

A47 Blofield to North Burlingham Dualling

Scheme Number: TR010040

Volume 6

6.1 Environmental Statement

Chapter 7 – Landscape and Visual Effects

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CHAPTER 7
LANDSCAPE AND VISUAL EFFECTS

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7. Landscape and visual effects

7.1. Introduction

- 7.1.1. As part of the Environmental Impact Assessment (EIA) process, this Environmental Statement (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 impacts of the Proposed Scheme upon surrounding landscape and visual receptors and identification of appropriate mitigation.
- 7.1.2. The approach to this assessment follows the Scoping Report (February 2018) and subsequently agreed Scoping Opinion (March 2018) for the Proposed Scheme, in combination with the most up to date guidance in the Design Manual for Roads and Bridges (DMRB), LA107 Landscape and Visual Effects.
- 7.1.3. The main chapter text is supported by Appendices 7.1 to 7.8, which contain:
- a summary of relevant planning policy
 - detail on the landscape and visual assessment methodology
 - the viewpoint visualisation methodology
 - figures supporting the written content of the assessment
 - detailed assessment of the Proposed Scheme effect on landscape and views
 - an arboricultural survey and impact assessment
 - a lighting survey and impact assessment
- 7.1.4. The assessment considers the effect of the Proposed Scheme on the surrounding landscape character. This includes an assessment of its effect on existing vegetation and other features located either side of the highway and along the route of the diverted gas main. The term 'landscape' is used throughout the assessment to refer to both 'landscape' and 'townscape' effects.
- 7.1.5. 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). 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 in assessing the landscape and visual effects of large-scale infrastructure developments.

- 7.2.2. The landscape competent expert holds a BA (Hons) Degree in Landscape Architecture, CMLI status and over 20 years' experience working in the field of landscape assessment and design. This includes numerous large-scale highway schemes across the UK. The competent expert has also represented landscape and visual issues at topic hearings as part of the Nationally Significant Infrastructure Project (NSIP) application process.

7.3. Legislative and policy framework

- 7.3.1. Legislative and policy context is included in chapter 1 Introduction. Landscape related policy is summarised in Appendix 7.1 (Planning Policy Context) **(TR010040/APP/6.2)**.
- 7.3.2. The key legislation, policy and supplementary guidance themes of relevance to this assessment are:
- protection and enhancement of the value, quality and character of the landscape (including local distinctiveness and sense of place)
 - the consideration of efficiency in long term maintenance implications
 - adaptability to climate change
 - integration of sustainability principles
 - integration with a broader green infrastructure framework
 - maintaining gaps between settlements
 - retention of mature or significant trees, groups of trees or woodland (and where removal is proposed, replacement with those of similar amenity value)
 - limitation of impact on dark skies
 - enhancement of the approach to Blofield at the A47 junction with Yarmouth Road
 - protection of views of community importance (views from and approaching the eastern edge of Blofield)

7.4. Assessment methodology

Reference sources

- 7.4.1. Highways England requires highways projects to be assessed and reported in accordance with procedures set out within 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 guidance as follows:
- *DMRB LA104 Revision 1 Environmental Assessment and Monitoring* (Highways England, September 2019)

- *DMRB LA107 Revision 0 Landscape and Visual Effects* (Highways England, September 2019)
- *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. The structure of this assessment is broken down into in the following six stages:

- 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 receptor susceptibility and value).
- An assessment of the **potential impacts** associated with the Proposed Scheme.
- Identification of **mitigation**.
- 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 **significance** of the effect on the receptor.

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 landscape features and landscape character areas (LCA). The identification (and in some cases quantification) of the effects of the Proposed Scheme on landscape features informs the overall assessment of the significance of the effects on each landscape character area.

7.4.5. The visual receptors with potential to experience change as a result of the Proposed Scheme comprise 13 representative viewpoints and the individual receptors with potential to experience views of the Proposed Scheme (that is, people in specific locations such as their homes, public areas or places of work). The assessment of the effects on representative viewpoints also informs the assessment of the significance of the effects on the individual visual receptors whilst providing illustration of typical views of the Proposed Scheme.

7.4.6. The assessment of landscape and visual effects includes consideration of the following influences:

- 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 (for example loss of existing trees).
- The effect of temporary construction activity (for example presence of plant, temporary buildings, materials storage, and construction traffic 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 one (winter) during operation; short term (temporary) effects
- year 15 (summer) during operation (mitigation design year once planting has gained a relative stage of maturity); medium term (permanent) effects

7.4.8. The assessment of operational effects at winter year one after opening constitutes a 'worst case' assessment scenario. The assessment of effects at summer year 15 after opening represents a point by which Proposed Scheme planting would have established to contribute notably to visual screening and integration.

7.4.9. The assessment assumes the following timeframes:

- start of construction works in 2022
- estimated 22 month duration of construction
- fully open for traffic in 2024

7.4.10. The assessment considers the relative nature of 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 in available views of the landscape and its content, for residents and visitors caused by the development of the Proposed Scheme

- 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

7.4.11. Further detail on the digital modelling aspect of the methodology is included in Appendix 7.3 (ZTV and Verified Photomontage Methodology) (**TR010040/APP/6.2**).

7.4.12. The approach to assessment of the night-time effects of lighting is reported in Appendix 7.8 (**TR010040/APP/6.2**). The assessment of night-time effects in chapter 7 takes reference from Appendix 7.8 to inform understanding of the effects of lighting on visual receptors. Chapter 7 does not however seek to replicate what is written in Appendix 7.8, so the two documents need to be read together to understand the relative nature and extent of night-time lighting effects.

Update to guidance and scope of assessment

7.4.13. Following a review of change to requirements following the publication of *DMRB LA107* in 2019, the scope of this assessment has been updated from that included in the Scoping Report of the Proposed Scheme (2018) to acknowledge the scoping criteria set out in *DMRB LA107* and summarised in Tables 7-1 and 7-2 below.

7.4.14. Tables 7-1 and 7-2, in accordance with *DMRB LA107*, set out the proposed scope for further assessment in the ES. 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 characteristics or distinctive features?	Construction of the Proposed Scheme would involve removal of existing trees and hedgerows which would initially bring about loss of existing landscape features and fragmentation of the local landscape pattern. This effect would be re-balanced by the establishment of Proposed Scheme planting during operation.	Yes
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 planting 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 Blofield and North Burlingham but would not notably affect their 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 relatively sparsely populated but includes the visual outlook from Blofield and North Burlingham, along with views from individual residential properties and Public Rights of Way (PRoW). 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 PRoW, albeit that their sensitivity is typically conditioned by views of the existing A47.	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 has the potential to result in significant visual effects, most notably attributable to the construction stage and early years of operation.	Yes

7.4.15. Since issue of the Scoping Report 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 7.3 (ZTV and Verified Photomontage Methodology) (TR010040/APP/6.2) but does not notably change the approach previously advised in the Scoping Report.

7.4.16. The change in assessment guidance noted above does not affect the focus of points raised in the Scoping Opinion, all of which have been considered and addressed in this assessment.

