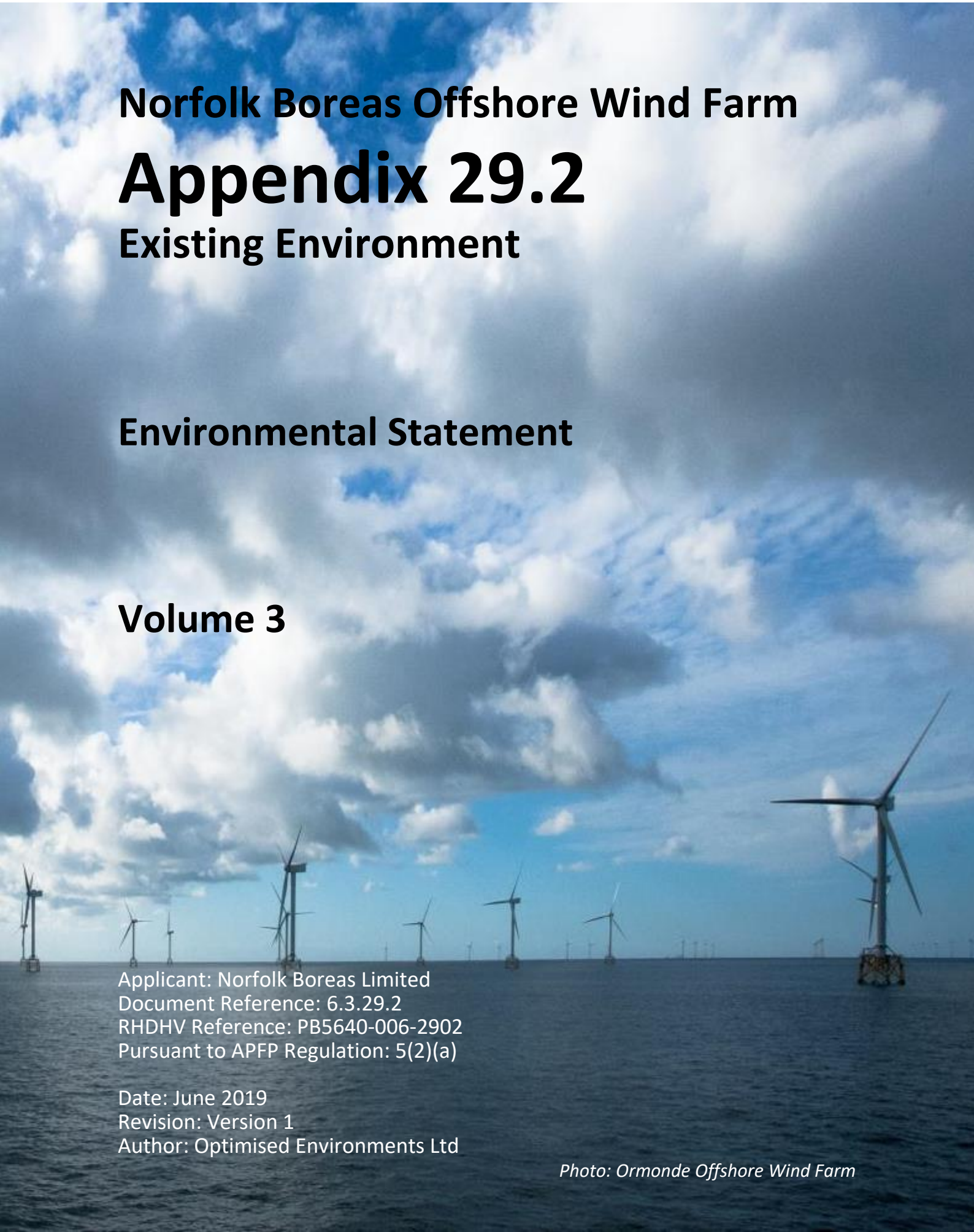
Norfolk Boreas Offshore Wind Farm

Appendix 29.2

Existing Environment

Environmental Statement

Volume 3



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Glossary of Acronyms

AONB	Area of Outstanding Natural Beauty
CIA	Cumulative Impact Assessment
CLVIA	Cumulative Landscape and Visual Impact Assessment
DCO	Development Consent order
EIA	Environmental Impact Assessment
ES	Environmental Statement
GIS	Geographical Information System
GLVIA	Guidelines for the Assessment of Landscape and Visual Impacts
HVDC	High Voltage Direct Current
LCA	Landscape Character Assessment
LCT	Landscape Character Types
LCU	Landscape Character Units
LI	Landscape Institute
LVIA	Landscape and Visual Impact Assessment
NCA	National Character Areas
NP	National Park
NPS	National Policy Statement
OPEN	Optimised Environments Ltd
PRoW	Public Rights of Way
RPG	Registered Parks and Gardens
SNH	Scottish Natural Heritage
ZTV	Zone of Theoretical Visibility

Glossary of Terminology

Landfall	Where the offshore cables come ashore at Happisburgh South
Mobilisation area	Areas approx. 100 x 100m used as access points to the running track for duct installation. Required to store equipment and provide welfare facilities. Located adjacent to the onshore cable route, accessible from local highways network suitable for the delivery of heavy and oversized materials and equipment.
Mobilisation zone	Area within which the mobilisation area will be located.
National Grid new / replacement overhead line tower	New overhead line towers to be installed at the National Grid substation.
National Grid substation extension	The permanent footprint of the National Grid substation extension
Necton National Grid substation	The grid connection location for Norfolk Boreas and Norfolk Vanguard.
Onshore cable route	The up to 35m working width within a 45m wide corridor which will contain the buried export cables as well as the temporary running track, topsoil storage and excavated material during construction.

