategy for Broadland, Norwich and South Norfolk (2014), the key legislation, policy and supplementary guidance themes of relevance to this assessment are:

- The retention and enhancement of green infrastructure within all three authorities is important (Breckland, Broadland and South Norfolk District Councils). Developments should protect green infrastructure and where loss is unavoidable, appropriate mitigation should be incorporated into the design.
- Areas of open space should be protected and, where loss is unavoidable, it should be compensated for through mitigation. This is particularly relevant to Poppy's Wood within Breckland District and this has been considered in the development of mitigation proposals for the Proposed Scheme.
- Particular note is taken of the policy protection afforded to the landscape character of the River Tud and this has been noted in the development of mitigation proposals through reference to the respective published landscape character assessments.
- Local distinctiveness should be considered in the design of development and therefore the development of mitigation proposals. Reference to local landscape character assessments and site surveys have allowed an informed approach to the development of mitigation.

7.4. Assessment methodology

Reference sources

7.4.1. The Applicant requires highways projects to be assessed and reported in accordance with procedures set out within the DMRB. DMRB in turn recognises other relevant guidance to inform the consideration of effects. This assessment complies with DMRB and takes account of other relevant reference sources as follows:

- DMRB LA 104 Revision 1 'Environmental Assessment and Monitoring' (Highways England, September 2019)
- DMRB LA 107 Revision 2 Landscape and Visual Effects (Highways England, February 2020)
- Guidelines for Landscape and Visual Impact Assessment Third Edition (Landscape Institute & Institute of Environmental Management and Assessment, 2013)
- An Approach to Landscape Character Assessment (Natural England and Department for Environment, Food and Rural Affairs, 2014)
- Landscape Institute Technical Information Note 08/15, Landscape Character Assessment (The Landscape Institute, 2016)
- Landscape Institute Technical Guidance Note 06/19, Visual Representation of Development Proposals (The Landscape Institute, 2019)

Structure of assessment

7.4.2. This LVIA comprises:

- Identification of landscape and visual **receptors** and a description of current **baseline conditions**

- An assessment of the **sensitivity** of the receptors to change (taking account of both receptor susceptibility and receptor value)
- An assessment of the **potential impacts** associated with the Proposed Scheme; i.e. describe how the introduction of the Proposed Scheme to the will alter the baseline landscape and visual conditions
- An assessment of the **magnitude** of change to the receptor (taking into account the scale, extent, duration and potential reversibility of the change)
- An assessment of the level and **significance** of the effect on the receptor
- Identification of measures to **mitigate** adverse landscape and visual effects
- Report on the residual landscape effects once mitigation has been taken into account

Approach to assessment

- 7.4.3. The approach to assessment comprises a desktop study and walkover survey. Its purpose is to establish the nature and extent of potential receptors, to identify the likely sensitivity of receptors, and to record the potential landscape and visual effects of the Proposed Scheme on the receptors.
- 7.4.4. The landscape receptors with potential to experience change as a result of the Proposed Scheme comprise five local landscape character areas with potential to be changed by the Proposed Scheme. The landscape components with potential to experience change as a result of the Proposed Scheme comprise landscape features (i.e. woodland, individual trees, hedgerow, landform, field pattern, etc) and five landscape character areas (LCA). However, the identification of the change caused by the Proposed Scheme to landscape features informs the overall assessment of the significance of the effects on landscape character areas.
- 7.4.5. The visual receptors with potential to experience change as a result of the Proposed Scheme comprise 20 representative viewpoints and individual receptors (i.e. people in specific locations such as their homes, public areas or places of work) with potential to experience views of the Proposed Scheme. The assessment of effects on representative viewpoints provides an illustration of typical views of the Proposed Scheme and informs the assessment of effects on the more comprehensive list of visual receptors within the study area (Appendix 7.4) (**TR010038/APP/6.3**).
- 7.4.6. The assessment of landscape and visual effects includes consideration of the following:
- Seasonal differences with or without the Proposed Scheme including summer with foliage and winter without foliage
 - Both day and night-time situations with or without the Proposed Scheme
 - The effect of change or loss of existing landscape features (e.g. loss of existing trees)

- The effect of temporary construction activity (e.g. presence of plant, temporary buildings, materials storage, and construction traffic parking and movements)
- The effect of the introduction of new highway infrastructure (e.g. bridges, signage and lighting)
- The effect of vehicles travelling along the Proposed Scheme
- The opinions and consensus of the local public and different interest groups, their perception of the landscape and the value they place upon it.

7.4.7. The assessment considers the effects of the Proposed Scheme at the following points in time:

- Construction; short term (temporary) effects.
- Year 1 during operation; short term (temporary) effects. The visual assessment considers both winter and summer effects and the description of each effect includes reference to key differences in seasonal effects where applicable. However, the judgement with regards the level and significance of effect on each visual receptor refers to winter. Visual effects experienced during winter months are considered to be the 'worst-case' in assessment terms as trees are without leaf and visibility tends to be more open.
- Year 15 during operation (mitigation design year once planting has gained a relative stage of maturity); long term (residual) effects. Similar to the Year 1 assessment, reference has been made to visual effects at Year 15 during both summer and winter and the focus of this assessment is the extent to which proposed mitigation planting would have established and the subsequent change in effects during both seasons, albeit with the level and significance of effect on each visual assessed as a worst-case during winter.

7.4.8. The environmental masterplan (**TR010038/APP/6.8**) has been designed to mitigate effects during both summer and winter, albeit it is acknowledged that this tends to be more effective during summer when trees are in leaf. The depth of planting proposed in key locations where visual effects have been identified has been designed to be sufficient to mitigate visual effects during both seasons.

7.4.9. The landscape assessment does not take into account seasonality, however reference may be made to the seasons where seasonal changes over a calendar year form a distinct part of the landscape character.

7.4.10. The assessment considers the following timescales:

- Start of construction works – January 2023
- Estimated duration of construction – 23 months
- Open for traffic (opening year) – October 2024

- 7.4.11. The potential combined and cumulative landscape and visual effects of the Proposed Scheme are considered in ES Chapter 15 (Cumulative effects assessment) (**TR010038/APP/6.1**).
- 7.4.12. Further detail on the digital modelling aspect of the methodology is included in Appendix 7.2 (Verified Photomontage Methodology) (**TR010038/APP/6.3**).
- 7.4.13. The assessment considers effects in terms of:
- Direct effects on physical features of the landscape.
 - Indirect effects on the character and quality of the landscape, for example through the Proposed Scheme causing changes in the perception of the landscape.
 - Direct effects on the visual amenity of visual receptors, for example changes caused by the Proposed Scheme to available views of the landscape for residents and visitors.
 - Indirect effects on visual receptors in different places, for example an altered visual perception leading to changes in public attitude, behaviour and how they value or use a place.

Update to guidance and scope of assessment

- 7.4.14. Following a review of change to requirements in DMRB LA 107 Landscape and Visual Effects, the scope of this assessment has been updated from that included in the Scoping Report (**TR010038/APP/6.5**) and subsequent Scoping Opinion (**TR010038/APP/6.6**) for the Proposed Scheme (2019) to acknowledge the scoping criteria set out in DMRB LA 107 and summarised in Tables 7-1 and 7-2 below.
- 7.4.15. Tables 7-1 and 7-2, in accordance with DMRB LA 107, set out the proposed scope for further assessment. Where the response to one or more of the scoping assessment questions is 'yes', further assessment has been undertaken.

Table 7-1: Summary of proposed scope (landscape effects)

Scoping question	Comment	Scope in?
Is the project likely to affect designated landscapes (statutory or local designation)?	There are no landscape designations associated with the Proposed Scheme study area therefore the Proposed Scheme would not affect any designated landscapes (statutory or local designation)	No
Is the project likely to affect the distinctiveness of a landscape character area or type?	The landscape character areas and types with potential to be affected by the Proposed Scheme are of sufficient scale and appearance to accommodate residual change of the type proposed without fundamental effect on distinctiveness. Change brought about during construction would however exert a discordant influence on landscape character associations.	Yes
Is the project likely to affect national, regional or local	Construction of the Proposed Scheme would involve removal of existing trees and hedgerows which would initially bring about loss	Yes

Scoping question	Comment	Scope in?
characteristics or distinctive features?	of existing landscape features and fragmentation of the local landscape pattern. This effect would be re-balanced by the establishment of Proposed Scheme mitigation during operation.	
Is the project likely to affect the condition or quality of a landscape?	Construction of the Proposed Scheme would involve removal and disruption to existing landcover, earthworks and construction activity, which would be at odds with the relative uniformity of the surroundings. This effect would be re-balanced by the establishment of Proposed Scheme mitigation during operation.	Yes
Is the project likely to affect the intrinsic character, qualities and local identity of the urban environment (sense of place)?	The Proposed Scheme alignment does not coincide directly with any urban areas. The Proposed Scheme alignment does pass close to the settlements of Hockering, Honingham and Easton, however physical change to the settlements would be limited and visibility of the scheme is limited, therefore it would not affect urban setting or sense of place.	No

Table 7-2 : Summary of proposed scope (visual effects)

Scoping question	Comment	Scope in?
Is the project likely to affect receptors (individuals or range of people) views and the visual amenity of the area?	The study area is sparsely populated but includes the visual outlook from mainly isolated residential receptors, small settlements, Public Rights of Way and other publicly accessible locations (churches and employment sites for examples). Some views have the potential to be affected during both construction and operation of the Proposed Scheme.	Yes
Is the project likely to affect the sensitivity of views to and from designated and/or valued landscapes, or from public rights of ways, public open spaces or from national trails?	There are no landscape designations or national trails associated with the Proposed Scheme study area therefore the Proposed Scheme will not affect any designated landscapes (statutory or local designation). There is however potential for the Proposed Scheme to affect views from public rights of way.	Yes
Is the project likely to affect a range of viewpoints and nature of views from which the project is visible?	The Proposed Scheme would be visible from a range of viewpoints associated with residential, recreational, commercial and road outlooks.	Yes
Is the project likely to generate significant visual effects (daytime and night-time)?	The Proposed Scheme is likely to result in some significant visual effects, most notably attributable to the construction stage and early years of operation, prior to the establishment of mitigation.	Yes

7.4.16. Since issue of the Scoping Report (TR010038/APP/6.5) there has also been change in guidance on Visual Representation of Development Proposals (Landscape Institute Technical Guidance Note 06/19). Detail on the approach to visualisation is included in Appendix 7.2 (Verified Photomontage Methodology)(TR010038/APP/6.3) but does not notably change the approach previously advised in the Scoping Report (TR010038/APP/6.5).

- 7.4.17. The change in assessment guidance noted above does not affect the focus of points raised in the Scoping Opinion (**TR010038/APP/6.6**) response, all of which have been considered and addressed in this assessment.

Consultation

- 7.4.18. Since issue of the Preliminary Environmental Information Report (PEIR), consultation has been undertaken with: the Director of Planning and Building Control at Breckland Council; and the Landscape Officer at Broadland District Council (who has also represented South Norfolk District Council in consultation), to reaffirm representative assessment viewpoint locations. These were agreed as being acceptable as proposed, without further amendment.