Consultation

7.4.17. Since issue of the Preliminary Environmental Information Report, consultation has been undertaken with the Arboriculture and Landscape Conservation Officer at Broadland District Council to reaffirm representative assessment viewpoint locations and extent of study area (August 2019). These were agreed as being acceptable as proposed, without further amendment.

7.4.18. Further consultation with Broadland District Council was undertaken in July 2020 to establish whether additional detail on the proposed alignment of the gas main diversion would affect previous opinion on the locations of representative assessment viewpoints. The consultation also invited comment on proposed

species mixes for inclusion in mitigation proposals. At the current time (October 2020) no response has been received, so a no further comment outcome has been assumed.

Assessment criteria

- 7.4.19. The assessment criteria defined in DMRB LA107 have been adopted, with the addition of clarifications where relevant to assist interpretation (refer to Appendix 7.2 (Landscape and Visual Assessment Criteria) (**TR010040/APP/6.2**)). The overarching criteria for determination and definition of the significance of effects is included in chapter 4 Environmental Assessment Methodology.
- 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.
- 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 (for example the more sensitive).
- 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. For the purpose of this assessment, significance has been determined in accordance with the criteria set out in DMRB LA104 and referenced in chapter 4 Environmental assessment methodology.

7.5. Assessment assumptions and limitations

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

- 7.5.2. Response has not yet been received (September 2020) from Broadland District Council on whether additional detail on the proposed alignment of the gas main diversion would affect previous opinion on the locations of representative assessment viewpoints. The consultation also invited comment on proposed species mixes for inclusion in mitigation proposals. The current assumptions are that viewpoint locations are appropriate and that species mixes will be based on site observations and information recorded in the arboricultural and habitat surveys. The outstanding response therefore has potential to affect the current assumptions.

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 LA104 Environmental Assessment and Monitoring and LA107 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) (**TR010040/APP/6.3**) for the extent of ZTV and Appendix 7.3 (ZTV and Verified Photomontage Methodology) (**TR010040/APP/6.2**) 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.
- 7.6.2. Taking account of the above, the study area for the LVIA has been identified to extend to typically 1km from the red line boundary (Volume 2, Figure 1.1 (Scheme overview) (**TR010040/APP/6.3**)). Where there is potential for a specific landscape and visual effect to be experienced beyond the 1km study area this is noted within the assessment. The area within the red line boundary is hereafter referred to as 'the Site'.

7.7. Baseline conditions

- 7.7.1. The landscape context of the proposed Scheme comprises a spur of gently undulating rural landscape to the east of Norwich. The topography reaches a highpoint of around 29m Above Ordnance Datum (AOD) to the north of Blofield, set between the flat Broads of the River Bure to the north and the River Yare to the south.
- 7.7.2. The existing A47 is relatively well integrated with its surroundings, with the roadside including extents of mature hedgerows and trees that contribute to the screening of the highway and vehicles. The relatively shallow grade of the surrounding landform in combination with areas of woodland and trees in the wider landscape also limit the potential for extensive views along the length of route. At the eastern and western extents of the Proposed Scheme the influence

of the A47 is more apparent where roadside vegetation is absent or where adjacent field boundaries are sparse.

- 7.7.3. The Site extends along the existing A47 highway corridor between Blofield and North Burlingham (refer to Figure 7.1 (Site Location) (**TR010040/APP/6.3**)). 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.
- 7.7.4. Settlement within the extents of the study area is characterised by villages, clusters of houses and isolated farmsteads. The main areas of settlement associate with the villages of Blofield and Lingwood and the smaller linear settlements of North Burlingham and Burlingham Green. Brundall and Acle are respectively located to the south-west and east of the Proposed Scheme, beyond the immediate limits of the study area.
- 7.7.5. The Norwich to Great Yarmouth railway line runs through the south-eastern extents of the study area. Public Rights of Way (PRoW) within the study area are concentrated around the settlement edges of Blofield, Lingwood and North Burlingham.

Landscape

Landscape designations

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

Landscape features

- 7.7.7. 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 and hedgerows).
- 7.7.8. Physical features in the immediate vicinity of the 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. The existing A47 is partially bounded by mature trees and hedgerows but is more widely characterised by a setting of open arable farmland with limited field boundary vegetation.
- 7.7.9. The following provides a summary of the principal existing landscape features within the Site.

Trees and hedgerows

- 7.7.10. Existing trees associated with the Site have been the subject of an arboricultural survey (included in Appendix 7.7 (Arboricultural Survey) (**TR010040/APP/6.2**)).

- 7.7.11. Woodland cover is generally limited where land is in agricultural use although some areas of land to the south of the A47 have recently been planted to provide community woodland. Mature woodland is found in the grounds of old houses in the north, particularly at North Burlingham, associated with the former parkland of Burlingham House, and along the tributaries of the Yare and Bure and around settlements.
- 7.7.12. Hedgerows form the boundaries of fields, with a predominance of hawthorn, but also including beech, hazel and elder. 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. Two hedgerows in the vicinity of North Burlingham have been identified under The Hedgerow Regulations as being important (refer to chapter 8 Biodiversity).
- 7.7.13. 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.
- 7.7.14. Existing trees and hedgerows, by virtue of their combined value contribution to the structure and appearance of the landscape, are considered to be of **medium sensitivity** to change.

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. A number of distinctly smaller scale, enclosed fields used for horse grazing are located on the western edge of North Burlingham.
- 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.
- 7.7.17. Agricultural land (as distinct from the structure afforded to the land by the trees and hedgerows referenced above) is considered to be of **low sensitivity** to change due to its large scale and extensive occurrence throughout the study area. The localised variation to this is in the vicinity of North Burlingham where

the more intimately scaled pastoral fields are considered to have a **medium sensitivity** to change.

Landscape character

National Character Areas

- 7.7.18. The study area lies within *National Character Area (NCA) 79; North East Norfolk and Flegg*, which comprises a generally flat, low-lying landscape. It has limited topographic variation and slopes gently from west to east, becoming flatter as it merges with the Broads. The area is notable for its deep, loamy, free draining and highly fertile soils which support productive arable farming. The rich agricultural land generally comprises small to medium scale fields which are bordered by high hedgerows and prominent hedgerow oaks. The area is also characterised by isolated farmsteads and small, nucleated villages with large medieval churches which are linked by a dense network of lanes.
- 7.7.19. The A47 is noted to form a strategic route for commuting and trade between Great Yarmouth and Norwich. It is also noted within the NCA under the topic of 'Experiential qualities' and the sub-topic of 'Intrusion' that the existing A47 presents a rural disturbance in the area around Blofield.