Onshore project substation	A compound containing electrical equipment to enable connection to the National Grid. The substation will convert the exported power from HVDC to HVAC, to 400kV (grid voltage). This also contains equipment to help maintain stable grid voltage.
The project	Norfolk Boreas Offshore Wind Farm, including the onshore and offshore infrastructure.

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1.1 Introduction

1. The existing baseline environments associated with the components of the project are described in section 2, principally through the landscape character descriptions. These present an overview of the different landscape characteristics in order to 'set the scene' for the assessment. This information has been supplemented with observations made during site work regarding the local baseline environments in terms of characteristics and features that will be relevant to the detailed assessments.

2. An overview of landscape designations, presented in section 1.3, highlights special sensitivities as denoted through the designation of certain landscape types and areas.

3. An overview of viewpoints and principal visual receptors, presented in section 1.4, highlights special sensitivities in respect of those settlements, roads and footpaths from which people may be affected by the project.

4. The baseline descriptions, combined with an overview of the sensitivities of receptors to the project, act to identify those receptors that are susceptible to being significantly affected and this assists in defining the scope of the assessment. Further baseline description and evaluation of sensitivity is to be found in the main assessment in section 29.7 and cumulative assessment in section 29.8 of Chapter 29 Landscape and Visual Impact Assessment of the ES, alongside the assessment of the effects on the individual receptors.

1.2 Landscape Character

5. The English landscape is classified at the national level by National Character Areas (NCAs). The 159 NCAs, which cover England, were originally identified by the Countryside Agency. This mapping and the associated descriptions have been revised and developed by Natural England into NCA profiles which provide a recognised, national, spatial framework. The location of the NCAs are shown in Figure 29.2 and Figure 29.13.

6. The study areas for Norfolk Boreas are within the following NCAs:

   - Landfall – North East Norfolk and Flegg (79) and The Broads (80);
   - Onshore cable route – Central North Norfolk (78) and Mid Norfolk (84); and
   - Onshore project substation – Mid Norfolk (84).

7. The landfall site is located in North East Norfolk and Flegg NCA. This NCA comprises coastal and inland landscapes, interspersed by the Norfolk Broads NCA, which sits in the middle and intersperses this NCA into three separate areas. The coastal landscape is characterised by sandy beaches and low cliffs, the soft sediment of

which makes them susceptible to erosion. The coastal edge is finely defined with arable farmland encroaching right up to the cliff edge.

8. The 60km length of the onshore cable route passes through the inland landscapes of North East Norfolk and Flegg, which is generally flat, low-lying and relatively exposed owing to the predominance of arable farmland and the erosion of hedgerows. Further inland, more frequent enclosure along field boundaries creates a more defined landscape pattern.

9. Central North Norfolk NCA extends from the North Norfolk coast, south to Norwich and west to Fakenham. Mid-Norfolk NCA extends from Fakenham in the north-west to Norwich in the south-east and Watton in the south-west. Central North Norfolk NCA and Mid-Norfolk NCA are attributed the same description in Natural England's citations; '*…ancient countryside with a long-settled agricultural character, where arable land is enclosed by winding lanes and hedgerows, interspersed with woodland and heath, and dissected by lush pastoral river valleys.'*

10. Each of Natural England's NCA citations includes '*Statements of Environmental Opportunity' (SEOs)*. These are of relevance to the LVIA in respect of replacement planting and embedded mitigation, insofar as certain aims and objectives of the SEOs have been accommodated within the landscape mitigation for the onshore project substation and National Grid substation extension. Replacement planting and embedded mitigation are described in section 29.7.1 of Chapter 29 Landscape and Visual Impact Assessment.

11. Local Authorities across England have produced Landscape Character Assessments (LCA) for their administrative areas which subdivide the broader NCAs into more detailed Landscape Character Types (LCTs) and Landscape Character Units (LCUs), hereafter described as LCUs. The more local scale of landscape characterisation has been used to inform the baseline descriptions. The relevant LCAs in Norfolk include the following;

- North Norfolk Landscape Character Assessment (June 2009);
- Broadland District Landscape Character Assessment (Sept 2013);
- Breckland District Landscape Character Assessment (May 2007); and
- North and South Brecks Landscape Character Assessment (Oct 2013).

12. In addition to these LCAs, North Norfolk has recently published a draft update to its LCA (2018) and also a draft Landscape Sensitivity Assessment (2018), with particular reference to renewable energy and low carbon developments. These are intended to be adopted as Supplementary Planning Documents by Summer 2019. While these emerging documents have been used to inform an understanding of the context, there is not a detailed assessment of effects on landscape character in North Norfolk. This is because the onshore cable route construction works is the only component of

the project that would occur in North Norfolk and is of an insufficient scale to materially alter the landscape character of the LCAs which it passes through.