Assessment criteria

- 7.4.19. The assessment criteria defined in DMRB LA 107 have been adopted. The overarching criteria for determination and definition of the significance of effects is included in ES Chapter 4 (Environmental Assessment Methodology) (**TR010038/APP/6.1**).
- 7.4.20. The significance of landscape effect has been determined by combining the sensitivity of the affected landscape with the magnitude of change associated with the introduction of the Proposed Scheme. The evaluation of the sensitivity of the landscape resource is based on factors and attributes which affect the value of the landscape and its susceptibility to change. Reference is made to Section 3.16 to 3.27 of LA 107 which defines the criteria required in landscape assessment and which are applied in this assessment.
- 7.4.21. The significance of visual effect has been determined by combining the sensitivity of the visual receptor with the magnitude of change associated with the introduction of the Proposed Scheme. The visual sensitivity of individual receptors depends upon the location and context of the view from the receptor, the activity associated with the receptor, and the importance of the view. It is sometimes the case that different categories of visual receptor might be present at a selected representative viewpoint (for example a selected location may include both residential properties and road users suggesting different levels of sensitivity). In such cases the primary receptor category is identified (i.e. the more sensitive). Reference is made to Section 3.28 to 3.46 of LA 107 which defines the criteria required in visual assessment and which are applied in this assessment.
- 7.4.22. Qualitative judgements used in landscape and visual impact assessment include reference to evidence to support any professional judgements that have been made (including how thresholds in significance have been determined).

- 7.4.23. The assessment of significance of residual effects takes into consideration mitigation measures implemented as part of the Proposed Scheme.

7.5. Assessment assumptions and limitations

- 7.5.1. Visual impacts have been considered based on site visits to publicly accessible areas, therefore it has not been possible to validate the potential for views from all receptors, nor to exactly define the nature of views from all private locations. The site survey does however reflect the best estimate of those effects.

7.6. Study area

- 7.6.1. The study area for the Proposed Scheme has been established with reference to criteria set out in DMRB LA 104 'Environmental Assessment and Monitoring' and LA 107 'Landscape and Visual Effects'. A Zone of Theoretical Visibility (ZTV) has been established using computer modelling to help identify the potential extents from which the Proposed Scheme may be visible (refer to Figure 7.4 (Visual Context) (TR010038/APP/6.2) for the extent of ZTV and Appendix 7.3 (ZTV and Verified Photomontage Methodology) (TR010038/APP/6.3) for the approach to ZTV modelling). The extent of potential visibility has then been verified in the field to determine how perceptible potential views of the Proposed Scheme may be. The extent of proposed assessment study area has also been discussed and agreed with the respective Local Planning Authorities (refer to para 7.4.17).
- 7.6.2. Taking account of the above, the study area for the LVIA extends to 1km from the DCO boundary (Figure 1.1 (Scheme overview)) (TR010038/APP/6.2). This distance is considered adequate given the limited vertical height of the elements of the Proposed Scheme and the generally low lying, only gently rolling and well-wooded landscape context. The area within DCO boundary is hereafter referred to as 'the Site'. The study area boundary is 1km in both the landscape and visual assessments, however this has not been taken as a fixed boundary which cannot be exceeded and reference has been made to receptors beyond 1km where applicable.

7.7. Baseline conditions

General context

- 7.7.1. The Site extends along the existing A47 highway corridor between North Tuddenham and Easton (refer to Figure 7.1 (Site Location) (TR010038/APP/6.2)). The A47 corridor is located within a largely rural landscape characterised by agricultural land use and dispersed settlement linked by a network of local roads. The Site and study area are located within shallow valley, with an approximate variation of between 70m above ordnance datum

(AOD) at its highest point, in the vicinity of Hockering Wood, and 30m AOD at its lowest point, in the vicinity of the River Tud.

- 7.7.2. Settlement within the extents of the study area is characterised by a small number of villages, clusters of houses and isolated farmsteads. The main areas of settlement associate with the villages of: Hockering; Honingham; and Easton. The eastern periphery of North Tuddenham is located within the study area, however the majority of the village is outside the study area.
- 7.7.3. The River Tud flows from west to east through much of the study area, crossing the existing A47 just to the east of Honingham. Public Rights of Way (ProWs) are scattered throughout the study area, with notable clusters around the River Tud and the afore mentioned villages.

Landscape

Landscape designations

- 7.7.4. There are no landscape designations associated with the Proposed Scheme study area.

Landscape features

- 7.7.5. Consideration has been given to the direct, physical loss of existing landscape features as a result of the Proposed Scheme (focusing principally on the effects of the Proposed Scheme on tree cover).
- 7.7.6. Physical features in the immediate vicinity of the existing A47 corridor which contribute to the landscape character of the wider area include agricultural fields enclosed by hedgerows with mature trees and small areas of woodland. In the most part, the existing A47 is bounded by a linear belt of mature trees and hedgerows but is more widely characterised by a setting of open arable farmland with limited field boundary vegetation.
- 7.7.7. The following provides a summary of the principal existing landscape features within the Site.

Trees and hedgerows

- 7.7.8. Existing trees associated with the Site have been the subject of an arboricultural survey (included in Appendix 7.6) (**TR010038/APP/6.3**). The survey was carried out during June and July 2020, in line with the requirements of 'BS5837:2012 Trees in Relation to Construction: Recommendations' (BS5837:2012). The tree survey identified a total of 955 tree features including 605 individual trees, 246 groups of trees and 104 hedgerows which have the potential to be impacted by the proposals.

- 7.7.9. In line with the recommendations contained within Table 1 of BS5837:2012, 48 tree features were awarded a high quality A grade, including 44 individual trees and four hedgerows. 213 tree features were awarded a moderate quality B grade, including 149 individual trees, 62 groups of trees and two hedgerows. 631 tree features were awarded a low quality C grade, including 361 individual trees, 168 groups of trees and 102 hedgerows.
- 7.7.10. 63 tree features were categorised as very low quality U grade trees which should be removed for reasons of sound arboricultural management. The location of the trees and their categories are shown on the Arboricultural Impact Assessment Plan (AIAP) (Appendix 7.6) (**TR010038/APP/6.3**).
- 7.7.11. This is a predominately arable working agricultural landscape and so woodland cover is generally limited. Fields are generally medium to large in size and are bordered by hedgerow and occasional trees. Lines of mature trees are present along the edges of some fields. Low embankments divide some of the fields and line many of the rural lanes.
- 7.7.12. The evident fragmentation of hedgerows, in part attributable to the agricultural trend towards removal of field boundaries and an increase in field size, results in a landscape where the condition and quality of trees and hedgerows is perceptibly eroded. Trees are also typically at a mature stage of establishment with limited successional replacement and are therefore at risk of further decline as trees die out. This indicates that the integrity of the framework of trees and hedgerows has a reduced susceptibility to change in its current state but that there is potential for enhancement.
- 7.7.13. The main area of woodland cover within the study area is beside the River Tud, which is located to the south of the Proposed Scheme, except for the section east of Honingham at which the scheme is located to the south of the river. This is a linear belt of mature woodland cover located at the base of a shallow valley.
- 7.7.14. Other notable areas of woodland are:
- Poppy's Wood, which is an area of woodland with paths throughout, located at the western extent of the Proposed Scheme
 - Hockering Wood, which is a large wood within the north-western extent of the study area
 - Large swathes of planting to the north-east of Honingham, in the vicinity of Hall Farm

Agricultural landscape

- 7.7.15. Agricultural land within the study area consists primarily of medium to large scale, rectilinear, arable fields, often with fragmented boundaries defined by gappy hedgerows and mature hedgerow trees.
- 7.7.16. The condition and quality of the agricultural landscape is good and typical of the area. Its value associates with its contribution to the consistency in appearance of the character of the area. Due to the extensive scale of agricultural land use it does however indicate potential to accommodate some change without diminishing its overall integrity. An agricultural soils assessment has been provided within ES Chapter 9 (Geology & Soils) (TR010038/APP/6.1) which provides detailed description of soils within the site.

Landscape character

National character areas

- 7.7.17. The majority of the study area lies within National Character Area (NCA) 84: Mid Norfolk. This is a broad-scale landscape character study and as such provides a high-level understanding of the landscape character of the study area, with the local character assessments providing greater detail. The key characteristics of NCA 84 are:
- *“Broadly flat, glacial till plateau dissected by river valleys which create a more intricate landscape to the west of Norwich.*
 - *Underlying chalk aquifer; small, fast-flowing chalk streams and biodiversity-rich, wide, lush river valleys with wooded valley slopes, including the internationally important chalk-fed River Wensum.*
 - *Tranquil agricultural landscape with extensive areas of arable land, dominated by cereals with break-cropping of sugar beet and oilseed rape, and some pastures along valley floors.*
 - *Ancient countryside, much of it enclosed in the 14th century, with a sporadically rationalised patchwork field system, sinuous lanes and mixed hedges with hedgerow oaks.*
 - *Largely fragmented, isolated mixed deciduous and pasture woodlands, with a notable area of ancient woodland at Foxley Wood.*
 - *Important alkaline valley fen communities and areas of remnant heathland.*
 - *Large number of 18th-century estates with their associated parkland, and a great density and stylistic variety of churches which are prominent features in the landscape.*
 - *Coherent vernacular architecture – marked by distinctive red brick and flint buildings with pantiled roofs, much dating from the 17th and 18th centuries, with some earlier timber frame – is an inherent component of the area’s character.*
 - *A mix of villages and many isolated farmsteads within a complex minor road network, with a traditional pattern of market towns connected by main*

roads, and the city of Norwich providing a centre for cultural and economic activity.

- *Dense network of public rights of way including bridleways and the Peddars Way and Norfolk Coast Path National Trail.”*

7.7.18. A small proportion of the very eastern extent of the study area is located within NCA 78: Central North Norfolk. Referring to Figure 7.3 (**TR010038/APP/6.2**) which illustrates that a small extent of the study area, located to the north of Easton is within NCA 78. Given the limited extent of coverage, the broad scale of the NCAs, this has been scoped out of further consideration in this chapter. The area covered by NCA 78 is assessed in greater detail within small extents of local character areas D2, G1 and A3 which are described in the subsequent section of this report.

Local character areas

7.7.19. The Proposed Scheme and study area are located within three local authority boundaries, and each authority has produced a landscape character assessment, which are:

- Breckland Council (2007) *Breckland Landscape Character Assessment*
- Broadland District Council (2008 and 2013 update) *Broadland Landscape Character Assessment*
- South Norfolk Council (2001) *South Norfolk Landscape Character Assessment*

7.7.20. Refer to Figure 7.3 (Landscape Character) (**TR010038/APP/6.2**) for the extent of LCAs.

7.7.21. The following five character areas have been used as the basis for assessment of the Proposed Scheme landscape effects (taken from west to east along the Proposed Scheme):

- Breckland character areas:
 - LCA B6: River Wensum and Tud Tributary Farmland (Settled Tributary Farmland Type)
 - LCA A5: Upper Tud (River Valleys Type)
- Broadland character areas
 - LCA D2: Weston Green Tributary Farmland (Tributary Farmland Type)
- South Norfolk character areas
 - LCA G1: Easton Fringe Farmland (Fringe Farmland Type)
 - LCA A3: Tud Rural River Valley (Rural River Valley Type)

7.7.22. Baseline descriptions of each of the above five LCAs are presented in Appendix 7.3 (Landscape Character Areas) (**TR010038/APP/6.3**). Each of the baseline landscape descriptions includes a summary of the key characteristics of the

landscape within the extents of the study area that have a bearing on the sensitivity of the LCA to the Proposed Scheme (i.e. the key characteristics and attributes that are likely to be indicators of the sensitivity of each LCA to the addition of highway infrastructure). Each description includes the identification of a sensitivity rating of the landscape area relative to the Proposed Scheme. Table 7-3 below summarises the key characteristics and sensitivities of each assessment LCA.