Local character areas

Published landscape character areas

- 7.7.20. In terms of local landscape character, the study area lies within the Broadland District Council *Landscape Character Assessment 'Blofield Tributary Farmland' and 'Freethorpe Plateau Farmland'* (LCA) – refer to Figure 7.3 (Landscape Character) (**TR010040/APP/6.3**) for the extent of LCAs.
- 7.7.21. The Broadland District Council *Landscape Character Assessment* describes the Blofield Tributary Farmland LCA (which coincides with the western extents of the Site) as associating with a shelving and gently undulating landform, occasionally cut through by small tributary valleys. Landcover is dominated by arable farmland, with medium to large fields bounded by hedgerows. Woodland cover typically associates with river corridors and the peripheries of settlements. The A47 is noted under the visual character summary topic, as '*a major transport route, which effectively sub-divides the area.*' Under the character area '*Inherent Landscape Sensitives*' topic, a relatively strong sense of tranquillity is noted away from major transport routes and the '*Landscape Planning Guidelines*' includes the objective to '*seek to conserve the relatively strong sense of tranquillity within central and northern parts of the area.*'
- 7.7.22. The eastern extents of the Site associate with the Freethorpe Plateau Farmland LCA which is characterised by a flat, elevated landform that stands above the

surrounding landscape. Landcover in the area is mainly arable farmland, with medium to large fields typically bounded by hedgerows, although many hedges have been lost due to the intensification of arable agriculture. Small woodland clumps of mixed or deciduous trees are infrequently scattered across the area. The landscape pattern of the area is therefore quite simple and open, affording the potential for long distance views in places.

- 7.7.23. The 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 and 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 chapter 6 Cultural Heritage.

Assessment landscape character areas

- 7.7.24. Assessment landscape character areas have been identified as an outcome of review of the above published landscape character studies and site observation (refer to Figure 7.3 (Landscape Character) (**TR010040/APP/6.3**) for the extent of each character area). The following character areas have been used as the basis for assessment of the Proposed Scheme landscape effects:

- LCA 1: Blofield settlement
- LCA 2: Blofield / Lingwood valley
- LCA 3: Blofield / Lingwood plateau
- LCA 4: Burlingham plantation
- LCA 5: Freethorpe plateau

- 7.7.25. Baseline descriptions of each of the above five LCAs are presented in Appendix 7.4 (Landscape Character Areas) (**TR010040/APP/6.2**). Each of the baseline landscape descriptions includes a summary of the key characteristics of the landscape within the extents of the study area. These characteristics inform an understanding on the sensitivity of the LCA to the Proposed Scheme (that is, 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 1: Blofield Settlement	Low density residential development; notable tree cover; landmark church spire; gently graded sloping landform; limited intervisibility and low tranquillity.	Medium sensitivity
LCA 2: Blofield / Lingwood Valley	Broad 'valley' landscape; expansive visual relationships with setting from upper slopes, more intimate and contained lower slopes; large scale arable fields delineated by fragmented tree and hedgerow boundaries; landmark church spires; limited tranquillity.	Medium sensitivity
LCA 3: Blofield / Lingwood Plateau	Extensive 'plateau' landscape; medium to large scale arable fields delineated by fragmented tree and hedgerow boundaries; landmark church spire; limited tranquillity.	Medium sensitivity
LCA 4: Burlingham Plantation	Woodland copse and plantation tree cover defining enclosure of fields and settlement; views and vistas limited or filtered by the extent of tree cover; underlying 'plateau' topography; small to medium scale arable fields; limited tranquillity.	Medium sensitivity
LCA 5: Freethorpe Plateau	Extensive 'plateau' landscape; large scale arable fields delineated by fragmented tree and hedgerow boundaries; open aspect; limited tranquillity.	Medium sensitivity

Visual

Key visual influences

7.7.26. Towards the eastern extents of the study area the broad plateau topography and openness of the agricultural landscape affords extensive views across the area. Closer to Blofield and towards the western extents of the study area the rolling topography creates a more diverse visual experience with extensive views from high points and enclosed views associated with valley features. The extent of views across the landscape to the north of the Site is influenced by the partial screening effect of woodland and mature hedgerow trees.

Zone of theoretical visibility

- 7.7.27. The extent of ZTV is notably influenced by vegetation and topography, with some limitation afforded by built form (refer to Figure 7.4 (Visual Context) **(TR010040/APP/6.3)** for the extent of ZTV and Appendix 7.3 (ZTV and Verified Photomontage Methodology **(TR010040/APP/6.2)**) for the approach to ZTV modelling).
- 7.7.28. The extent of ZTV is limited along the majority of the Proposed Scheme by field boundary vegetation in the form of hedgerows with scattered mature trees and by woodland plantation blocks in the vicinity of North Burlingham. A line of vegetation along the Norwich to Great Yarmouth railway line limits the extent of visibility to the south-east of the Proposed Scheme.

- 7.7.29. Topographical influences are most apparent in the western extents of the study area where a subtle valley landform to the east of Blofield broadly limits the extent of visibility within a north to south orientating dip in landform.
- 7.7.30. The greatest influence of built form on the extent of visibility is afforded by the eastern settlement edge of Blofield, which limits the potential for extensive visibility from within the village.

Key visual elements

- 7.7.31. From west to east, the following key visual elements are present within the study area:
- St Andrew and St Peter Church spire located on the southern edge of Blofield
 - distinctive shelterbelts of poplar trees in the vicinity of the Yarmouth Road junction with the A47
 - broad open arable fields with extents demarcated by rectilinear hedgerows and occasional lines of mature trees
 - isolated farmsteads scattered throughout the agricultural fields
 - blocks of plantation woodland around Burlingham Green and North Burlingham, including the former extents of Burlingham Park
 - St Andrew's Church spire on the western edge of North Burlingham
 - lighting columns associated with the junction of the A47 and B1140 to the south and east of North Burlingham

Night-time context

- 7.7.32. The most visible sources of artificial light include
- illumination from buildings and street lights in and around the main settlement extents of Blofield, Lingwood and North Burlingham
 - highway lighting at the A47 North Burlingham junction with the B1140
 - football and training pitch lighting, including 16m high floodlights, at the Norwich United Football Club ground at Plantation Park
 - lighting within the forecourt of Norwich Camping and Leisure retail unit in Blofield and
 - lighting within the compound of the 'Garden Buildings' business in North Burlingham.
- 7.7.33. Existing A47 highway lighting associated with the B1140 junction consists of 12m high columns, which appear notably brighter than the surrounding area which is mainly unlit.
- 7.7.34. 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 Blofield and North Burlingham the surrounding areas are susceptible to a spread or coalescence of lighting beyond existing limits.