13. The distribution of the LCTs and LCUs within the potential study areas and described by these LCAs, is shown in Figure 29.2 and Figure 29.13. The LCTs and LCUs of relevance to each of the onshore infrastructure are presented below:

- Landfall – Coastal Plain LCT: Bacton to Sea Palling (CP1);
- Onshore cable route – Coastal Plain LCT: CP1 Bacton to Sea Palling LCU; Low Plains Farmland LCT: LP1 Edingthorpe to Honing LCU, LP2 Stalham LCU, LP4 Colby, Banningham, Felmingham & Skeyton LCU and LP5 North Walsham LCU; and Small Valleys LCT : SV4 Banningham to Suffield LCU, SV5 Southrepps, Antringham & Spa Common LCU and SV7 Worstead, Beeston & Ashmanhaugh LCU, Tributary Farmland LCT: D1 Cawston Tributary Farmland LCU, D3 Coltishall Tributary Farmland LCU; Plateau Farmland LCT: C1 Foulsham and Reepham LCU; Wooded Estatelands LCT: E1 Blickling and Oulton LCU; and River Valley LCT: Bure River Valley LCU, Plateau Farmland LCT: E8 Dereham Plateau LCU; Settled Tributary Farmland LCT: River Wensum and Tud LCU; and River Valleys LCT: River Wensum and Blackwater LCU.
- Onshore project substation – Settled Tributary Farmland LCT: River Wissey Tributary Farmland (B5) and Plateau Farmland LCT: Central Breckland Plateau (E5).

14. The following extracts from the LCAs are presented to give an overview of the character of the LCUs associated with the landfall, onshore project substation and National Grid substation extension. The extracts have been abridged to highlight the most relevant data to the LVIA. An outline description of the landscapes associated with the onshore cable route is also presented. Direct quotations from the LCAs are indicated by italicised text.

15. LCTs and LCUs are shown along the length of the onshore cable route, from the landfall to the onshore project substation on Figure 29.2 and Figure 29.13.

1.2.1 Landscape Character of the Landfall

1.2.1.1 Coastal Plain LCT: Bacton to Sea Palling (CP1)

1.2.1.1.1 Landscape Character Assessment extracts

16. The key characteristics of this LCU, which make it distinctive include the following;

- “Generally level or very gently rolling landscape which is relatively low compared with neighbouring coastal areas to the North.
- Settlement pattern is linear along the coast with large areas of ad hoc development straggling along roadways between settlements.

- Away from the coast and mirroring the underlying pattern along the coastal part, the settlement structure is semi-nucleated with small villages.
- No major roads. The coast road and main, unusually straight B1159 are the only major roads servicing this Area.
- Bacton Gas Terminal dominates the landscape. It has a strong influence over the perception of the landscape for a wide area around Bacton but not so much from the northern (Paston) side from which it is partly hidden by rising ground.
- Large caravan and chalet parks. Most are sited along the coastal fringe and dominate the settlement structure.
- The surprisingly large Bush Estate at Eccles is the epitome of ad hoc 'plotlands' holiday development being quite isolated down unadopted rough tracks.
- Older settlements such as Happisburgh…have an almost 'Broads' feel in terms of vernacular architecture.
- Field pattern is pre-Enclosure (mainly). But many field boundaries have been lost.
- Views of the Happisburgh Lighthouse, Watertower and Churches (especially Walcott, Happisburgh (and Ruston), Lessingham) are very visually dominant in this open landscape."

17. In terms of the evaluation of the LCU, the following comments are made in the Landscape Character Assessment:

- "The condition of the landscape character varies from Poor to Moderate. Areas close to the coast (Bacton Walcott) show the most degraded and eroded character due to recent overlying developments. Areas away from the coast yet not overly degraded by field boundary removals show Moderate character. The strength of character is Moderate – even the degraded or eroded parts demonstrate a highly distinctive if often unlovely, character which is often full of interest if somewhat generic nationally."

18. In terms of the issues facing this LCU, the pressure of development is highlighted as the main concern.

- "This is a landscape which, like the Coastal Towns Type around Mundesley, has been adversely affected by decades of ad hoc and other development pressures. It is consequently in need of restoration on the coastal fringe area but where it is more intact inland, conservation may be more appropriate."

19. Landscape enhancements to the existing landscape character, including new hedges, grassland, scrub copses and woodland are encouraged to integrate with existing landscape features.

1.2.1.1.2 Baseline description

20. This LCU is relevant to the assessment in respect of the landfall, which lies between Happisburgh to the north and Eccles-on-Sea to the south.

21. The section of coastline where the landfall would be located is characterised by low cliffs and a sandy beach within a slightly indented coastline. Timber groynes have been located to the north and south to reduce longshore drift and the cliffs appear susceptible to erosion. The sensitivity of this coastline is denoted by the presence of the England Coast Path which is a long-distance path of national importance (Figure 29.3 and Figure 29.14).