Table 7-3 : Assessment landscape character areas baseline summary

LCA Reference	LCA summary description	LCA sensitivity (to the Proposed Scheme)
LCA B6: River Wensum and Tud Tributary Farmland	Gently undulating landform; mainly medium to large-scale arable farmland; occasional small woodland blocks and one large block noted at Hockering Wood; dispersed farmsteads and villages clustered around road network; arable landscape that generally retains a tranquil rural character; influence of the existing A47 at its southern extent.	Medium sensitivity
LCA A5: Upper Tud	Shallow, contained valley centred on the River Tud with limited topographical variation; the River Tud forms a distinctive element on the valley floor; views are intermittent due to the containment by the valley form and tree cover on the valley floor, close to the river; pastoral farmland is the predominant land cover; church towers (e.g. East Tuddenham/Hockering) are prominent, and the skylines of the valley crests are uninterrupted.	High sensitivity
LCA D2: Weston Green Tributary Farmland	A peaceful, rural landscape clearly defined by a broad shallow valley landform; mixed woodland; structure is provided by the numerous close clipped hedgerows and woodland copses, whilst the top of the plateau, large-scale fields, limited tree and hedgerow cover, and the elevated nature of the area create an exposed and less structured landscape; interspersed between these plantations, medium-scale fields are in mixed use; the area's mix of land cover elements adds visual interest, creating a diverse rural landscape with a strong sense of visual integrity; with the exception of some localised visual and noise intrusion from the A47, this landscape comprises a unified peaceful character.	High sensitivity
LCA G1: Easton Fringe Farmland	An undulating landscape sloping towards a distinct ridge which marks the boundary between the River Yare valley (northern extent of the LCA) and River Tud valley (southern extent of the LCA); the ridge top is highly developed and has a 'strong urban fringe' character; generally limited woodland, however an exception is at the very northern extent of the LCA, and just to the north of the existing A47, where a linear belt of woodland at Longdell is located, however this associates more with	Low sensitivity

LCA Reference	LCA summary description	LCA sensitivity (to the Proposed Scheme)
	the lower levels, close to the River Tud; the A47 is a major transportation through-route and provides a gateway route into South Norfolk from the west.	
LCA A3: Tud Rural River Valley	A small, intimate, rural valley with confined form. There are occasional long-range views from higher ground, however generally views out are restricted; the Tud river channel itself is small-scale and largely screened from view by tree cover; it's intricate, sinuous topography is accentuated by the wooded valley sides and narrow valley floor; a strongly wooded character; mixed agricultural fields on the valley sides; there is limited, small-scale settlement comprising isolated farmsteads; it has a remote and very rural character and presents a 'wooded gateway' to Norwich, acting as a backdrop to adjacent character areas.	High sensitivity

7.7.23. Norfolk Historic Landscape Characterisation (HLC) provides information regarding historic character areas across the study area. The dominant HLC within the study area is one of rural working agricultural countryside with dispersed settlements, farmsteads and informal parkland and a mixture of 18th-19th century enclosure, 20th century agriculture and parks, gardens and recreation. Much of the land was historically enclosed between the 18th and 19th centuries, with subsequent 20th century boundary loss as a result of arable expansion throughout the modern period. Detailed information regarding HLC in relation to the Proposed Scheme is included within ES Chapter 6 (Cultural Heritage) (TR010038/APP/6.1).

Visual

Topographical context

7.7.24. The study area is broadly defined by the presence of the River Tud which is incised through the landscape from west to east. The study area broadly comprises a shallow valley, with an approximate variation of between 70m AOD at its highest point, in the vicinity of Hockering Wood, and 30m AOD at its lowest point, in the vicinity of the River Tud.

7.7.25. There are therefore two main topographical features of the study area:

- The lower, incised valley form of the River Tud
- To the north and south of the River Tud, and on the periphery of the study area, there are broad plateaus which are more open and afford views across the landscape, some of which are down towards the River Tud

7.7.26. The existing A47 is mostly located on the south facing shallow slopes, to the north of the River Tud. However, mature vegetation cover located beside it limits its visibility from within the wider area.

Zone of theoretical visibility

7.7.27. The extent of ZTV is primarily influenced by subtle topographical variations and tree cover. Given the limited amount of built form within the study area, this has less of an influence on the ZTV, however there are some localised screening afforded by built form, particularly with the villages of Hockering, Honingham and Easton (refer to Figure 7.4 (Visual Context) for the extent of ZTV (TR010038/APP/6.2)).

7.7.28. Notable landform and vegetation features which provide a screen to views are:

- The linear belt of tree and hedgerow cover beside the existing A47
- The topographical variation which is centred on the following lower levels of The River Tud, which is largely located just to the south of the Proposed Scheme, until the vicinity of Honingham, at which it crosses and is located just to the north. Views from the lower levels, up towards the Site, are screened
- Tree cover at the lower levels, beside the River Tud in particular
- At the western extent of the site, Poppy's Wood and Hockering Wood
- The village of Hockering
- Scattered, small-scale woodland blocks, in proximity to Wood Lane, north of Honingham
- The village of Honingham
- Tree and hedgerow cover located on the western edge of Easton

Key visual elements

7.7.29. From west to east, the following key visual elements are present within the study area:

- Two wind turbines, located at a farm just to the east of North Tuddenham
- Poppy's Wood, a mature woodland block located directly to the north of the existing A47
- Radio mast south of Oak Farm and the existing A47
- Hockering Wood
- St Michael's Church, Hockering
- All Saint's Church, East Tuddenham
- 'Old Covert' woodland block, located on higher slopes to the north of the site
- Warren Plantation, located on higher slopes to the south of the site
- St Andrew's Church, Honingham
- Plantation woodland at the very north-eastern extent, and extending out of the study area to the north, including Blackbreck Plantation

- St Peter's Church, Easton

Night-time context

7.7.30. There is relatively limited artificial lighting within the study area as it is predominantly arable farmland. The most visible sources of existing artificial light include:

- Highway lighting at the A47 Easton roundabout with Dereham Road
- Residential roads at Easton and smaller settlements at: Hockering and Honingham

7.7.31. Existing A47 highway lighting associated with the Easton roundabout junction consists of 12m high columns, which appear notably brighter than the surrounding area which is mainly unlit. However, this roundabout is surrounded by mature tree cover which limits light being visible from the surrounding area. The same principle applies to lighting columns within Easton on residential roads as it is visually enclosed from the surrounding area.

7.7.32. The value of relatively low levels of existing lighting is that it accentuates night-time distinction between built and un-built areas and limits adverse influence on the experience of tranquillity. As the existing extent of lighting is concentrated around Easton, Hockering and Honingham, the surrounding areas are susceptible to a spread or coalescence of lighting beyond existing limits.

7.7.33. Consequently, the night-time context is considered to be of **low sensitivity** adjacent to existing settlement and of **medium sensitivity** in the surrounding area.

7.7.34. Further information on the lighting within the study area is presented in Appendix 7.7 (Lighting Assessment) (**TR010038/APP/6.3**).

Representative viewpoints

7.7.35. 20 representative viewpoint locations have been selected and agreed with the host planning authorities to assist in understanding the appearance and visual effects of the Proposed Scheme. The locations of representative viewpoints are shown on Figure 7.4 (Visual Context) (**TR010038/APP/6.2**).

7.7.36. Viewpoints are 'representative' and as such, whilst taken from a fixed point, are intended to reflect the range of visual aspects experienced by the receptors they represent. The interpretation of the significance of visual effects on individual representative viewpoints should therefore be recognised as more widely informing the assessment of effects on the visual receptors identified in this assessment.

7.7.37. The following Table 7-4 lists the representative viewpoints, identifying the key receptors that each represents.

Table 7-4: Representative viewpoints baseline summary

Viewpoint reference	Location	Location & Distance (m) and direction from Proposed Scheme	Reason for selection	Viewpoint sensitivity (to the Proposed Scheme)
1	Low Road, west of Hockering	TG 06410 13252	Viewpoint representative of high sensitivity residential receptor in the vicinity of Low Road and located in close proximity to the Scheme	High
2	Mattishall Lane, Hockering	TG 07004 13007	Viewpoint representative of high sensitivity residential receptors at Mattishall Lane, Hockering	High
3	Path near Newgate House, south of Hockering	TG 07790 12406	Viewpoint representative of public right of way users and residential receptors (high sensitivity), Riverside Farm being the nearest to the east	High
4	Sandy Lane Properties beside A47	TG 08793 12607	Viewpoint representative of residential receptors (high sensitivity) at Sandy Lane, just off the existing A47	High
5	St Andrew's Church, Honingham	TG 11391 11191	Viewpoint representative of visitors/attendees of the church (low sensitivity)	Low
6	St Peter's Church, Easton	TG 13000 10918	Viewpoint representative of visitors/attendees of the church (medium sensitivity)	Medium
7	Taverham Road	TG 11969 11879	Specifically requested by the host local authorities. Representative of a clear view towards the site experienced by road users (low sensitivity) and users of an adjacent footpath (medium sensitivity)	Medium
A	Poppy's Wood	TG 05785 13645	Specifically requested by the host local authorities Representative of recreational users of a footpath network within an area of open space (medium sensitivity)	Medium
B	The Street, West Hockering	TG 07198 13041	Specifically requested by the host planning authorities. Representative of car users exiting Hockering via The Street (low sensitivity)	Low
C	River Tud Footpath	TG 07420 12631	Representative of recreational users of footpaths beside the River Tud (medium sensitivity)	Medium
D	Park Lane, east of Hockering	TG 08582 12967	Representative of users of recreational users of Park Lane (medium sensitivity)	Medium
E	Church Lane	TG 08739 12384	Viewpoint representative of residential receptors (high sensitivity) at Church Lane	High

Viewpoint reference	Location	Location & Distance (m) and direction from Proposed Scheme	Reason for selection	Viewpoint sensitivity (to the Proposed Scheme)
F	Path near All Saints Church, East Tuddenham	TG 08738 11665	Representative of recreational users (medium sensitivity) of a path between All Saints Church and the River Tud	Medium
G	Path to west of Wood Lane	TG 09541 12948	Representative of users of recreational users (medium sensitivity) of a path near to Wood Lane	Medium
H	Path to east of Wood Lane	TG 10022 12441	Specifically requested by the host planning authorities. Representative of users of recreational users (medium sensitivity) of a path near to Wood Lane	Medium
I	Dereham Road, Honingham	TG 10131 11821	Viewpoint representative of residential receptors (high sensitivity) In Honingham	High
J	Richmond Close, Honingham	TG 10574 11608	Viewpoint representative of residential receptors (high sensitivity) In Honingham	High
K	Taverham Road beside A47	TG 11833 11185	Representative of car users turning onto the existing A47 via Taverham Road (low sensitivity)	Low
L	Blind Lane, west of Easton	TG 11854 10598	Representative of car users on Blind Lane (low sensitivity)	Low
M	Ringland Rd, between Lower Easton and Easton	TG 13351 11345	Viewpoint representative of residential receptors (high sensitivity) on Ringland Road between Lower Easton and Easton	High

7.7.38. Representative viewpoints have been divided into ‘visualisation’ views (1 to 7) and ‘baseline’ views (A to M) following discussion and agreement of the respective focus with the host planning authorities. The assessment has considered visual effects on all viewpoints. Visualisation views have however been afforded a more detailed consideration (see Table 7-5) of the existing baseline and assessment of effects in recognition of the relative focus of interest in these particular views.