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

Representative viewpoints

- 7.7.36. Thirteen representative viewpoint locations have been selected and agreed with Broadland District Council to assist in understanding the appearance and visual effects of the Proposed Scheme. The locations of representative viewpoints are shown in Figure 7.4 (Visual Context) (**TR010040/APP/6.3**).
- 7.7.37. No specific landscape or visual sensitivities have been identified (with reference to any heightened designation value or focus on a particular key view) therefore viewpoints have been selected to represent the typical range of visual receptor types, viewing distances and directions associated with the study area.
- 7.7.38. 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.
- 7.7.39. 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	Distance (m) and direction from Proposed Scheme (most visible component)	Reason for selection	Viewpoint sensitivity (to the Proposed Scheme)
1	Waterlow	115m south-west	Representative of views experienced by residents at Waterlow and road users of Waterlow and Blofield Road.	High
2	High Noon Lane	700m north-west	Specifically requested by Broadland District Council. Representative of views experienced by residents of farmsteads at Bullacebush Farm and High Noon Farm and road users of High Noon Lane and Bullacebush Lane.	High
3	Lingwood Road	55m west	Representative of views experienced by residents of properties in the vicinity of Poplar Farm and road users of Lingwood Road.	High

Viewpoint reference	Location	Distance (m) and direction from Proposed Scheme (most visible component)	Reason for selection	Viewpoint sensitivity (to the Proposed Scheme)
4	Main Road (North Burlingham)	140m north	Representative of views experienced by residents of North Burlingham and road users of Main Road.	High
5	Lingwood Lane	790m south-west	Representative of views experienced by residents of properties along Lingwood Lane and White House Lane and road users of Lingwood Lane and White House Lane.	High
6	White House Lane	0m (within Site boundary)	Representative of views experienced by residents of properties at The Coach House and users of White House Lane (B1140).	Medium
7	Burlingham Woodland Walk	730m north-west	Representative of views experienced by recreational users of the Burlingham Woodland Walk (between The Windle and South Walsham Road) and residents of Burlingham Lodge Farm.	High
A	Blofield Byeway Open to All Traffic (BOAT) 11 PRoW	590m south-west	Representative of views experienced by residents of properties on Shillito Road and recreational users of the PRoW between Braydeston Hall Lane and Lingwood Road.	High
B	Yarmouth Road	0m (within Site boundary)	Representative of views experienced by residents on the north-eastern edge of Blofield, recreational users of the allotments south of Yarmouth Road, road users of Yarmouth Road and Waterlow and business users of Norwich Camping and Leisure.	Medium
C	Blofield Road	375m south	Representative of views experienced by residents on Lingwood Road and road users of Lingwood Road.	High
D	South Walsham Road	0m (within Site boundary)	Specifically requested by Broadland District Council. Representative of views experienced by road users of South Walsham Road (B1140).	Low
E	The Windle	200m north-east	Representative of views experienced by residents of properties at the junction of The Windle and the A47 and road users of The Windle.	Medium
F	Main Road (western edge of North Burlingham)	120m north	Representative of views experienced by residents of North Burlingham and road users of Main Road.	High

7.7.40. Representative viewpoints have been divided into visualisation views (1 to 7) and baseline views (A to F) following discussion and agreement of the respective focus with Broadland District Council. Visualisation views include photomontage illustration of the Proposed Scheme, whilst baseline views consist photographs of the existing situation. 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.

- 7.7.41. A description of the existing and proposed view at each viewpoint location is provided in Appendix 7.6 (Representative Viewpoints) (**TR010040/APP/6.2**). Baseline photographs of the view from each representative viewpoint location are presented in Figures 7.6.1 to 7.6.13 (**TR010040/APP/6.3**). Photomontage images of visualisation viewpoints are presented in Figures 7.6.1 to 7.6.7 (**TR010040/APP/6.3**).

Table 7-5 : Representative viewpoints assessment reporting

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

Visual receptors

- 7.7.42. The locations of visual receptors are identified in Figures 7.5.1 and 7.5.2 (Visual Receptors) (**TR010040/APP/6.3**). A description of the existing view from each receptor location is provided in Appendix 7.5 (Visual Receptors) (**TR010040/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).
 - Highway locations (views from people travelling along roads).
- 7.7.43. The close proximity of the Proposed Scheme to the existing A47 means that many of the visual receptors within the study area already experience existing views of highway infrastructure and traffic. As a result, the sensitivity of receptors to visual change as a consequence of the Proposed Scheme is diminished by exposure to the existing A47.
- 7.7.44. Forces for change with potential to affect the visual setting and views are limited but include areas of new build housing on the periphery of Blofield.
- 7.7.45. A summary of the type and location of the main visual receptor groups is provided below.

Residential receptors

- 7.7.46. The potential for views from residential properties includes those collectively grouped on the north-eastern edge of Blofield, the northern edge of Lingwood and a smaller grouping of residential properties on the southern edge of North Burlingham. Residential receptors also include the more widely dispersed individual properties and hamlets located extensively across the study area to the north and south of the Proposed Scheme.
- 7.7.47. 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.
- 7.7.48. Residential receptors are generally considered to be **high sensitivity**, reducing to **medium sensitivity** where the A47 is a notable feature of the existing view.

Recreational receptors (including PRow and community facilities)

- 7.7.49. Various PRow footpaths and bridleways coincide with the extent of the study area, with potential to afford views from PRow on the north-eastern edge of Blofield, to the north of Lingfield and forming part of the Burlingham Woodland Walks close to North Burlingham.
- 7.7.50. The potential for recreational views would also include users of the allotments on the north-eastern edge of Blofield.
- 7.7.51. 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.
- 7.7.52. Footpath receptors are generally considered to be of **high sensitivity**, whilst other community facilities or activities are generally considered to be of **medium sensitivity**.

Commercial receptors

- 7.7.53. Views of the Proposed Scheme would be experienced by indoor workers at Burlingham Business Centre (North Burlingham) and by outdoor workers at Norwich Camping and Leisure, Atlantic Truck and Van Centre (Blofield) and Church Farm Units (North Burlingham). More general views would be experienced by agricultural workers within the extensive farmland that makes up the study area.
- 7.7.54. 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.
- 7.7.55. Commercial receptors associated with indoor workers are generally considered to be of **low sensitivity**, whilst receptors associated with outdoor workers are considered to be of medium sensitivity.

Road receptors

- 7.7.56. Views of the Proposed Scheme would be experienced by road users of the A47, B1140 and various minor roads to the north and south of the existing A47.
- 7.7.57. 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.
- 7.7.58. Road receptors are generally considered to be of **low sensitivity**.

7.8. Potential impacts

- 7.8.1. The potential effects of the Proposed Scheme which may result in significant landscape and/or visual impacts are summarised below. For the purposes of this assessment, construction effects are regarded as temporary and operation effects are regarded as permanent.

Construction

- Loss of existing woodland, trees and hedgerows associated with site clearance for the highway and gas main diversion.
- Earthworks associated with the storage of soil materials and grading of levels for the carriageway, overbridges, drainage and installation of the gas main diversion.
- The presence of site compounds and construction machinery.

Operation

- Creation of 2.6km of new dual carriageway.
- The physical presence of overbridges on the B1140 and at Blofield.
- Moving vehicles (visible and audible).
- Changes to the existing road network and non-motorised user routes.
- Changes to the existing landform due to earthworks (embankments and linear roadside bunds).
- Residual loss of existing vegetation (including gas main diversion easement constraints on potential for replanting).
- New woodland, trees and hedgerows as mitigation.
- New street furniture, including noise barriers, safety barriers, fencing and signing.
- New lights and lighting at the Yarmouth Road junction and change to the extent of lighting at the B1140 junction.

7.8.2. All landscape related mitigation is embedded within the Proposed Scheme design therefore the assessment of landscape and visual impacts is considered under the heading for assessment of likely significant effects.