22. The coastline forms a narrow strip closely abutted by arable farmland. The arable fields would traditionally have been small and enclosed, but through removal of hedgerows, amalgamation has formed a larger-scale pattern with a more open and exposed character. The landform is gently undulating, with the land to the south of Happisburgh subtly convex and the land to the north of Eccles subtly concave in form. A key feature of this landscape is the distinctive Happisburgh Lighthouse with its bold red and white banding.

23. This LCU is both cultivated and settled, with a fine network of roads imposing a geometric pattern over the landform and along which clusters of settlement have formed. Much of the rural development comprises farmsteads, sometimes prominent in the open landscape owing to groups of large sheds, but also with a dispersed pattern of individual dwellings.

24. The Bacton to Sea Palling LCU is covered by the Norfolk Coast Area of Outstanding Natural Beauty (AONB) in the northern corner between Mundesley and Bacton (Figure 29.2 and Figure 29.13). The majority of the LCU is not covered by any local, county or national landscape designations which would otherwise denote a special landscape value and add to its sensitivity. The LCA extracts presented above indicate a Poor to Moderate rating for the condition of the landscape, with developed sections of the coastline scoring lowest and landward areas with intact field boundaries scoring highest. Strength of character is rated as Moderate.

25. The LCU is a landscape that has been modified through agricultural intensification. This has eroded historic field boundaries and reduced the proportion of uncultivated land. Development is evident in the rural villages and farmsteads, many of which have historic origins. More recent development has expanded these settlements, most notably where the coastal chalets of Doggett's Lane extend onto the coastal cliffs. In the landward area, it is the development of larger farm sheds that have had a more notable effect.

1.2.2 Landscape Character of Onshore Project Substation and National Grid Substation Extension

1.2.2.1 Settled Tributary Farmland: River Wissey Tributary Farmland (B5)

1.2.2.1.1 Landscape Character Assessment extracts

26. The key characteristics of this LCU which make it distinctive include the following:

- "Lowestoft till glacial deposits give rise to a gently undulating landform interrupted by occasional shallow dry valleys and tributaries. Alluvial deposits are also a feature of the tributaries, overlain with clayey Argillic brown earth soils.
- Topography varies between 35 m A.O.D at the base of the tributary valleys to 80m A.O.D to the adjacent plateau character areas.
- Views within and across the character area are largely contained by mixed enclosure hedges with hedgerow oaks. Hedged and treed skylines are a feature of the landscape.
- Arable agriculture is the predominant land cover. Fields are often medium to large in size and bounded by hedgerow and hedgerow trees, of variable condition. Localised areas of smaller fields are found on settlement edges and land adjacent to tributaries.
- Woodland within the character area is generally sparse, characteristically including small scale plantation blocks, farm woodland and wet woodland.
- The once extensive areas of heathland and common land have been replaced by farmland or woodland e.g. Common Plantation on Necton Common.
- Whilst population density remains low, the area is characterised by a number of villages which show evidence of infilling and extension. Villages are connected by an extensive rural road network, and sunken lanes are often characteristic.
- The Peddars Way is an historically important National Trail which crosses the western extent of the character area before heading southwards towards Great Cressingham."

27. In terms of the evaluation of the LCU, the special landscape sensitivities include:

- "The historic cores of villages and the consistent vernacular;
- Surviving field boundary hedgerows and trees, which indicate the post Enclosure
- character of the landscape prior to agricultural intensification; and
- The network of hedged and ditched rural roads which connect the settlements."

28. The current state of the landscape is described as follows:

- "The landscape is essentially a managed, functional and productive arable agricultural landscape. Although isolated areas of smaller scale, historic field

boundaries exist, 20th century agricultural intensification has resulted in areas of boundary loss, weakening the historic integrity of the character area."

29. In terms of landscape management as part of a future strategy for this LCU, guidelines focus on both conserving and enhancing existing hedgerows and trees and establishing new species rich hedgerows and field set-aside margins. While many of the development considerations presented in the document are concerned with the interface between settlement and countryside, consideration is also sought to ensure views to landmark features, such as Necton Church are conserved, and the upgrading of rural roads is resisted.

30. Peddars Way lies 5km west of the onshore project substation and would not be affected by the project owing to a lack of visibility.

1.2.2.1.2 Baseline description

31. The River Wissey Tributary Farmland LCU is largely typical of the characteristics of the wider Settled Tributary Farmland LCT, being relatively low with broad undulations following the valley landform and hosting a land cover of arable fields with hedgerow and hedgetree enclosure. This LCU covers the southern half of the onshore project substation study area, with an additional 'spur' extending north-west into the surrounding Plateau Farmland LCT, following the course of the unnamed river that flows from Little Dunham to join River Wissey to the south of the hamlet of Ivy Todd.

32. While farmland in this LCU is largely enclosed by vegetation, hedgerow removal and field amalgamation have increased the scale of field pattern such that localised areas have lost the characteristic small scale and intimacy of the historic landscape. Sufficient parts remain enclosed to keep views contained within the short to medium range. This reduces the association and influence that occurs between different parts of the LCU. In contrast, where erosion of vegetation has occurred visual influences have become more open.