7.7.39. A description of the existing view at each ‘visualisation’ viewpoint location is provided in Appendix 7.5 (Representative Viewpoints) (TR010038/APP/6.3). Baseline photographs of the view from each representative viewpoint location are presented in Figures 7.6.1 to 7.6.13 (TR010038/APP/6.2).

Table 7-5 : Representative viewpoints assessment reporting

Viewpoint location references	Viewpoint 'type'	Assessment detail	Baseline photo view	Proposed Scheme visualisation view
1 to 7	Visualisation	Detailed	Yes	Yes
A to M	Baseline	Summary	Yes	No

Visual receptors

7.7.40. The locations of visual receptors are identified on Figures 7.5.1 and 7.5.2 (Visual Receptors) (TR010038/APP/6.2). A description of the existing view from each receptor location is provided in Figure 7.5 (Visual Receptors) (TR010038/APP/6.2). Visual receptors typically associate with the following outlooks:

- Residential locations (private views from people's homes)
- Footpath locations (the public views of people walking along PRoW)
- Community locations (views from community facilities such as allotments)
- Commercial locations (views from people's places of work)
- Road locations (views from people travelling along roads)

7.7.41. A summary of the type and location of the main visual receptor groups is provided below. For each group of receptors, a standardised judgement on sensitivity to change has not been applied. For example, residential receptors are typically considered to be of high sensitivity to the type of change proposed, however this is not always the case and some residential receptors may be judged to be of medium sensitivity to the type of change proposed. Refer to Appendix 7.4 which defines the level of sensitivity to each receptor (TR010038/APP/6.3).

Residential receptors

7.7.42. The study area is predominantly rural and residential receptors generally comprise isolated farmsteads or small clusters of properties throughout the areas. There are three villages in proximity to the Proposed Scheme: Hockering, Honingham and Easton.

7.7.43. Views out from the villages are generally screened by surrounding tree cover, subtle landform undulations and tree cover on their edged limit views out. At most, glimpsed views are likely from some upper storey windows. This is particularly evident in Easton, where a strongly defined line of mature trees defines the northern edge of the village and screens views of the immediately adjacent A47 corridor.

7.7.44. The value of views from residential properties associates with people's sense of identity and place. As such any change in view is likely to affect the viewers perception and experience of the outside world. The susceptibility of such views to change is therefore typically considered to be high but influenced by what is present in the existing view. It therefore follows that the visibility of existing roads or traffic may reduce susceptibility where similar features are proposed.

Community receptors

7.7.45. Views of the Proposed Scheme would be experienced by attendees at three churches within the study area: St Michael's Church, Hockering; St Andrew's Church, Honingham; and St Peter's Church, Easton.

7.7.46. The value of views from community receptors, in this case specifically church attendees, would typically be limited where the focus of the individual would be on the immediate location rather than the wider outlook, in this case the church service. However, church attendees would experience views when entering and exiting church, albeit for a relatively short duration.

Footpath receptors (including PRow and community facilities)

7.7.47. Various PRow footpaths and bridleways coincide with the extent of the study area, which are shown on Figure 7.4 (**TR010038/APP/6.2**). Many footpaths are enclosed by landform undulations and tree cover, particularly including paths at lower levels in proximity to the River Tud. However, the following routes afford views in the direction of the site:

- Paths on higher ground leading north from Hockering in the direction of Hockering Wood, looking south back towards the site
- Paths leading south from the River Tud onto higher ground, in the vicinity of East Tuddenham and Honingham
- Paths on higher ground in the vicinity of Wood Lane, to the north of the Proposed Scheme
- Paths on higher ground in the vicinity of Taverham Road, to the north of the Proposed Scheme

7.7.48. The value of views from recreational receptors varies depending on the nature of the recreational activity and therefore how much attention is given to the view. Where the activity is focussed, such as an organised sport, or has some active engagement such as allotments then the surrounding view is less important than where the purpose of the recreation is specific to the enjoyment of the setting. The susceptibility of views to change is therefore variable and is further influenced by what is present in the existing view such that the visibility of existing roads or traffic may reduce susceptibility where similar features are proposed.

Commercial receptors

- 7.7.49. Views of the Proposed Scheme would be experienced by indoor workers at: Hockering Nursery (Hockering); a reclamation yard (Hockering); and Two Acres Boarding Kennels (Low Road). More general views would be experienced by agricultural workers within the extensive farmland that makes up the study area.
- 7.7.50. The value of views from commercial receptors would typically be limited where the focus of the individual would be on the immediate location rather than the wider outlook. The susceptibility of views to change is therefore relatively low but nonetheless influenced by what appears in the existing view. The visibility of existing roads or traffic may therefore reduce susceptibility where similar features are proposed.

Road receptors

- 7.7.51. Views of the Proposed Scheme would be experienced by road users of the A47 and various minor roads to the north and south of the existing A47.
- 7.7.52. The value of views from road receptors would typically be limited where the focus of the view would not be fixed on a particular outlook or visual relationship. As the receptor outlook is inherently that of a road, the susceptibility of views to change of a similar type is low.

7.8. Potential impacts

- 7.8.1. The principal potential impacts of the Proposed Scheme which may result in significant landscape or visual effects are listed below.

Construction

- 7.8.2. Temporary construction impacts would include:
- Removal of existing woodland, individual trees and areas of linear highway planting.
 - Earthworks associated with:
 - Excavation associated with various extents of cutting, particularly where the Proposed Scheme is located on a slope
 - Deep cutting associated with: the Mattishall Lane Link Road underbridge; Hall Farm underpass; Honingham Church underpass; and realigned local roads to the south of Norwich Road junction
 - Excavation of ten flood attenuation basins alongside the Proposed Scheme
 - Grading of levels for the new embankments (including either side of the River Tud for the bridge crossing), carriageways and slip roads

- Earth bunds required for visual screening and acoustic mitigation purposes
- The presence of construction compounds (as shown in Figure 2.3) (TR010038/APP/6.2) located at:
 - To the west of Hockering, between the existing A47 and Proposed Scheme, to the west of Mattishall Lane Link Road underbridge (Compound 1). Two materials storage areas (Material area 1 and 2) would also be located here, one either side of the compound
 - A large materials storage area (Material area 3) located to the south-east of Hockering
 - Three locations to the north-west of Honingham, in the vicinity of the proposed Wood Lane junction. A construction compound (Compound 2) would be located to the south west of the junction. Two material storage areas (Material area 4 and 5) would be located beside the junction (to the south west and north east) also, a smaller area to the south of the junction and a larger area to the east for a National Grid compound
 - One location to the south-east of Honingham beside Grange Plantation (Compound 3), including a materials stock-pile area (Material area 6)
 - One location to the north-west of Easton (Compound 4) and an additional five material storage areas (Material area 7, 8, 9, 10 and 11) in their vicinity located between the proposed Norwich Road junction and Easton
- The general presence of construction activity, construction vehicles, plant and associated traffic management interventions.

Operational

7.8.3. The following components of the Proposed Scheme comprise operational impacts:

- The introduction of approximately 9km of new trunk road with associated slip road carriageway and associated earthworks. The Proposed Scheme comprises 9km of new dual carriageway, running to the south of the existing A47 at Hockering and north of the existing A47 at Honingham.
- The introduction of approximately 9km of new and realigned local roads and associated earthworks (principally: the realigned Lyng Road; the Mattishall Lane Link Road and underbridge; the realigned Church Lane).
- The introduction of two junctions: the Wood Lane junction and associated realignment of Wood Lane to the north and Dereham Road to the south; and the Norwich Road junction and associated realignment of the existing A47 and Norwich Road.
- The introduction of the River Tud Crossing and associated embankments.
- The introduction of a pedestrian and cyclist crossings: Hall Farm underpass and Honingham Church underpass to the east of the River Tud.
- The introduction of a pedestrian and cyclist footbridge at the eastern extent of the Proposed Scheme, to the west of Easton (Easton footbridge).
- Creation of ten flood attenuation basins and associated earthworks.

- Moving vehicles (visible and audible).
- New woodland, trees and hedgerows as mitigation.
- New road furniture, safety barriers, boundary fencing and signage
- New lights and lighting.

7.8.4. The principal potentially adverse impacts of the Proposed Scheme on landscape and visual receptors which have informed key mitigation strategies are:

- The potential loss of tree cover including the removal of mature specimen trees from roadsides and beside the River Tud in the vicinity of the bridge crossing.
- The height and potential visual prominence of some new infrastructure and landforms within the low lying landscape.
- The potential erosion of rural character through the geometry and detailed design of new elements away from the main trunk roads. The two proposed junctions (Wood Lane and Norwich Road) are a focus in this respect.
- Impact on the character of the River Tud through the introduction of a new bridge crossing.

7.8.5. The principal potentially beneficial impact of the Proposed Scheme on landscape and visual receptors which have informed key mitigation strategies is:

- The River Tud Crossing has been lowered to fit in with the landscape
- The design of the flood attenuation basins has been consulted with the landscape
- The walking and cycling route between Norwich Road junction and Easton to allow for additional planting

7.9. Design, mitigation and enhancement measures

Construction phase

7.9.1. Mitigation during construction would comprise:

- sensitive colouring of welfare facilities and temporary office units within site compounds
- keeping a tidy and organised site
- materials delivered on an 'as needed' basis to prevent unnecessary stockpiles
- protection of retained vegetation in accordance with British Standard (BS) 5837:2012

7.9.2. The Principal Contractor will engage an arboricultural consultant to:

- complete an arboricultural method statement. The method statement shall include, but not limited to the following:
 - tree protection measures in compliance with BS5837:2012 (Trees in relation to design, demolition, and construction – Recommendations) during the construction phase

- maintenance and monitoring requirements of the tree protection measures
- schedule of trees to be removed and retained in compliance with the Environmental Masterplan (**TR010038/APP/6.8**) and Appendix 7.7 Arboricultural Impact Assessment (**TR010038/APP/6.3**)
- tree root protection zones
- contingency plan (chemical spillage, collision, emergency access to the root protection zone)
- monitor tree protection measures on site. This shall include, but are not limited to checking:
 - the robustness and positioning of tree protection fencing
 - that no materials or plant are stored within the tree root protection zones

Operational phase

7.9.3. Based on a review of the landscape and visual policy context and taking account of the potentially adverse impacts of the Proposed Scheme identified above, the following overarching landscape and visual objectives were identified and have guided the iterative development of the Proposed Scheme design. Securing these objectives is embedded within the location, scale, extent and height of the highway geometry and earthworks design:

- To **minimise direct impacts on trees and woodlands** through avoidance - especially mature or veteran specimen trees along roadsides.
- To minimise the landscape effect and visibility of the main infrastructure by **limiting the elevation of new infrastructure and earthworks** within this low-lying landscape and by providing adequate screen planting.
- To **maintain the distinction between the trunk road network and the underlying peaceful, rural landscape** by ensuring that elements of the Proposed Scheme away from the main trunk roads are detailed in a way which is appropriate to the local vernacular and rural character and distinct from the treatment of the A47 corridor.