7.9. Design, mitigation and enhancement measures

7.9.1. Landscape and visual related design interventions associated with the Proposed Scheme include:

- Input to the alignment of fence lines to accommodate the extent of proposed planting areas.
- Input to the location and extent of drainage soakaways and attenuation ponds to avoid existing vegetation and to accommodate the extent of proposed planting locations.

7.9.2. The overarching mitigation principles embedded in the Proposed Scheme design (which address strategic and policy derived objectives and location specific screening and integration functions) include:

- Protection and enhancement of habitats and biodiversity through:
 - integration of existing bat flight paths into the linear arrangement of hedgerows and treelines
 - creation of skylark habitat within areas of open grassland
 - extensive diversification of former farmland into species rich meadows
 - design of ponds to maximise landscape and ecological enhancement
- Protection and enhancement of the landscape character and sense of place by:
 - retaining the pervading sense of openness where this is consistent with a balanced preference for visual screening
 - integrating Proposed Scheme infrastructure (notably elevated overbridges) through appropriate use of planting to contribute to visual screening

- reinforcing existing plantation 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
- including for translocation and reinstatement of important hedgerows
- providing an appropriate Blofield 'gateway' semi-ornamental landscape treatment at the A47 junction with Yarmouth Road
- retaining or replacing and reinforcing existing vegetation where this contributes to the distinctive qualities of the landscape, including a notable line of poplar trees on the north-eastern edge of Blofield
- selecting plant and grass species appropriate to the locality to maintain consistency with the appearance of the area
- Protection of views of 'community importance' associated with the eastern landscape setting of Blofield. This would be achieved through a range of proposed landscape treatments including woodland, hedgerows and individual trees to integrate the Proposed Scheme without detriment to the general visual outlook.
- Acknowledgement of the setting of cultural heritage assets in maintaining existing church spire visibility associations with St Andrew's Church in North Burlingham.
- 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 of local provenance plant and grass species where possible in the interests of extending local flora and construction sustainability.

7.9.3. Primary landscape and visual mitigation measures embedded in the Proposed Scheme design are illustrated and detailed in the Masterplan (TR010040/APP/6.8) and commitments defined in the Environmental Management Plan (EMP) (TR010040/APP/7.7).

7.9.4. Mitigation measures would be established at year one of operation (currently anticipated to be 2023) with a mitigation design year of 2038. By the mitigation design year, proposed planting would have established to a point of relative maturity in contributing to mitigation objectives.

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.

7.9.6. For the purpose of assessment, mitigation planting growth and height assumptions have been defined in Table 7-6 below (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 one	Year 15
Individual trees (12-14cm heavy standard)	3.5m	7.5m
Woodland	0.6m	9m
Shrubs	0.6m	3-5m (depending on species)
Scrub	0.6m	1-2m
Hedgerow (maintained)	0.6m	1-2m
Hedgerow (unmaintained)	0.6m	3-5m (depending on species)

Construction

7.9.7. 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
- temporary storage of soil mounds in linear bunds in locations where this would be beneficial to the visual screening of construction works
- grass seeding of soil storage mounds to assist visual integration of earthworks
- protection of retained vegetation in accordance with British Standard (BS) 5837:2012

Operation

7.9.8. Mitigation during operation would comprise the embedded mitigation proposals described in the design interventions and mitigation introductory sections and detailed in the Masterplan (**TR010040/APP/6.8**). In summary this includes:

- use of screening vegetation to limit views of the Proposed Scheme
- use of native species appropriate to the local environment to aid integration with neighbouring landscape
- design of attenuation ponds for landscape and ecological enhancement
- inclusion of a earth bund between the existing A47 and Proposed Scheme contributing to visual screening
- smoothly profiled cuttings and embankments to soften earthwork grading with the surrounding landscape
- limiting the height of highway lighting columns and including back shields to luminaires where appropriate to limiting light spill

7.10. Assessment of likely significant effects

- 7.10.1. This section evaluates and assesses the significance of the effects of the Proposed Scheme on landscape and visual sensitivities following design refinement during the EIA process and application of embedded mitigation and enhancement measures.

Construction

- 7.10.2. Construction would result in temporary disruption to the footprint and setting of the Proposed Scheme. This would include vegetation clearance and earthworks associated with the grading of levels for a carriageway, overbridges and drainage. It would also include vegetation clearance and earthworks associated with installation of the gas main diversion and the presence of site compounds and construction machinery.

Landscape effects

General effects

- 7.10.3. The removal of existing vegetation, earthworks and presence of construction plant, materials, machinery, construction compounds and construction lighting would have an adverse effect on local landscape elements and character during construction.

Effects on landscape features

- 7.10.4. The Proposed Scheme would result in the loss of a line of mature shelterbelt trees on the southern edge of Waterlow, adjacent to the allotments on the north-eastern edge of Blofield. A line of mature trees along the northern edge of the A47 to the west of the Yarmouth Road junction at Blofield would also be removed by construction. More generally along the length of the Proposed Scheme the combined loss of hedgerows, mature trees and localised areas of woodland would result in an increased sense of openness within the landscape. Two hedgerows in the vicinity of North Burlingham identified under The Hedgerow Regulations as being important would be partially removed (refer to chapter 8 Biodiversity).
- 7.10.5. Construction would result in earthworks along the length of the Proposed Scheme, locally accentuated at the site of the Blofield and B1140 overbridges where the elevated landform would be graded up to nine metres above the existing ground level.
- 7.10.6. An 18m wide strip of land along the route of the proposed gas main diversion would be subject to vegetation clearance and ground excavation. This would

notably affect existing vegetation on Waterlow close to residential properties at Waterlow and areas of plantation woodland to the south of Poplar Farm.

- 7.10.7. Overall there would be a **minor adverse magnitude** of change and **slight adverse significance** of effect from construction on trees, hedgerows and the wider agricultural landscape. This would reflect the relative measure of how much the loss would affect the overall integrity of those features within the extent of study area.

Effects on landscape character

- 7.10.8. The detailed assessment of construction stage effects on landscape character is set out in Appendix 7.4 (Landscape Character Areas) (**TR010040/APP/6.2**). 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	Magnitude of change	Significance of effect
LCA 1: Blofield Settlement (medium sensitivity)	Minor adverse	Slight adverse
LCA 2: Blofield / Lingwood Valley (medium sensitivity)	Moderate adverse	Moderate adverse
LCA 3: Blofield / Lingwood Plateau (medium sensitivity)	Moderate adverse	Moderate adverse
LCA 4: Burlingham Plantation (medium sensitivity)	Moderate adverse	Moderate adverse
LCA 5: Freethorpe Plateau (medium sensitivity)	Moderate adverse	Moderate adverse

- 7.10.9. Generally, landscape character would be affected to a similar degree along the length of the Proposed Scheme. Landscape effects would however potentially appear more concentrated within the extents of LCA 2 to the east of Blofield where the inward focus of the subtle valley landform would accentuate the influence of construction within the relative containment of the setting.

Visual effects

General effects

- 7.10.10. The Proposed Scheme would bring about extensive disruption to the existing visual associations experienced within a relatively simple and typically rural landscape. The removal of existing vegetation would lead to an increased openness in views and the disruption caused by construction earthworks combined with the diverse and extensive influence of machinery and materials would notably contrast with the surroundings.