33. The River Wissey Tributary Farmland LCU is not covered by any local, county or national landscape designations, which would otherwise denote a special landscape value and add to the rating. In terms of the condition of the landscape and its strength of character, these attributes are variable across the broad extent of the LCU. Generally, the condition appears to be moderate, as hedgerow and woodland enclosure is largely intact, albeit with some evidence of erosion through agricultural intensification. Similarly, strength of character is moderate as the landscape is typical of the wider Settled Tributary Farmland and does not present any dramatic or unique landscape features.

34. The LCU is a landscape that has been modified through agricultural practices. The onshore project substation occupies a part of this LCU where intensification has led to a more open and exposed valley landform being created. Furthermore, this area is currently influenced by the presence of energy developments in the form of Necton National Grid substation, Dudgeon substation and associated overhead lines that connect to these substations from the east.

1.2.3 Plateau Farmland: Beeston Plateau (E5)

1.2.3.1 Landscape Character Assessment extracts

35. The key characteristics of this LCU which make it distinctive include the following:

- "Thick deposits of glacial till underlie the character area, informing its elevated position overlooking the adjacent Wissey Settled tributary farmland character areas.
- A gently undulating topography ranges from 60-95m AOD making this one of the most elevated character areas within Breckland.
- There is the potential for distant views due to the elevated aspect although these are often framed due to relict historic vegetation, field boundary hedgerows, and hedgerow enclosed lanes.
- Landcover pattern is predominantly arable, although there are frequent blocks of mixed oak and ash dominated woodland.
- Mature woodland blocks, including areas of Ancient Woodland at Horse Wood (Mileham) and Honeypot Wood (Wendling) lend a sense of historical integrity to the character area.
- Field pattern is regular and medium-large in scale, often defined by mixed hedgerows with hedgerow trees. Field boundary ditches are also apparent.
- A network of rural roads lined by mature hedgerows and hedgerow trees connects the villages, creating an enclosed and rural character."

36. In terms of the evaluation of the LCU, the special landscape sensitivities include:

- "Dense, mixed and well treed hedgerows in places, which refer to the historic land cover pattern and the early post Enclosure landscape.
- Areas of ancient woodland and veteran trees in field coverts indicate historic land cover, as do localised areas of enclosed lanes in addition to enhancing biodiversity interest.
- The elevated, domes plateau landform, and the availability of distant, framed views out of the character area from localised points."

37. The current state of the landscape is described as follows:

- "The landscape is essentially a well-managed, functional arable agricultural landscape, with a reasonably intact Enclosure field boundary hedgerow system

in addition to localised farm coverts and areas of ancient woodland. The landscape and historic integrity has been partially eroded by 20th century agricultural intensification."

38. In terms of landscape management as part of a future strategy for this LCU, guidelines focus on both conserving and enhancing existing hedgerows and woodlands and establishing new species rich hedgerows and field set aside margins. The 'Development Considerations' presented include ensuring views to landmark features are conserved and upgrading of rural roads is resisted. The consideration of particular relevance to the proposed project is "*in planning for future change, consider the scale of potential development and its effects on long views, skylines and intervisibility with surrounding character areas*".

1.2.3.2 Baseline description

39. The Beeston Plateau LCU occupies much of the northern half of the onshore project substation study area, with a spur extending into the southern half where the onshore project substation site is located. A similar spur extends south from the North Pickenham Plateau LCU and together these enclose the northern extension of the River Wissey Tributary Farmland LCU, described above.

40. The Beeston Plateau LCU is distinguished from the wider Plateau Farmland LCT by the extent of settlement, which is not typical of this type. A series of small linear and nucleated villages, including Beeston, Mileham, the Dunhams and the Franshams occupy the plateau and are connected by a linear, rather than latticed, road pattern.

41. The Beeston Plateau LCU is also distinguished from the interspersed Settled Tributary Farmland LCT by its convex plateau landform, in contrast to the concave landform of the intermittent valleys. While the visual sensitivity of this landscape is identified in the LCA as being defined by the distant and framed views out from the plateau, it does make the point that these are from localised points. The extent of hedgerow and woodland enclosure in the LCU ensures that visual connectivity is largely contained within the short range. This enclosure means that the broader landform of the plateau is seldom experienced.

42. The spur on which the Scenario 1 Norfolk Boreas onshore project substation would be located, occurs as an extension of the domed landform into a context of predominantly valley landscapes. Again, the extent of surrounding enclosure limits the perception of this subtle distinction apart from within the localised area. The Scenario 1 Norfolk Vanguard onshore project substation and Scenario 2 Norfolk Boreas onshore project substation would be located in the immediately adjacent part of the Settled Tributary Farmland LCU and therefore their effects on the Beeston Plateau LCU would be indirect.

43. The Beeston Plateau LCU is not covered by any local, county or national landscape designations, which would otherwise denote a special landscape value and add to the rating. In terms of the condition of the landscape and its strength of character, these attributes are variable across the broad extent of the LCU. Generally, the condition appears to be moderate, as hedgerow and woodland enclosure is largely intact, albeit with some evidence of erosion through agricultural intensification. The strength of character is moderate as the landscape is typical of the wider Plateau Farmland and does not present any dramatic or unique landscape features.