7.9.4. The environmental masterplan (**TR010038/APP/6.8**) sets out the additional proposed landscape and visual mitigation of the Proposed Scheme and the Environmental Management Plan (**TR010038/APP/7.4**) comprises the delivery mechanism through which the mitigation will be delivered. At this more detailed level, mitigation aims to also achieve the following which are relevant to this chapter:

- Protection and enhancement of the landscape character and sense of place by:
 - retaining, away from the main trunk road carriageways, the pervading sense of an underlying peaceful, rural landscape
 - creation of new areas of tree and woodland planting to compensate for losses

- integrating Proposed Scheme infrastructure through appropriate use of planting to contribute to visual screening
- reinforcing the existing linear and geometric character with woodland planting where this is consistent with the surroundings
- reinforcing existing field boundaries with individual trees and hedgerows where the field pattern is a notable component of the landscape
- retaining or replacing and reinforcing existing vegetation where this contributes to the distinctive qualities of the landscape
- selecting plant and grass species appropriate to the locality to maintain consistency with the appearance of the area.
- Acknowledgement of the landscape setting of cultural heritage assets, most notably two Listed churches: St Andrew's Church, Honingham; and St Peter's Church, Easton.
- The alignment of fence lines to accommodate the extent of proposed planting areas.
- The alignment of fences for noise bunds and noise fences for noise mitigation
- The location and extent of drainage soakaways and attenuation basins to avoid existing vegetation; to accommodate the extent of proposed planting locations; and to maximise biodiversity gain.
- The lighting strategy to help maintain the distinction between urban and rural areas.
- Consideration of future maintenance with inclusion of pull in lay-bys and gated access points and the selection of plant and grass types that would require limited maintenance resources.
- Building in resilience for climate change by including diversity within the plant and grass species mixes to ensure that a range of species types suitable for a range of conditions are incorporated. Also taking into consideration the creation of soil conditions favourable to plant establishment under either dryer or wetter conditions.
- Sourcing plant and grass species of local provenance where possible in the interests of extending local flora and construction sustainability.

7.9.5. Proposed landscape and visual mitigation measures form part of a wider complementary association with other environmental mitigation functions derived from requirements identified within the various ES chapters. Examples of enhancement measures recommended in other environmental assessments which would further integrate the landscape into the landscape and visual baseline include:

- Wetland areas to improve biodiversity in the Proposed Scheme
- Remeandering of field drains to meet the Water Framework Directive requirements
- A planted noise barrier at St Peter's Church

7.9.6. All proposed landscape and visual mitigation measures would be implemented by the year of opening (Year 1), which is currently anticipated to be 2025, with a

mitigation design year of 2040 (Year 15), which is the date by which proposed planting would have established to a point of relative maturity in contributing to mitigation objectives. For the purpose of assessment, mitigation planting growth and height assumptions have been defined in Table 7-6 below. The figures set out in Table 7-6 are based on experience of the competent expert and colleagues, including previous DCO and public inquiry experience (TR010038/APP/6.2). They are reasonable estimates of growth rates which are subject to the variables of ground conditions, general climatic influences and individual species growth rates).

Table 7-6 : Mitigation planting growth and height assumptions

Planting type	Year 1	Year 15
Individual trees (12-14cm heavy standard)	3.5m	7.5m
Woodland	0.6m	8m
Shrubs	0.6m	3-5m
Scrub	0.6m	1-2m
Hedgerow (maintained)	0.6m	1-2m
Hedgerow (unmaintained)	0.6m	3-5m

7.9.7. The following earth bunds and fences are proposed immediately adjacent to the Proposed Scheme and will provide additional visual screening:

- A bund to act as an acoustic barrier at Mattishall Lane, to the north of the Proposed Scheme and to the south of Hockering
- A fence to act as an acoustic barrier at Mattishall Lane, to the south of the Proposed Scheme and to the south of Hockering
- A bund to act as an acoustic barrier beside Church Lane, to the south of the Proposed Scheme and to the east of Hockering
- A fence to act as an acoustic barrier along the southern side of the Proposed Scheme, beside Church Lane, to the south of the Proposed Scheme and to the east of Hockering
- A bund to act as a visual barrier to the east of Wood Lane junction
- A planted fence to act as an acoustic barrier to the north east of St Peter’s Church, at the eastern extent of the Proposed Scheme at Easton

7.10. Assessment of likely significant effects

7.10.1. This section assesses the significance of the residual effects of the Proposed Scheme on landscape and visual sensitivities during both construction and operation. The assessments follow the iterative design development process and incorporation of the mitigation and enhancement measures set out in the

Environmental Masterplan (**TR010038/APP/6.8**) and Environmental Management Plan (EMP) (**TR010038/APP/7.4**) .

Construction

7.10.2. Construction would result in disruption within the Site and within the landscape setting of the Proposed Scheme. This would include vegetation clearance and earthworks associated with the grading of levels for the carriageways, overbridges and drainage; and the presence of site compounds and construction plant, vehicles and machinery.

Effects on landscape features

7.10.3. The removal of existing vegetation, earthworks and presence of construction plant, materials, machinery, construction compounds would have an adverse effect on local landscape elements. Construction operations would be temporary and the residual effect on landscape character due to tree removal is factored into the assessment of operational phase effects.

7.10.4. Some tree removal would be required as part of the construction operations, however this would be relatively limited in the context of the 9km scheme. The tree survey (Appendix 7.6) (**TR010038/APP/6.3**) identifies that the Proposed Scheme would require the likely removal of:

- 256 of the existing 605 individual trees identified within the site which have the potential to be impacted
- 66 of the 246 groups of trees identified within the site
- 27 of the 104 hedgerows identified within the site
- In addition, 63 tree groups and 42 hedgerows would require partial removal to varying extents (refer to Appendix 7.6 for exact details) (**TR010038/APP/6.3**)

7.10.5. Tree loss would be primarily located beside the existing A47, i.e. roadside tree cover. To ensure the retention of as many trees and hedgerows as possible, special construction techniques would be incorporated into construction methods to ensure other trees can be retained during the course of the works.

7.10.6. Notable areas of tree loss would be: existing A47 roadside tree cover at the western extent of the Proposed Scheme; scattered trees to the east of Mattishall Lane; woodland beside the existing A47 between Sandy Lane and Wood Lane; linear belts of planting beside Wood Lane (at the proposed junction location); linear belts of planting beside the existing A47, to the north of Honingham; mature tree cover beside the River Tud as the Proposed Scheme crosses it, just to the east of Honingham (although this has been minimised to avoid losses directly beside the river); linear belts of planting beside the existing A47 between

Honingham and Easton (including and beside the proposed junction location); and tree cover on the northern boundary of St Peter’s Church, Easton.

7.10.7. In terms of earthworks and the impact on the existing landform, there would be operations associated with creating both cutting and embankment throughout the Proposed Scheme. Overall, this would be relatively limited, however notable areas of earthworks within the Proposed Scheme which would give rise to localised adverse changes to the landform would be:

- At the Wood Lane junction, the mainline would require an embankment creating, whereas the associated local access roads and embankment would be in cuttings for the most part
- At the Norwich Road junction, the mainline would require a small embankment creating, whereas the associated local access roads and embankment would be in cuttings for the most part
- Excavation required for the cuttings beneath the realigned Mattishall Lane Link Road
- Operations associated with the realigned Dereham Road, Honingham
- Operations associated with the proposed access route in the vicinity of St Andrew’s Church, Honingham
- Earthworks associated with the proposed local access road directly to the north of St Peter’s Church, Easton
- Excavation required for the ten proposed drainage basins

Effects on landscape character

7.10.8. The detailed assessment of construction stage effects on landscape character is set out in Appendix 7.3 (Landscape Character Areas) (TR010038/APP/6.3). The conclusions of the landscape character assessment are summarised in Table 7-7 below.

Table 7-7 : Construction effects on landscape character areas (summary)

LCA reference	Sensitivity	Magnitude of change	Significance of effect
LCA B6: River Wensum and Tud Tributary Farmland	Medium	Negligible adverse	Neutral/Not significant
LCA A5: Upper Tud	High	Moderate adverse	Moderate adverse/Significant
LCA D2: Weston Green Tributary Farmland	High	Major adverse	Large adverse/Significant
LCA G1: Easton Fringe Farmland	Low	Minor adverse	Slight adverse/Not significant
LCA A3: Tud Rural River Valley	High	Negligible adverse	Neutral/Not significant

- 7.10.9. Overall, the removal of existing vegetation, earthworks and presence of construction plant, materials, machinery, construction compounds and construction lighting would have a **moderate adverse (significant)** effect on local landscape character during construction.
- 7.10.10. The landscape character of the Site and its immediate setting would be affected to the greatest degree within the two central character areas within the study area: LCA A5 and LCA D2 and the primary impacts which would cause these adverse effects would be:
- the construction operations associated with the two proposed junctions, Wood Lane and Norwich Road, due to their more extensive footprint than the main Proposed Scheme corridor.
 - the extents of the Proposed Scheme which pass to the south of Hockering and to the north of Honingham in more open ground, which would introduce construction operations into the landscape away from the existing road corridor. To the south of Hockering there is a particular sense of isolation and visual separation from the nearby existing trunk road network which would be impacted by construction.
 - the bridge crossing over the River Tud and its localised effect on the character of the river corridor.

Effects on tranquillity

- 7.10.11. The Proposed Scheme would locally vary perceptions of tranquillity within the study area as a result of construction activities within the vicinity of the existing A47 road corridor. Perceived variations in tranquillity would however be short term due to the temporary nature of construction works.

Visual effects

General effects

- 7.10.12. The construction of the Proposed Scheme would bring about disruption to existing views. The removal of existing vegetation would lead to an increased openness in views and the disruption caused by construction earthworks, the presence of temporary construction compounds, soil storage areas and the diverse and extensive influence of construction vehicles, machinery and materials would notably contrast with the rural surroundings away from the existing trunk road.

Night-time effects

- 7.10.13. It would be anticipated that construction operations would largely be undertaken during daylight hours, however with potential for an element of construction lighting to allow for working during times of darkness, particularly during autumn

to winter (October to March). This would be expected to be concentrated within site compounds and around the locations of overbridges and underpasses.

7.10.14. There would be four main construction compounds and 11 no. material storage areas, located at various locations within the Site (see Figure 2.3 General Scheme Layout for locations) (**TR010038/APP/6.2**). All would be located in close proximity to the Proposed Scheme and main construction operations, i.e. they would not extend effects further out into the surrounding study area. Some isolated residential properties may experience some glimpsed views of night-time lighting of compounds, for example at Berry Hall & Berry Hall Cottages (R24) and Merrywood House (R25) which are in close proximity to proposed location of compounds beside the Wood Lane junction. However, given the sparsely developed nature of the study area, effects due to night-time lighting are expected to be limited.

7.10.15. Overall, there would be a **minor adverse magnitude** of change and **slight adverse (not significant)** effect on night-time views arising from construction.

Effects on representative viewpoints

7.10.16. The detailed assessment of construction phase effects on representative viewpoints is set out in Appendix 7.5 (Representative Viewpoints) (**TR010038/APP/6.3**). The conclusions of the visual assessment are summarised in Table 7-8 below.