Night-time effects

- 7.10.11. It would be anticipated that construction operations would largely be undertaken during daylight hours, but with potential for an element of construction lighting. This would be expected to concentrate within site compounds and around the locations of overbridges and thereby most notably affect visual receptors on the eastern edge of Blofield (Blofield overbridge) and in the vicinity of North Burlingham (B1140 overbridge).
- 7.10.12. Overall there would be a **minor adverse magnitude** of change and **slight adverse significance** of effect on night-time views arising from construction.

Effects on representative viewpoints

- 7.10.13. The detailed assessment of construction stage effects on representative viewpoints is set out in Appendix 7.6 (Representative Viewpoints) (TR010040/APP/6.2). The conclusions of the visual assessment are summarised in Table 7-8 below.

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

Viewpoint reference	Magnitude of change	Significance of effect
1. Waterlow (high sensitivity)	Major adverse	Large adverse
2. High Noon Lane (high sensitivity)	Moderate adverse	Moderate adverse
3. Lingwood Road (high sensitivity)	Major adverse	Large adverse
4. Main Road (North Burlingham) (high sensitivity)	Minor adverse	Slight adverse
5. Lingwood Lane (high sensitivity)	Minor adverse	Slight adverse
6. White House Lane (medium sensitivity)	Major adverse	Large adverse
7. Burlingham Woodland Walk (high sensitivity)	Minor adverse	Slight adverse
A. Blofield BOAT11 PRow (high sensitivity)	Minor adverse	Slight adverse
B. Yarmouth Road (medium sensitivity)	Major adverse	Large adverse
C. Blofield Road (high sensitivity)	Moderate adverse	Moderate adverse
D. South Walsham Road (low sensitivity)	Major adverse	Moderate adverse
E. The Windle (medium sensitivity)	Minor adverse	Slight adverse

Viewpoint reference	Magnitude of change	Significance of effect
F. Main Road (western edge of North Burlingham) (high sensitivity)	Minor adverse	Slight adverse

7.10.14. The largest construction effects on representative viewpoints would associate with those locations in closest proximity to the Proposed Scheme, and which would in turn experience a noticeable or dominant magnitude of change.

7.10.15. Viewpoints one, two, six, B, C and D highlight that moderate to large adverse visual effects would be experienced by residential properties as a result of construction work associated with the elevated overbridges. Viewpoints 3 and B highlight that disruption to existing agricultural land and removal of existing vegetation within the immediate setting of viewpoints would result in large adverse visual effects on individual residential properties.

Effects on visual receptors

7.10.16. The effects on visual receptors within the study area are reported in Appendix 7.5 (Visual Receptors) (**TR010040/APP/6.2**) and located on Figures 7.5.1 and 7.5.2 (**TR010040/APP/6.3**). 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	26	27	79	0
PRoW	0	1	1	7	0
Community	0	0	2	1	0
Commercial	0	0	1	4	0
Roads	0	1	5	9	0

7.10.17. 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

7.10.18. Visual effects along the length of the Proposed Scheme would typically associate with views of construction of the elevated overbridges and the general disruption to existing land caused by construction earthworks and the removal of existing vegetation. Residential properties adjacent to the junction of Yarmouth

Road and the A47 on the north-eastern edge of Blofield would experience direct disturbance to their gardens. Vegetation between the properties and A47 would largely be removed and the immediate property settings would be subject to views of construction work associated with installation of a retaining wall and acoustic barrier. Vehicles travelling along the A47 would also be visible.

7.10.19. Of the 132 residential receptors identified as being potentially affected by the Proposed Scheme, 53 would experience large or moderate adverse construction visual effects. These would typically associate with properties:

- on the north-eastern edge of Blofield
- in the vicinity of Poplar Farm on Lingwood Road
- on the southern edge of North Burlingham
- on Lingwood Lane
- along the B1140 to the north and south of the existing A47

Recreational receptors (comprising PRow and community facilities)

7.10.20. Visual effects on PRow would most directly associate with disruption to existing agricultural land caused by construction earthworks and the removal of existing vegetation where the route of the PRow is coincident with the Proposed Scheme footprint. The consideration of recreational receptors includes Blofield allotments which would experience views of the realignment of Waterlow, gas main diversion and construction of the Blofield overbridge. The sports facility associated with Norwich United Football club would also experience a change in visual outlook with removal of a line of trees along the northern boundary of the A47.

7.10.21. Of the twelve recreational receptors identified as being potentially affected by the Proposed Scheme four would experience large or moderate adverse construction visual effects.

Commercial receptors

7.10.22. Visual effects would be apparent from the outdoor extents of Norwich Camping and Leisure. Views would include construction work associated with realignment of Waterlow, the gas main diversion and reconfiguration of the A47 junction with Yarmouth Road.

7.10.23. Of the five commercial receptors identified as being potentially affected by the Proposed Scheme four would experience slight adverse construction visual effects. Holiday accommodation at The Old College, North Burlingham, would experience a moderate adverse visual effect as a result of the partial removal of the property boundary vegetation.

Road receptors

- 7.10.24. Visual effects along the length of the Proposed Scheme would associate with views of construction of the elevated overbridges and the general disruption to existing agricultural land caused by construction earthworks and the removal of existing vegetation.
- 7.10.25. Of the 15 road receptors identified as being potentially affected by the Proposed Scheme six would experience large or moderate adverse construction visual effects. This would typically associate with views from:
- the existing A47
 - Waterlow
 - Lingwood Lane
 - Lingwood Road
 - the B1140 to the north and south of the Proposed Scheme

Operation

- 7.10.26. The following section considers the landscape and visual effects of the Proposed Scheme during operation.

Policy effects

- 7.10.27. The Proposed Scheme design would be consistent with the policy objectives identified in Section 7.3.2 of this chapter. The context of the Proposed Scheme would also associate directly with the setting of the existing A47, by affording consistency with existing precedents for a strategic highway corridor in this location.

Landscape effects

Effects on landscape features

- 7.10.28. At year one of operation there would be a residual loss of existing vegetation, fragmentation of farmland along the Proposed Scheme corridor and an as yet unestablished juvenile state of Proposed Scheme planting. At year one of operation there would be a **minor adverse magnitude** of change and **slight adverse significance** of effect on trees, hedgerows and agricultural land. This would reflect the relative measure of how their residual loss would affect the overall integrity of those features within the extent of study area.
- 7.10.29. 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. At year 15 of operation there would be a

negligible magnitude of change and **neutral significance** of effect on landscape features.

Effects on landscape character

7.10.30. The detailed assessment of operational effects on landscape character is set out in Appendix 7.4 (Landscape Character Areas) (**TR010040/APP/6.2**). The conclusions of the assessment are summarised in Table 7-10 below.