44. The LCU is a landscape that has been modified through agricultural practices. The Norfolk Boreas onshore project substation will occupy the southern spur of this LCU where woodland remains a key characterising feature, especially to the east, while some erosion of enclosure has occurred, especially to the west. Influence from existing development is limited in this spur, owing to the enclosure of vegetation as well as the distance from surrounding developments.

1.2.4 Landscape Character of the Onshore Cable Route

45. The landscape of the onshore cable route is primarily rural and agricultural in character although there are subtle changes between LCUs across the study area. This can be seen in the identified LCUs which transition from the Coastal Plain and Low Plains Farmland character types of North Norfolk District to the Tributary Farmland and Plateau Farmland character types of Broadland and Breckland Districts. The onshore cable route also crosses River Valley and Wooded Estatelands character types, which intersect these larger, more frequent character types.

46. The LCTs or LCUs within the wider 6km contextual study area throughout the length of the onshore cable route across North Norfolk, Broadlands and Breckland Districts are not considered to have the potential for significant effects due to the scale of the proposed construction works and the distance from these landscapes. Several of these landscape character areas are found at the boundary with the study area. However, following a review of these areas and given that the onshore cable route does not directly influence them; it is considered that there is no potential for significant effects.

47. The landscape character areas which the onshore cable route crosses can be divided into three main sections, which cover the North Norfolk, Broadland and Breckland Districts. LCTs and LCUs along the cable route are shown on Figure 29.2 and Figure 29.13.

48. The LCTs (and LCUs) that occur along the onshore cable route within North Norfolk District are as follows: Coastal Plain LCT (CP1 Bacton to Sea Palling LCU); Low Plains Farmland LCT (LP1 Edingthorpe to Honing LCU, LP2 Stalham LCU, LP4 Colby,

Banningham, Felmingham & Skeyton LCU and LP5 North Walsham LCU); and Small Valleys LCT (SV4 Banningham to Suffield LCU, SV5 Southrepps, Antringham & Spa Common LCU and SV7 Worstead, Beeston & Ashmanhaugh LCU).

49. The broad characteristics of the agricultural landscape of North Norfolk within the study area are of a gently undulating and open landscape, of mainly arable fields divided by ditches, banks and hedgerows with groups of trees around settlement. Hedgerows are more fragmented and less frequent to the east although there is evidence of historic hedgerow losses throughout. Potential changes to the local landscape character of the 1,045m wide study area would therefore occur as a result of the onshore cable route construction activities within open agricultural fields and the potential loss of landscape elements, which contribute to its character, such as further hedgerow losses. These losses would mostly be temporary, and reversible, as hedgerow reinstatement would be implemented as far as practicable over the 13 to 16.5m permanent cable easement, although reinstatement of trees would be restricted to outwith 6m to 10m of the 20m easement. This is to ensure tree roots do not interfere with cables for health and safety reasons.

50. The LCTs (and LCUs) that occur along the onshore cable route within Broadland District are as follows: Tributary Farmland LCT (D1 Cawston Tributary Farmland LCU, D3 Coltishall Tributary Farmland LCU); Plateau Farmland LCT (C1 Foulsham and Reepham LCU); Wooded Estatelands LCT (E1 Blickling and Oulton LCU); and River Valley LCT (A2 Bure River Valley LCU).

51. The broad characteristics of the agricultural landscape of Broadland within the study area are largely of arable fields divided by a network of hedgerows and field boundary trees which provides a sense of enclosure. The fields are irregular in shape and some are large in size with less intact hedgerows leading to a more open experience across parts of the landscape. Grazing is present in the river valleys within a smaller pattern of fields and larger more distinct woodlands are found within the area of Wooded Estatelands to the north west of Aylsham. As a result of embedded mitigation employed at the site selection stage, the onshore cable route avoids woodlands and potential changes to the local landscape character of the 1,045m wide study area would therefore occur as a result of the onshore cable route construction activities within open agricultural fields and the potential loss of landscape elements which contribute to its character, such as hedgerows and hedgetrees. Mitigation planting would occur post construction, with hedgerows replanted over the 13 to 16.5m cable easements and hedgetrees beyond 6m to 10m of the easement.

52. The LCTs (and LCUs) that occur along the cable route within Breckland District are as follows: Plateau Farmland LCT (E8 Dereham Plateau LCU); Settled Tributary Farmland

LCT (River Wensum and Tud LCU); and River Valleys LCT (River Wensum and Blackwater LCU).

53. The broad characteristics of the agricultural landscape of Breckland within the study area are largely of arable fields which are large in scale divided by hedgerows and hedgetrees and woodland blocks. It is crossed by the broad, shallow river valleys of the Wensum and Blackwater, which contain fields of predominantly grazing pasture. Topographical transitions are subtle across the study area, despite the difference in elevation between the plateau farmland and valley landscapes. The onshore cable route avoids woodlands and potential changes to the local landscape character of the 1,045m study area would therefore occur as a result of the onshore cable route construction activities within open agricultural fields and the potential loss of landscape elements which contribute to its character, such as hedgerows and hedgetrees. Mitigation planting would occur post construction, with hedgerows replanted over the 13 to 16.5m cable easements and hedgetrees beyond 6 to 10m of the easement.