Table 7-8 : Construction effects on representative viewpoints (summary)

Viewpoint reference	Sensitivity	Magnitude of change	Significance of effect
1. Low Road, west of Hockering	High	Major adverse	Large adverse/ Significant
2. Mattishall Lane, Hockering	High	Major adverse	Large adverse/ Significant
3. Path near Newgate House, south of Hockering	High	Moderate adverse	Moderate adverse/ Significant
4. Sandy Lane Properties beside A47	High	Major adverse	Large adverse/ Significant
5. St Andrew's Church, Honingham	Low	Minor adverse	Slight adverse/ Not significant
6. St Peter's Church, Easton	Medium	Minor adverse	Slight adverse/ Not significant
7. Taverham Road	Medium	Moderate adverse	Moderate adverse/Significant
A. Poppy's Wood	Medium	Negligible adverse	Neutral/Not significant
B. The Street, West Hockering	Low	Negligible adverse	Neutral/Not significant
C. River Tud Footpath	Medium	Moderate adverse	Moderate adverse/Significant

Viewpoint reference	Sensitivity	Magnitude of change	Significance of effect
D. Park Lane, east of Hockering	Medium	Negligible adverse	Neutral/Not significant
E. Church Lane	High	Major adverse	Large adverse/Significant
F. Path near All Saints Church, East Tuddenham	Medium	Minor adverse	Slight adverse/Not significant
G. Path to west of Wood Lane	Medium	Minor adverse	Slight adverse/Not significant
H. Path to east of Wood Lane	Medium	Moderate adverse	Moderate adverse/Significant
I. Dereham Road, Honingham	High	Minor adverse	Slight adverse/Not significant
J. Richmond Close, Honingham	High	No change	Neutral/Not significant
K. Taverham Road beside A47	Low	Minor adverse	Slight adverse/Not significant
L. Blind Lane, west of Easton	Low	Minor adverse	Slight adverse/Not significant
M. Ringland Road, between Lower Easton and Easton	High	Minor adverse	Slight adverse/Not significant

7.10.17. Of the twenty viewpoints, eight have been assessed as likely experiencing significant visual effects during construction. The largest construction effects on representative viewpoints would associate with those locations in closest proximity to the Proposed Scheme, particularly residential receptors and users of footpaths, with the following significant visual effects noted:

- At Viewpoint 1, beside Low Road, and at Viewpoint 2, on Mattishall Lane, just west of Hockering, in both instances the clearance of vegetation beside the existing road would open up clear views of construction operations and a material storage area in close proximity to the receptors would likely be visible through boundary vegetation.
- At Viewpoints 3 and C, on footpaths beside the River Tud and just south of the existing A47 and Hockering, where close range views of construction operations would be likely.
- At Viewpoints 4 (Sandy Lane properties) and E (Church Lane), located directly north and south of the existing A47 respectively, where the clearance of vegetation would open up views of construction operations.
- At Viewpoint H, located just to the north-east of the proposed Wood Lane junction would experience close-range views of the clearance operations associated with the junction.
- At a slightly higher elevation above the Proposed Scheme, and slightly further away from the Site, from Viewpoint 7, on Taverham Road, there would be views down onto construction operations from a partially elevated rural position and a significant visual effect is predicted during construction.

Effects on visual receptors

7.10.18. The effects on visual receptors within the study area are reported in Appendix 7.4 (Visual Receptors) (TR010038/APP/6.3) and located on Figures 7.5.1, 7.5.2 and

7.5.3 (TR010038/APP/6.2). A summary of construction effects on each receptor type is provided in Table 7-9.

Table 7-9 : Construction effects on visual receptors (summary)

Visual receptor type	Significance – number of visual receptors affected				
	Very large adverse	Large adverse	Moderate adverse	Slight adverse	Neutral
Residential	0	7	7	8	20
Community	0	0	0	2	1
Commercial	0	0	0	0	2
PRoW	0	0	2	5	9
Roads	0	0	0	11	2

7.10.19. The following provides a general overview of the effects on each receptor type, summarising the potential nature, extent and significance of visual effects that would occur across the study area.

Residential receptors

7.10.20. The residential receptors that would be subject to a significant visual effect during construction are as follows:

- R5: Oak Farm properties and R6: Ash Lodge properties (large adverse), due to their proximity to the construction operations.
- R11: Hill View properties (large adverse) and R41: Caravan Park on Mattishall Lane, due to their proximity to construction operations, including a material storage area and compound.
- R14: Newgate House (large adverse), located directly to the north of construction operations.
- R18: Sycamore Farm properties (large adverse), located directly to the south of construction operations.
- R21 and R22: Properties beside Sandy Lane (large adverse), located directly to the north of construction operations.
- R24: Berry Hall properties (moderate adverse) and R25: Merrywood House (moderate adverse), located directly to the south of construction operations.
- R26: Property at western extent of Honingham (moderate adverse), located directly to the south of construction operations associated with the proposed Wood Lane junction.
- R31: Hall Farm (moderate adverse) and R32: Hall Farm Cottages (moderate adverse), located directly to the north of construction operations.
- R34: Properties opposite Church Plantation (moderate adverse), located directly to the north of construction operations associated with the proposed Norwich Road junction.
- R41: Caravan site, Mattishall Lane (moderate adverse), located directly south east of construction operations.

7.10.21. All residential receptors identified as experiencing significant visual effects are located in close proximity to the Proposed Scheme and views would be opened up by clearance of vegetation within the DCO boundary. In the context of the 9km Proposed Scheme and given the low density of settlement within the study area, a limited number of residential receptors have been identified as experiencing significant visual effects during construction.

Recreational receptors (including community facilities and PRow)

7.10.22. The recreational receptors that would be subject to a significant visual effect during construction are as follows:

- On footpaths to the south of Hockering and the Proposed Scheme, in proximity to the River Tud. Views north from the footpaths would comprise intermittent views of proposed construction operations. This includes P5 (moderate adverse) and P6 (moderate adverse).

7.10.23. In the context of the 9km Proposed Scheme, a relatively limited number of recreational receptors have been identified as experiencing significant visual effects.

Community receptors

7.10.24. No community receptors have been identified as experiencing a significant visual effect during the temporary construction works.

Commercial receptors

7.10.25. No commercial receptors have been identified as experiencing a significant visual effect during the temporary construction works.

Road receptors

7.10.26. The low sensitivity of road receptors means that none would be subject to a significant visual effect during the temporary construction works.

Operation

7.10.27. The following section considers the landscape and visual effects of the Proposed Scheme during operation. Assessments are undertaken in the year of opening (Year 1) and in year 15.

Policy effects

7.10.28. The Proposed Scheme design would be consistent with the policy objectives identified in this chapter. The context of the Proposed Scheme would also associate directly with the setting of the existing A47, thereby affording

consistency with existing precedents for a strategic highway corridor in this location.

Landscape effects

Effects on landscape features

- 7.10.29. As stated in the baseline section, overall this is a working agricultural landscape in the most part, which has a low level of tree and hedgerow cover. However, the Proposed Scheme would require the loss and/or change to some landscape features. Affected landscape features would include trees and woodland; the field pattern; and the non-trunk local road network of lanes.
- 7.10.30. The effect of the Proposed Scheme on landscape features principally associates with the removal of individual trees and areas of woodland. Refer to the previous section on construction effects (specifically para. 7.10.4 to 7.10.6), the principal areas of tree and woodland removal would occur beside the existing A47. The following would be the notable areas of tree loss within the Proposed Scheme: existing A47 roadside tree cover at the western extent of the Proposed Scheme; scattered trees to the east of Mattishall Lane; woodland beside the existing A47 between Sandy Lane and Wood Lane; linear belts of planting beside Wood Lane (at the proposed junction location); linear belts of planting beside the existing A47, to the north of Honingham; mature tree cover beside the River Tud as the Proposed Scheme crosses it, just to the east of Honingham (although this has been minimised to avoid losses directly beside the river); linear belts of planting beside the existing A47 between Honingham and Easton (including and beside the proposed junction location) and tree cover on the northern boundary of St Peter's Church, Easton.
- 7.10.31. There would be permanent changes to the landform associated with creating both cutting and embankment throughout the Proposed Scheme. Overall, this would be relatively limited, however notable areas of earthworks would be:
- At the Wood Lane junction, the mainline would require an embankment to be constructed, whereas the associated local access roads would be in cutting for the most part
 - At the Norwich Road junction, the mainline would require a small embankment to be constructed, whereas the associated local access roads would be in cutting for the most part
 - Cutting beneath the realigned Mattishall Lane Link Road
 - Embankment associated with the realigned Dereham Road, Honingham
 - Embankment associated with the proposed access route in the vicinity of St Andrew's Church, Honingham

- Embankment associated with the proposed local access road directly to the north of St Peter’s Church, Easton
- Creation of the ten proposed drainage basins

7.10.32. Several alterations to the non-trunk local road network are proposed which could adversely affect the distinct rural character. These comprise:

- The realigned Lyng Road
- The Mattishall Lane Link Road and underpass
- The realigned Church Lane

7.10.33. Overall, at year 1 of operation the following would be evident with respect of landscape features: there would be unavoidable removal of areas of woodland; changes to the existing landform; and change to some rural roads. However, these changes are considered to be relatively limited in the context of the 9km scheme and losses are largely contained within the existing A47 corridor.

7.10.34. At year 15 of operation the establishment of Proposed Scheme woodland, individual trees and hedgerows would notably contribute to the reinforcement and enhancement of landscape features and contribute to integration of the Proposed Scheme into its setting.

Effects on landscape character

7.10.35. The detailed assessment of operational effects on landscape character is set out in Appendix 7.3 (Landscape Character Areas) (**TR010038/APP/6.3**). The conclusions of the assessment are summarised in Table 7-10 below.

Table 7-10 : Operation effects on landscape character areas (summary)

LCA reference	Sensitivity	Year 1		Year 15	
		Magnitude of change	Significance of effect	Magnitude of change	Significance of effect
LCA B6: River Wensum and Tud Tributary Farmland	Medium	Negligible adverse	Neutral/Not significant	Negligible adverse	Neutral/Not significant
LCA A5: Upper Tud	High	Moderate adverse	Moderate adverse/Significant	Minor adverse	Slight adverse/Not significant
LCA D2: Weston Green Tributary Farmland	High	Major adverse	Large adverse/Significant	Minor adverse	Slight adverse/Not significant
LCA G1: Easton Fringe Farmland	Low	Minor adverse	Slight adverse/Not significant	Negligible adverse	Neutral/Not significant
LCA A3: Tud Rural River Valley	High	Negligible adverse	Neutral/Not significant	Negligible adverse	Neutral/Not significant

7.10.36. Changes in landscape character would principally associate with:

- the introduction of two junctions with a large footprint: Wood Lane and Norwich Road
- the extent of Proposed Scheme which would be relatively isolated from the exiting A47 to the south of Hockering
- the interface between the Proposed Scheme and the River Tud wooded corridor, particular at the proposed bridge crossing to the east of Honingham, albeit this change to the underlying quiet rural character of the area would however be very localised
- the removal of some areas of woodland and tree cover, most notably an extent of the mature tree cover within the River Tud corridor at the location of the proposed bridge crossing

7.10.37. At the very eastern and western extents of the Proposed Scheme, the changes to the landscape character areas through which they pass, LCA B6 and LCA G1 respectively, would experience limited change as: the Proposed Scheme would be largely centred on the existing A47 road corridor; and change would be limited from the wider character area by localised tree and landform screening.