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

LCA reference	Year 1 (winter)		Year 15 (summer)	
	Magnitude of change	Significance of effect	Magnitude of change	Significance of effect
LCA 1: Blofield Settlement (medium sensitivity)	Minor adverse	Slight adverse	Negligible	Neutral
LCA 2: Blofield / Lingwood Valley (medium sensitivity)	Moderate adverse	Moderate adverse	Minor adverse	Slight adverse
LCA 3: Blofield / Lingwood Plateau (medium sensitivity)	Moderate adverse	Moderate adverse	Minor adverse	Slight adverse
LCA 4: Burlingham Plantation (medium sensitivity)	Minor adverse	Slight adverse	Negligible	Neutral
LCA 5: Freethorpe Plateau (medium sensitivity)	Moderate adverse	Moderate adverse	Minor adverse	Slight adverse

7.10.31. At year one of operation, there would be effects on landscape character due to the relative prominence of Proposed Scheme infrastructure (including overbridges) prior to the establishment of integrating Proposed Scheme mitigation planting. The effects would also associate with the residual year one loss of mature tree and hedgerows relative to the existing baseline and to the localised loss and fragmentation of agricultural land. In particular the loss of distinctive rows of poplar trees along either side of the A47 on the north-eastern edge of Blofield would locally change the visual skyline.

7.10.32. By year 15 of operation, the establishment of Proposed Scheme landscape mitigation would contribute to a reduction in the extent and magnitude of landscape change. There would however remain the potential for localised residual landscape effects as an outcome of the relative increase in road infrastructure associated with enlarged junctions and overbridges within a relatively flat, open, agricultural landscape.

7.10.33. The most affected character areas would be LCA 2 and LCA 5. LCA 2 would be most affected to the east of Blofield. Here the inward focus of the subtle valley landform would accentuate the influence of Blofield overbridge within the relative containment of its setting. LCA 5, and to a lesser extent the north-eastern extents

of LCA3, would be affected by the influence of the B1140 overbridge within the relatively open landscape character context.

- 7.10.34. The residual effects of additional highway infrastructure (carriageways and overbridges) would accentuate highway influences within the respective landscape character context. The establishment of woodland, individual trees and hedgerows would however notably contribute to the reinforcement and enhancement of the inherent features of the landscape.

Visual effects

ZTV

- 7.10.35. Figure 7.4 (Visual Context) (**TR010040/APP/6.3**) shows the potential visibility of the Proposed Scheme in relation to visibility of the carriageway, vehicles and general highway infrastructure. The ZTV separately identifies visibility of the two Proposed Scheme overbridges as these have potential to be the most visible components of the Proposed Scheme. 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

- 7.10.36. At winter of year one of operation, 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.
- 7.10.37. By summer of 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

- 7.10.38. Proposed Scheme lighting and vehicle headlights would result in night-time effects on views.
- 7.10.39. Proposed Scheme lighting would be located at the junction of Yarmouth Road and the A47 on the north-eastern edge of Blofield and at the junction of the B1140 and A47 east of North Burlingham.
- 7.10.40. Proposed eight to ten metre high lighting columns at the Yarmouth Road junction would introduce lighting to an area where highway lighting isn't currently present. Consequently, there would be a **moderate adverse magnitude** of change and **moderate adverse significance** of night-time visual effect from highway lighting

on the rear aspect of residential properties on Yarmouth Road. This would be expected to diminish to a **minor adverse magnitude** of change and **slight adverse significance** of effect with establishment of Proposed Scheme highway boundary planting by Year 15.

- 7.10.41. The introduction of proposed lighting at the Yarmouth Road junction would also affect the night-time outlook of views from a residential property at Sunny Acres on the northern side of the A47. More distant views of the Yarmouth Road junction lighting would be visible from residential properties on Bullacebush Lane to the north and Waterlow and Lingwood Road to the south of the Proposed Scheme. From these residential properties proposed lighting would result in a **minor adverse magnitude of change** and a **slight adverse significance** of night-time visual effect. By year 15, following the establishment of Proposed Scheme planting, the influence of lighting would diminish to a **minor adverse to negligible magnitude of change** and **slight adverse to neutral significance** of effect.
- 7.10.42. Proposed lighting in the vicinity of the B1140 junction, including overbridge lighting, would extend along the A47 and the B1140 link roads. Relative to the existing 12m high lighting column layout, the proposed ten metre high lighting columns would associate with a reduction in the eastern and western limits of illumination along the route of the A47. Proposed lighting would however result in an increase in the northern and southern extent of influence of lighting along the B1140 link roads. Lighting columns would also extend across the elevated B1140 overbridge and approach roads. This would most directly affect night-time views from residential properties on the B1140 north of the A47 and residential properties on the B1140 and White House Lane, south of the A47. From these residential properties proposed lighting would result in a **minor adverse magnitude of change** and a **slight adverse significance** of night-time visual effect. By year 15, following the establishment of Proposed Scheme planting, the influence of lighting would diminish to a **minor adverse to negligible magnitude of change** and **slight adverse to neutral significance** of effect
- 7.10.43. The effects of vehicle headlights would be accentuated where elevated by overbridges and thereby affect visual receptors on the eastern edge of Blofield (Blofield overbridge) and in the vicinity of North Burlingham (B1140 overbridge). Visual receptors in these locations would typically experience a **minor adverse magnitude of change** and a **slight adverse significance** of night-time visual effect associated with vehicle headlights. By year 15, following the establishment of Proposed Scheme planting, the influence of lighting would diminish to a **minor adverse to negligible magnitude of change** and **slight adverse to neutral significance** of effect.

- 7.10.44. Whilst Proposed Scheme lighting would result in an increase in the extent of light influence experienced by residential properties and road users on the eastern edge of Blofield, existing associations of night-time tranquillity and sky glow would not significantly change.
- 7.10.45. General night-time lighting effects would reduce over time following the establishment of screening afforded by Proposed Scheme mitigation planting.

Effects on representative viewpoints

- 7.10.46. The detailed assessment of operational effects on representative viewpoints is set out in Appendix 7.6 (Representative Viewpoints) (TR010040/APP/6.2). The conclusions of the visual assessment are summarised in Table 7-11 below. Refer to Figures 7.6.1 to 7.6.7 (TR010040/APP/6.3) for photo illustration of the respective viewpoints.

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

	Year one (winter)		Year 15 (summer)	
LCA reference	Magnitude of change	Significance of effect	Magnitude of change	Significance of effect
1. Waterlow (high sensitivity)	Moderate adverse	Moderate adverse	Minor adverse	Slight adverse
2. High Noon Lane (high sensitivity)	Minor adverse	Slight adverse	Negligible	Slight adverse
3. Lingwood Road (high sensitivity)	Major adverse	Large adverse	Minor adverse	Slight adverse
4. Main Road (North Burlingham) (high sensitivity)	Minor adverse	Slight adverse	Minor positive	Slight positive
5. Lingwood Lane (high sensitivity)	Minor adverse	Slight adverse	Negligible	Slight adverse
6. White House Lane (medium sensitivity)	Moderate adverse	Moderate adverse	Minor adverse	Slight adverse
7. Burlingham Woodland Walk (high sensitivity)	Minor adverse	Slight adverse	Minor adverse	Slight adverse
A. Blofield BOAT11 PRoW (high sensitivity)	Minor adverse	Slight adverse	Negligible	Slight adverse
B. Yarmouth Road (medium sensitivity)	Moderate adverse	Moderate adverse	Negligible	Slight adverse
C. Blofield Road (high sensitivity)	Moderate adverse	Moderate adverse	Minor adverse	Slight adverse
D. South Walsham Road (low sensitivity)	Moderate adverse	Slight adverse	Negligible	Neutral
E. The Windle (medium sensitivity)	Minor adverse	Slight adverse	Negligible	Slight adverse
F. Main Road (western edge of North Burlingham) (high sensitivity)	Minor adverse	Slight adverse	Negligible	Slight adverse