1.2.5 Summary of landscape character

54. This section has reviewed the baseline characteristics of landscape character within the study areas of the landfall, onshore cable route, onshore project substation and National Grid substation extension, in order to understand how landform, land cover and land uses define the character of the landscape, how the landscape is valued and how it would be susceptible to the potential impacts of the project.

55. This information informs the assessment of potential impacts on these LCUs presented in section 29.7. The assessment considers the sensitivity and the magnitude of change that would arise as a result of the project and whether the resultant effect would be significant or not significant.

1.3 Landscape Designations

56. There are three types of landscape designation which are of relevance to the LVIA and lie within the LVIA study areas.

- AONBs;
- National Parks (NPs); and
- Registered Parks and Gardens (RPGs).

57. The onshore infrastructure of the project lies outside land subject to any international, national or regional landscape designation intended to protect landscape quality as shown in Figure 29.2 and Figure 29.13. This was a key decision in the site selection process for the project.

1.3.1 AONBs

58. AONBs are designated by Natural England and collectively represented by the National Association for AONBs. In general, they remain the responsibility of the Local Authority by means of a special committee and a dedicated AONB Officer. Their purpose is to conserve and enhance the natural beauty of the landscape. The National Planning Policy Framework (2012) states that AONBs have the same status as NPs in the planning system when it comes to landscape issues. Management plans set out the key issues and strategy for conservation and enhancement.

59. The Norfolk Coast AONB is the only AONB in the study area, lying approximately 6.8km north-west of the closest edge of the landfall.

60. The 2014 – 2019 Norfolk Coast AONB Management Plan sets out the special qualities of this area, along with the strategy for its protection. The seven special qualities are as follows;

- 'Dynamic character and geomorphology of the coast;
- Strong and distinctive links between the land and sea;
- Diversity and integrity of landscape, seascape and settlement character;
- Exceptionally important, varied and distinctive bio-diversity, based on locally distinctive habitats;
- Nationally and internationally important geology;
- Sense of remoteness, tranquillity and wildness; and
- Richness of archaeological heritage and historic environment, particularly that relating to the coast and its character.'

61. The key feature of the AONB is the coastline and the relationship between the sea and land. The AONB boundary does not extend more than 6km inland. The special qualities relate to attributes found within the AONB and there is no reference to surrounding landscapes with which the AONB has an association, other than the seascape of the North Sea.

62. Site reconnaissance has shown that the potential impact of the project on the AONB would be largely limited by a combination of distance, low landform and intervening built form and vegetation. The landscape of this coastal region is relatively low and gently undulating and without vantage points or elevated features this limits the extent of visibility. Furthermore, enclosure from intervening built form and vegetation further reduces these extents. There is therefore, very little possibility that the project landfall would be visible from the AONB, especially when considering the limited vertical scale of this development. The impact of the project on the Norfolk Coast AONB is, therefore, not assessed in detail in this LVIA as there would be no potential for significant effects to arise.

1.1.1 National Parks

63. NPs are managed by National Park Authorities whose role is to carry out the two main objectives:

- "To conserve and enhance the natural beauty, wildlife and cultural heritage of the area; and
- To promote opportunities for the understanding and enjoyment of the parks' special qualities by the public."

64. The only NP in the study area is The Broads, which lies approximately 4.2km south-west of the closest edge of the landfall. The Broads differs from the other NPs in that it was set up by the separately constituted Broads Authority enabled by a special act of Parliament. It differs most notably from the other NPs in that its primary statutory objective is to deal with navigation of the waterways rather than conservation of the landscape.

65. Site reconnaissance has shown that, despite the proximity of the project to the Broads NP, the extent of mature woodland that separates the two sites notably reduces the potential for visibility. In considering the relatively small scale of the works during the construction phase and the fact that the only above ground structures during the operational phase and the fact that the only above ground structures during the operational phase would be the intermittent link boxes, there is no possibility that the landfall would be visible from The Broads NP, especially taking into account the mature woodland that encloses the northern tip of the NP. The impact of the project on the Broads NP is, therefore, not assessed in detail in this LVIA as there would be no potential for significant effects to arise.

1.1.2 Register of Parks and Gardens

66. The Register of Parks and Gardens presents an inventory, maintained by Historic England, of all the protected sites in England and Wales. These sites are considered to be of national significance, and most are associated with stately homes, although many parks or cemeteries are also listed.

67. There is one RPG in the study area associated with the landfall and none in the study area associated with the onshore project substation. Happisburgh Manor is located approximately 400m north of the closest edge of the landfall.

68. The close proximity of Happisburgh Manor to the landfall sites means that there is the potential for significant effects to arise, despite the relatively enclosed nature of the gardens and the separation between the two by intervening development. The potential impacts on Happisburgh Manor gardens are considered in section 29.7.