7.10.38. The majority of the Proposed Scheme would be located within LCAs A5 and D2, which would be subject to Significant landscape effects at Year 1. These are landscape character areas which are associated with river corridors, the River Tud being the focus in this extent of the LCAs, and their characteristics are defined by the landform, vegetation cover and more intimate, enclosed nature of the landscape. In each case, it has been determined that there would be a significant effect at Year 1 due to the Proposed Scheme due to the notable change that would occur due to the introduction of a new road corridor and all associated local access roads, earthworks, as well as the loss of existing field pattern and loss of some tree and hedgerow cover. In the case of the LCA D2, it has been assessed that at Year 1, there would be a Large adverse level of effect on LCA D2, due mainly to the introduction of the two proposed junctions and bridge crossing over the River Tud.

7.10.39. Overall, at Year 1, there would be a **moderate adverse (significant)** effect on landscape character due to the relative prominence of Proposed Scheme infrastructure (including the proposed Wood Lane and Norwich Road junctions); and due to the loss of mature trees and woodlands relative to the existing baseline within Year 1.

7.10.40. By year 15 of operation, the establishment of Proposed Scheme landscape mitigation would contribute to a reduction in the magnitude of landscape change. The proposed environmental masterplan (**TR010038/APP/6.8**) has been developed in response to the potential for change to the host landscape and it would create a strong linear belt of planting beside the Proposed Scheme, with attention paid to the existing field pattern within the study area, such that it would

successfully replicate the approach taken to planting beside the existing A47, which is a relatively discrete road corridor located within this landscape. However, localised residual adverse landscape character effects would remain, in particular due to the presence of the two junctions. There would be a degree of erosion of the distinct underlying rural character away from the existing trunk road infrastructure. Despite the integrating contribution of new planting, a localised **slight adverse (not significant)** effect on landscape character would persist due to erosion of the character of the River Tud corridor.

Effects on tranquillity

- 7.10.41. The Proposed Scheme would locally vary perceptions of tranquillity within the study area at Year 1 and year 15 of operation. Whilst the influence of the existing A47 establishes a precedent for highway noise and visual influence within the overall Proposed Scheme setting, the introduction of the non-trunk road elements of the Proposed Scheme would slightly increase the relative influence of larger scale highway infrastructure and lead to some localised loss of tranquillity away from the trunk road network.
- 7.10.42. The subsequent section which considers night-time visual effects (para. 7.10.47) identifies that proposed lighting would be limited to two locations: beside the proposed junctions (Wood Lane and Norwich Road). However, horizontal illuminance would be contained beside the junctions and the subsequent change to night-time tranquillity would be limited, particularly once mitigation planting has established at Year 15.

Visual effects

Zone of theoretical visibility (ZTV)

- 7.10.43. Figure 7.4 (Visual Context) illustrates the potential visibility of the Proposed Scheme in relation to visibility of the carriageway, vehicles and general highway infrastructure (**TR010038/APP/6.2**). The relative significance of effects within the extent of ZTV is considered within the representative viewpoint assessment and assessment of effects on visual receptors reported below.

General effects

- 7.10.44. As stated within para. 7.4.7, the visual assessment has focused on winter of year 1, which is considered to be the 'worst-case' in assessment terms as trees are without leaf and visibility tends to be more open. However, reference will also be made to summer effects where there is considered to be a notable difference between summer and winter and effects.
- 7.10.45. In Year 1, prior to the establishment of Proposed Scheme landscape mitigation, there would be potential for visual effects associated with views of road

infrastructure and vehicles. This would include views experienced by occupiers of residential properties, recreational users of PRow, users of local community facilities, workers in commercial premises and vehicle travellers.

7.10.46. By year 15 of operation, the establishment of Proposed Scheme landscape mitigation would contribute to a reduction in the extent and magnitude of visual change.

Night-time effects

7.10.47. Proposed Scheme lighting and vehicle headlights would result in night-time effects on views. New effects (beyond the existing highway infrastructure) would be most apparent around the two proposed junctions (Wood Lane and Norwich Road). Here there is the potential (until proposed planting on the embankment matures) for headlights to be directed towards nearby residential receptors.

7.10.48. A lighting assessment is provided within Appendix 7.7 (TR010038/APP/6.3). The lighting assessment identifies that at the locations where new fixed lighting columns are proposed, i.e. beside the two proposed junctions, horizontal illuminance would be kept to a minimum and would not have any direct influence on visual receptors, in particular residential properties.

7.10.49. Overall, there would be a **minor adverse magnitude** of change and **slight adverse (not significant)** effect on night-time views at Year 1 reducing to a no change magnitude and **neutral (not significant)** effect at year 15. The effect identified at Year 1 is due to the potential for headlights on the Proposed Scheme to be glimpsed from some locations within the study area.

Effects on representative viewpoints

7.10.50. The detailed assessment of operational effects on representative viewpoints is set out in Appendix 7.5 (Representative Viewpoints) (TR010038/APP/6.3). The conclusions of the visual assessment are summarised in Table 7-11 below. Refer to Figure 7.4 (Landscape Chapter) for photo illustration of the respective viewpoints (TR010038/APP/6.2).

Table 7-11 : Operation effects on representative viewpoints (summary)

Viewpoint	Sensitivity	Year 1		Year 15	
		Magnitude of change	Significance of effect	Magnitude of change	Significance of effect
1. Low Road, west of Hockering	High	Moderate adverse	Moderate adverse/ Significant	Negligible adverse	Neutral/Not significant

Viewpoint	Sensitivity	Year 1		Year 15	
		Magnitude of change	Significance of effect	Magnitude of change	Significance of effect
2. Mattishall Lane, Hockering	High	Major adverse	Large adverse/ Significant	Minor adverse	Slight adverse/Not significant
3. Path near Newgate House, south of Hockering	High	Moderate adverse	Moderate adverse/ Significant	Minor adverse	Slight adverse/Not significant
4. Sandy Lane Properties beside A47	High	Major adverse	Large adverse/ Significant	Moderate adverse	Moderate adverse/ Significant
5. St Andrew's Church, Honingham	Low	Minor adverse	Slight adverse/ Not significant	Negligible adverse	Neutral/Not significant
6. St Peter's Church, Easton	Medium	Minor adverse	Slight adverse/ Not significant	Negligible adverse	Neutral/Not significant
7. Taverham Road	Medium	Moderate adverse	Moderate adverse/ Significant	Minor adverse	Slight adverse/Not significant
A. Poppy's Wood	Medium	Negligible adverse	Neutral/Not significant	Negligible adverse	Neutral/Not significant
B. The Street, West Hockering	Low	Negligible adverse	Neutral/Not significant	No change	Neutral/Not significant
C. River Tud Footpath	Medium	Moderate adverse	Moderate adverse/ Significant	Minor adverse	Slight adverse/Not significant
D. Park Lane, east of Hockering	Medium	Negligible adverse	Neutral/Not significant	No change	Neutral/Not significant
E. Church Lane	High	Major adverse	Large adverse/Significant	Moderate adverse	Moderate adverse/ Significant
F. Path near All Saints Church, East Tuddenham	Medium	Minor adverse	Slight adverse/Not significant	Negligible adverse	Neutral/Not significant
G. Path to west of Wood Lane	Medium	Minor adverse	Slight adverse/Not significant	Negligible adverse	Neutral/Not significant
H. Path to east of Wood Lane	Medium	Moderate adverse	Moderate adverse/Significant	Minor adverse	Slight adverse/Not significant
I. Dereham Road, Honingham	High	Minor adverse	Slight adverse/Not significant	Negligible adverse	Neutral/Not significant
J. Richmond Close, Honingham	High	No change	Neutral/Not significant	No change	Neutral/Not significant

Viewpoint	Sensitivity	Year 1		Year 15	
		Magnitude of change	Significance of effect	Magnitude of change	Significance of effect
K. Taverham Road beside A47	Low	Minor adverse	Slight adverse/Not significant	Negligible adverse	Neutral/Not significant
L. Blind Lane, west of Easton	Low	Minor adverse	Slight adverse/Not significant	Minor adverse	Slight adverse/Not significant
M. Ringland Rd, between Lower Easton and Easton	High	Minor adverse	Slight adverse/Not significant	Negligible adverse	Neutral/Not significant

7.10.51. Of the twenty viewpoints, eight have been assessed as likely experiencing significant visual effects at Year 1. The largest effects on representative viewpoints at Year 1, prior to the establishment of mitigation, would associate with those locations in closest proximity to the Proposed Scheme, particularly residential receptors and users of footpaths, with the following significant visual effects noted:

- At Viewpoints 1 (Low Road) and 2 (Mattishall Lane) which are close to residential receptors at the very western extent of the Proposed Scheme
- At Viewpoint 3 and C, both taken from footpaths within the lower levels of the River Tud corridor
- At Viewpoint 4, which is beside properties at the southern extent of Sandy Lane
- At Viewpoints E (Church Lane), located directly south of the existing A47, where the clearance of vegetation would open up views of the Proposed Scheme.
- At Viewpoint H, located just to the north-east of the proposed Wood Lane junction would experience close-range views of the clearance operations associated with the junction.
- At Viewpoint 7, which is located in an elevated position on Taverham Road, just to the north of the Proposed Scheme.

7.10.52. Negligible difference between effects experienced during summer and winter of Year 1 have been identified. This is typically the case as mitigation planting has yet to establish and as such there is limited difference in the effects experienced in summer and winter.

7.10.53. At Year 15, effects would be reduced on most viewpoints due to the screening provided by tree planting beside the Proposed Scheme, proposed as part of the environmental masterplan (**TR010038/APP/6.8**). However, two significant visual effects remain at Year 15: at both Viewpoint 4, Sandy Lane properties and Viewpoint E, Church Lane, the proposed mitigation would reduce the effect from Large adverse at Year 1 to Moderate adverse due to 15. However, a residual

significant effect would remain due to the remaining visibility of the Proposed Scheme and the fundamental change to the view that would occur at close proximity, including introduction of new planting.

7.10.54. Referring to the detailed assessment of representative viewpoints in Appendix 7.3 (**TR010038/APP/6.3**), a limited difference between effects experienced during summer and winter have been identified at Year 15. This is due mainly to the depth of planting proposed within the environmental masterplan. It is acknowledged that for some receptors there may be some glimpsed views during winter months when trees are not in leaf, however it would still be the case that the proposed planting would provide an effective screen throughout the whole year due to the depth proposed, combined with the screening effect of earth bunds in some instances.

Effects on visual receptors

7.10.55. The effects on visual receptors within the study area are reported in Appendix 7.4 (Visual Receptors) (**TR010038/APP/6.3**) and located on Figures 7.5.1 and 7.5.2 (**TR010038/APP/6.2**). A summary of year 1 and year 15 visual effects on each receptor group is provided in Tables 7-12 and 7-13.