- 7.10.47. The largest operation effects on representative viewpoints would associate with those locations in closest proximity to the Proposed Scheme, and which would in turn experience a noticeable or dominant magnitude of change during the early years of operation.
- 7.10.48. At year one of operation viewpoints one, six and C highlight that moderate to large adverse visual effects would be experienced from residential properties as a result of views of the elevated overbridges. Viewpoints three and B highlight that the influence of highway infrastructure (carriageway, signs, lighting, etc) and vehicles would result in large to moderate adverse visual effects on residential properties and on allotments on the north-eastern residential edge of Blofield.
- 7.10.49. By year 15 of operation the establishment of Proposed Scheme planting would contribute to screening of the elevated overbridges, highway infrastructure (carriageway, signs, lighting, etc) and vehicles. By year 15 of operation none of the assessment viewpoints would experience more than slight adverse visual effects. In the instance of viewpoint 4 representing residential properties on the edge of North Burlingham there would be a slight positive effect as a result of moving traffic further away from the settlement.

Effects on visual receptors

- 7.10.50. The effects on visual receptors within the study area are reported in Appendix 7.5 (Visual Receptors) (**TR010040/APP/6.2**) and located on Figures 7.5.1 and 7.5.2 (**TR010040/APP/6.3**). A summary of year one and year 15 visual effects on each receptor group is provided in Tables 7-12 and 7-13.

Table 7-12 : Year one 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	18	78	31
PRoW	0	0	0	6	3
Community	0	0	0	2	1
Commercial	0	0	0	1	4
Roads	0	0	0	13	2

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	0	63	69
PRoW	0	0	0	3	6
Community	0	0	0	1	2
Commercial	0	0	0	0	5
Roads	0	0	0	8	7

7.10.51. 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

- 7.10.52. At year one of operation, of the 132 residential receptors identified as being potentially affected by the Proposed Scheme, 23 would experience moderate or large adverse visual effects. These would typically associate with properties on the north-eastern edge of Blofield; in the vicinity of Poplar Farm on Lingwood Road; and in the vicinity of the existing junction between the A47 and B1140.
- 7.10.53. Despite the close proximity of the Proposed Scheme to the settlement edge of Blofield, the number of properties significantly affected would typically be limited to those with gardens immediately adjacent to the Proposed Scheme boundary. Such properties would experience views of an acoustic barrier, retaining wall and lighting columns as well as the tops of larger vehicles travelling along the A47. Significant visual effects attributable to the Blofield Overbridge would be relatively localised and relate to properties on Waterlow and Lingwood Road at Waterlow. Views of the Proposed Scheme from these properties would be partially filtered by garden vegetation within the immediate property setting.
- 7.10.54. Properties in the vicinity of Poplar Farm and in the vicinity of the existing junction between the A47 and B1140 would experience significant effects as a result of their close proximity to the Proposed Scheme. The relative effect of the Proposed Scheme would however be moderated by the influence of the existing A47 which is an existing component of views.
- 7.10.55. By year 15 of operation, the potential for adverse visual effects would diminish and be limited to slight adverse effects on views from 63 residential properties.

Recreational receptors (comprising PRow and community facilities)

7.10.56. Visual effects on PRow would associate most notably with those in closest proximity to the Proposed Scheme carriageway. The context of such views would however typically include views of the existing A47 so the relative magnitude of change would be limited. As such none of the PRow receptors would experience more than slight adverse visual effects at either year one or year 15 of operation.

Commercial receptors

7.10.57. Holiday accommodation at The Old College, North Burlingham, would experience a slight adverse visual effect at year one reducing to neutral by year 15. None of the other four commercial receptors identified as being potentially affected by the Proposed Scheme would experience operational visual effects at either year one or year 15.

Road receptors

7.10.58. None of the 15 road receptors identified as being potentially affected by the Proposed Scheme would experience more than slight adverse operational visual effects at either year one or year 15.

7.11. Monitoring

7.11.1. Monitoring commitments will ultimately be defined as an outcome of the DCO process. 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 EMP (**TR010040/APP/7.7**). Planting and seeding, proposed as mitigation for landscape and visual effects, would be maintained in order to achieve their full establishment throughout the construction contract. At completion, the works would initially be subject to a landscape-establishment maintenance period of two years, prior to handover to the future maintaining authority for on-going highway maintenance.

7.12. Summary

- 7.12.1. The Landscape and Visual Impact Assessment chapter comprises a review of the existing environment and identification of the potential effects of the Proposed Scheme upon surrounding landscape and visual receptors.
- 7.12.2. The landscape receptors with potential to experience change as a result of the Proposed Scheme comprise landscape features and landscape character areas. The visual 'receptors' with potential to experience change as a result of the Proposed Scheme comprise representative viewpoints and individual receptors.

- 7.12.3. The assessment of landscape and visual effects includes consideration of the effect of; the change or loss of existing landscape features; the effect of temporary construction works; the effect of introduction of new highway infrastructure; and the effect of vehicles travelling along the Proposed Scheme.
- 7.12.4. During construction there would be temporary slight adverse effects on landscape features and moderate adverse effects on landscape character associated with loss and change to existing vegetation and land use. Visual receptors would also be subject to large to moderate adverse effects, associated with views of construction of the elevated overbridges or where experiencing close proximity views of construction works.
- 7.12.5. At year one of operation there would be slight adverse effects on landscape features and moderate adverse effects on landscape character arising from the residual loss of vegetation and relative prominence of Proposed Scheme infrastructure. At year one of operation there would be moderate to large adverse effects on visual receptors associated with views of the elevated overbridges or where affected by close proximity views of the Proposed Scheme.
- 7.12.6. By year 15 of operation, with the establishment of Proposed Scheme landscape mitigation, effects on landscape features would be neutral. Effects on landscape character would retain a slight adverse effect in recognition of the residual increase in built infrastructure. By year 15 of operation the establishment of Proposed Scheme planting would contribute to screening of the elevated overbridges and highway infrastructure. This would result in a residual slight adverse visual effect attributable predominantly to residential properties or PRow in closest proximity to the Proposed Scheme. The potential for visibility of the Proposed Scheme would be greater during winter months following leaf fall but would not result in notable variation in the significance of visual effect.
- 7.12.7. As defined in DMRB LA107, the effect of a project on landscape and visual amenity is to be assessed independently and the outcome combined to a single conclusion of the likely significant effect on landscape and visual amenity. Consequently, this assessment concludes in finding that the Proposed Scheme would not result in a significant residual effect on landscape and visual amenity.

7.13. References

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