Table 7-12 : Year 1 operation effects on visual receptors (summary)

Visual receptor type	Significance – number of visual receptors affected				
	Very large adverse	Large adverse	Moderate adverse	Slight adverse	Neutral
Residential	0	5	7	8	22
Community	0	0	0	2	1
Commercial	0	0	0	0	2
PRoW	0	0	2	5	9
Roads	0	0	0	9	4

Table 7-13 : Year 15 operation effects on visual receptors (summary)

Visual receptor type	Significance – number of visual receptors affected				
	Very large adverse	Large adverse	Moderate adverse	Slight adverse	Neutral
Residential	0	0	4	7	31
Community	0	0	0	0	3
Commercial	0	0	0	0	2
PRoW	0	0	0	2	14
Roads	0	0	0	4	9

7.10.56. The following sections provide a general overview of the effects on each receptor type, summarising the potential nature, extent and significance of visual effects that would occur across the study area.

Residential receptors

7.10.57. The residential receptors that would be subject to a significant visual effect in the year of Year 1 are as follows:

- R5: Oak Farm properties and R6: Ash Lodge properties (moderate adverse), due to their proximity to the Proposed Scheme.
- R11: Hill View properties (large adverse), due to their proximity to the Proposed Scheme.
- R14: Newgate House (large adverse), located directly to the north of the Proposed Scheme.
- R18: Sycamore Farm properties (large adverse), located directly to the south of the Proposed Scheme.
- R21 and R22: Properties beside Sandy Lane (large adverse), located directly to the north of the Proposed Scheme.
- R26: Property at western extent of Honingham (moderate adverse), located directly to the south of the proposed Wood Lane junction.
- R31: Hall Farm (moderate adverse) and R32: Hall Farm Cottages (moderate adverse) located directly to the north of the Proposed Scheme;
- R34: Properties opposite Church Plantation (moderate adverse), located directly to the north of the proposed Norwich Road junction.
- R41: Caravan site, Mattishall Lane (moderate adverse), located directly south east of the Proposed Scheme.

7.10.58. All residential receptors identified as experiencing significant visual effects are located in close proximity to the Proposed Scheme and views would be opened up by clearance of vegetation within the Site. In the context of the 9km Proposed Scheme, a relatively limited number of residential receptors have been identified as experiencing significant visual effects at Year 1.

7.10.59. Negligible difference between effects experienced during Year 1 summer and winter have been identified.

7.10.60. By year 15 of operation new planting proposed as part of the environmental masterplan (**TR010038/APP/6.8**) would have reduced the visual effect at most residential receptors to not significant. However, the following residual moderate adverse (significant) effects have been assessed at Year 15 of operation:

- R11: Hill View properties (large adverse), located directly to the north of the Proposed Scheme.
- R14: Newgate House (moderate adverse), located directly to the north of the Proposed Scheme.

- R18: Sycamore Farm properties (moderate adverse), located directly to the south of the Proposed Scheme.
- R21 and R22: Properties beside Sandy Lane (moderate adverse), located directly to the north of the Proposed Scheme.

7.10.61. Referring to the detailed assessment of visual receptors in Appendix 7.4 (**TR010038/APP/6.3**), a limited difference between effects experienced during summer and winter have been identified at Year 15. This is due mainly to the effective screening proposals provided in the environmental masterplan (**TR010038/APP/6.8**).

Footpath receptors (including community facilities and PRow)

7.10.62. The recreational receptors that would be subject to a significant visual effect in Year 1 are as follows:

- On footpaths to the south of Hockering and the Proposed Scheme, in proximity to the River Tud. Views north from the footpaths would comprise intermittent views of the Proposed Scheme.
- On partially elevated footpaths located to the north of the proposed Wood Lane junction looking in a southerly direction.
- Beside St Peter's Church, Easton, at which clearance of mature trees to the north of the church would open up views of the Proposed Scheme.

7.10.63. In the context of the 9km Proposed Scheme, a relatively limited number of recreational receptors have been identified as experiencing significant visual effects.

7.10.64. By year 15 of operation new planting proposed as part of the environmental masterplan (**TR010038/APP/6.8**) would have reduced the visual effect at these and all other recreational receptors to not significant.

Community receptors

7.10.65. No community receptors have been assessed as experiencing a significant visual effect in Year 1 or year 15.

Commercial receptors

7.10.66. No commercial receptors have been assessed as experiencing a significant visual effect in Year 1 or year 15.

Road receptors

7.10.67. No road receptors have been assessed as experiencing a significant visual effect in Year 1 or year 15.

7.11. Monitoring

- 7.11.1. Monitoring commitments will be defined as an outcome of the DCO process, however initial assumptions on the scope of ongoing maintenance and management interventions to achieve the environmental objectives of the Proposed Scheme are set out in the Environmental Management Plan (**TR010038/APP/7.4**).
- 7.11.2. Planting and seeding, proposed as mitigation for landscape and visual effects, would be maintained in order to achieve their full establishment throughout construction and then handed over for a landscape-establishment maintenance period of five years, prior to handover to the future maintaining authority for on-going highway maintenance.

7.12. Summary

- 7.12.1. The LVIA chapter comprises a description of the existing environment and identification of the potential effects of the Proposed Scheme on surrounding landscape and visual receptors. The landscape 'receptors' with potential to experience change as a result of the Proposed Scheme comprise landscape character areas. The visual 'receptors' with potential to experience change as a result of the Proposed Scheme comprise representative viewpoints and individual receptor locations.
- 7.12.2. The assessment of landscape and visual effects includes consideration of the effect of change to or removal of existing landscape features; the effect of temporary construction works; the effect of the introduction of new highway infrastructure; the effect of vehicles travelling along the Proposed Scheme; and the effect of the requirements identified in the environmental masterplan (**TR010038/APP/6.8**).
- 7.12.3. Overall, during and as a direct consequence of construction there would be a moderate adverse (significant) effect on landscape character associated with the proposed removal of, and change to, existing vegetation and land use to allow construction to take place.
- 7.12.4. During construction some visual receptors would be subject to large to moderate adverse (significant) visual effects, associated with views of construction activities. However, in the context of the 9km Proposed Scheme and given the low density of settlement within the study area, a limited number of residential receptors have been identified as experiencing significant visual effects. The largest construction effects on visual receptors would associate with those locations in closest proximity to the construction activities associated with the Proposed Scheme, particularly residential receptors and users of footpaths.

Notable areas in which visual effects have been identified during construction are:

- to the south and west of Hockering as the Proposed Scheme is located in an open area to the south of the existing A47, such as at R5: Oak Farm properties, R6: Ash Lodge properties, R11: Hill View properties, R14 Newgate House, R18: Sycamore Farm properties and R21 and R22: Properties beside Sandy Lane
- in the vicinity of the proposed Wood Lane junction, such as at R24: Berry Hall properties and R25: Merrywood House. Also, footpaths to the south of the proposed junction in the vicinity of the River Tud
- R26: Property at western extent of Honingham, located directly to the south of construction operations associated with the proposed Wood Lane Junction, including a diverted local road
- In the vicinity of the proposed Norwich Road junction, such as R31: Hall Farm and R32: Hall Farm Cottages
- R34: Properties opposite Church Plantation, located directly to the north of construction operations associated with the proposed Norwich Road Junction
- R41: Caravan site, Mattishall Lane, located directly south east of the Proposed Scheme
- On partially elevated footpaths located to the north of the proposed Wood Lane junction looking in a southerly direction
- Beside St Peter's Church, Easton, at which clearance of mature trees to the north of the church would open up views of construction operations

7.12.5. At Year 1 there would be a moderate adverse (significant) effect on landscape character arising from the residual loss of vegetation and relative prominence of Proposed Scheme infrastructure. The majority of the Proposed Scheme would be located within LCAs A5 and D2, which would be subject to Significant landscape effects at Year 1. LCAs A5 and D2 are landscape character areas which are associated with river corridors, the River Tud being the focus in this extent of the LCAs, and their characteristics are defined by the landform, vegetation cover and more intimate, enclosed nature of the landscape. In each case, it has been determined that there would be a significant effect at Year 1 due to the Proposed Scheme due to the notable change that would occur due to the introduction of a new road corridor and all associated local access roads, earthworks, as well as the loss of existing field pattern and loss of some tree and hedgerow cover. In the case of the LCA D2, it has been assessed that at Year 1, there would be a Large adverse level of effect on LCA D2, due mainly to the introduction of the two proposed junctions and bridge crossing over the River Tud.

7.12.6. At Year 1 there would be moderate to large adverse (significant) effects on some visual receptors. Effects at Year 1 would be broadly similar to those identified during construction, prior to the establishment of proposed mitigation, with the following notable key areas of effects:

- Residential receptors to the south and west of Hockering as the Proposed Scheme is located in an open area to the south of the existing A47, such as at R5: Oak Farm properties, R6: Ash Lodge properties, R11: Hill View properties, R14 Newgate House, R18: Sycamore Farm properties and R21 and R22: Properties beside Sandy Lane
- In the vicinity of the proposed Wood Lane junction, such as at R24: Berry Hall properties, R25: Merrywood House, and R26: Property at western extent of Honingham. Also, footpaths to the south of the proposed junction in the vicinity of the River Tud
- R26: Property at western extent of Honingham, located directly to the south of construction operations associated with the proposed Wood Lane junction, including a diverted local road
- In the vicinity of the proposed Norwich Road junction, such as R31: Hall Farm and R32: Hall Farm Cottages
- R34: Properties opposite Church Plantation, located directly to the north of construction operations associated with the proposed Norwich Road junction
- R41: Caravan site, Mattishall Lane, located directly south east of the Proposed Scheme
- On partially elevated footpaths located to the north of the proposed Wood Lane junction looking in a southerly direction
- Beside St Peter's Church, Easton, at which clearance of mature trees to the north of the church would open up views of construction operations

7.12.7. By year 15 of operation, with the establishment of Proposed Scheme landscape mitigation, effects on landscape features would be neutral (not significant). Effects on landscape character would also be slight adverse (not significant).

7.12.8. By year 15 of operation the establishment of Proposed Scheme planting would contribute to screening and landscape integration resulting in an overall residual minor adverse (not significant) visual effect. Noted residual moderate adverse (significant) effects on five visual individual receptors comprise:

- R11: Hill View properties, located directly to the north of the Proposed Scheme.
- R14: Newgate House, located directly to the north of the Proposed Scheme.
- R18: Sycamore Farm properties, located directly to the south of the Proposed Scheme.
- R21 and R22: Properties beside Sandy Lane, located directly to the north of the Proposed Scheme.

7.12.9. Overall, this assessment concludes that the Proposed Scheme would not result in an overall significant residual impact on landscape and visual amenity. A small number of residual significant visual effects have been identified, however proposed mitigation would successfully integrate the Proposed Scheme into the existing landscape and visual setting by year 15 of operation.

7.13. References

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7.14. Glossary

AIA – Arboricultural Impact Assessment

BOAT – Byway Open to All Traffic

BS – British Standard

CEMP – Construction Environmental Management Plan

CMLI – Chartered Member of the Landscape Institute

DCO – Development Consent Order

DMRB – Design Manual for Roads and Bridges

EIA – Environmental Impact Assessment

EMP – Environmental Management Plan

ES – Environmental Statement

GLVIA – Guidelines for Landscape and Visual Impact Assessment

HLC – Historic Landscape Characterisation

LCA – Landscape Character Area

LVIA – Landscape and Visual Impact Assessment

NCA – National Character Area

NSIP – Nationally Significant Infrastructure Project

PCF – Project Control Framework

PEIR – Preliminary Environmental Information Report

PRoW – Public Right of Way

ZTV – Zone of Theoretical Visibility