69. Under Scenario 2, the onshore cable route does not cross any international, national or regional landscape designations. Parts of Blickling Hall RPG to the north west of

Aylsham, and Salle Park to the north east of Reepham, lie within the 1,045m wide study area, although the onshore cable route itself does not extend into these designated landscapes. While mature policy woodland means that a significant effect is unlikely in respect of both RPGs, detailed assessments of the construction impacts on both are included in the LVIA on account of the national importance of these designed landscapes.

70. Within the 6km wide contextual study area of the onshore cable route the following landscape designations are found: The Broads National Park; Norfolk Coast AONB; 'Registered Park and Garden' landscapes at Happisburgh Manor, Honing Hall, Gunton Park and Heydon Hall. Given the scale of the proposed construction works and the distance from these designated landscapes, it is considered unlikely that significant effects would arise in respect of Honing Hall, Gunton Park and Heydon Hall.

1.1.3 Summary of designations

71. This section has reviewed landscape designations within the study areas of the landfall, onshore project substation, onshore cable route, National Grid substation extension and overhead line modification in order to understand how these special landscapes are protected and valued and how susceptible they would be to the potential impacts of the project. The landscape designations with potential to be significantly affected by the project include RPGs at Happisburgh Manor Gardens, Salle Park and Blickling Hall.

72. This information informs the assessment of potential impacts on these landscape designations presented in section 29.7. The assessment considers the magnitude of change that would arise as a result of the project and whether the resultant effect would be significant or not significant.

1.4 Viewpoints and Principal Visual Receptors

73. The study areas associated with the landfall, onshore cable route, onshore project substation, and National Grid substation extension, span a broad cross section of Norfolk County from the coastal landscapes in the east, to the valley and plateau landscapes in the west. The common feature throughout this broad cross-section is the extent of the cultivated landscape, whereby almost all these landscapes are characterised by arable farmland. Settlements and roads are an integral feature of these farmed landscapes; settlements being typically small in scale and rural in character, occurring as hamlets, villages and towns, dispersed throughout the landscape; and roads being typically narrow, winding and enclosed by hedgerows or embankments. Public Rights of Way (PRoWs) and other footpaths allow access into many of the rural landscapes, and along the coastline, adding notably to the experience people have of their local landscapes.

74. Principal visual receptors are shown along the length of the onshore cable route, from the landfall to the onshore project substation and National Grid substation extension, on Figure 29.3 and Figure 29.14.

1.4.1 Settlements

75. The coastal settlements are distinct from the landward settlements owing to their typically linear form along the coast and greater extent of modern development, often comprising chalets and caravan parks. Across the landward area, settlement patterns are typically nucleated with an inward-looking character, and growth commonly enveloping the historic core. Some settlements have grown into towns, such as North Walsham and Aylsham, but most have remained as villages. The rural areas are characterised by small hamlets, clusters of dwellings and isolated farmsteads.

76. Happisburgh lies to the north of the landfall. It is a small nucleated village, characterised by two important landmark features, St. Mary's Church in the north of the village and Happisburgh Lighthouse to the south. The prominence of both these buildings is accentuated by their location on localised high points, making them highly visible across the wider coastal landscape and seascape. The historic core of the village in inset from the coastal edge, to which it is now connected by the more recent Manor Caravan Park and Beach Road. The village originated as a landward settlement but owing to extensive coastal erosion has ended up on the coast. Village expansion has occurred southwards along Whimpwell Street and Lighthouse Lane, and eastwards along Beach Road. It is these southern areas, closest to the landfall, which have potential to be affected by the project.

77. Eccles-on-Sea lies to the south of the landfall. It is a more modern village than Happisburgh and has developed along the coastline to create a long linear settlement. The houses are typically chalet bungalows set along straight, traditional streets with garden grounds but no substantial vegetation. To the north and south, the development spreads further along the coastline as a single row of bungalows facing out towards the North Sea. As the settlement is largely spread along the coastline, it is only the northern strip, on Doggett's Lane, that has potential to be affected by the proximity of the proposed project. This comprises a row of chalet bungalows enclosed by fences and garden vegetation.

78. Ivy Todd is a hamlet set to the south of the onshore project substation. It is located next to the unnamed tributary of the River Wissey that flows north to south through the valley, and as such occupies an enclosed location in the valley landform. There is fairly substantial tree cover surrounding the hamlet, which adds further to the sense of enclosure and disassociation from the surrounding landscape. There is some visibility outwards from the rear elevations of some properties and gardens on the

northern edge of the hamlet, giving rise to a greater degree of susceptibility to the associated effects during construction, operation and decommissioning.

79. Necton is a village located to the south-west of the onshore project substation and west of the National Grid substation extension. Modern development has built up around the historic core marked by All Saints Church, which forms an important landmark feature across the surrounding rural landscapes. The project would be largely screened from the village by intervening landform and buildings, with only residents on the north-east edge being potentially susceptible to the associated effects during construction and operation.

80. Settlements occurring within the 1,045m onshore cable route study area include: Happisburgh, Ridlington, Edingthorpe Green, North Walsham and Banningham within North Norfolk; Aylsham, Silvergate, Southgate, Cawston and Reepham within Broadlands District; and Swanton Morley, Dereham and Necton within Breckland District.

81. Owing to the scale and location of the onshore cable route, only a small number of these settlements are susceptible to the impacts of the project and furthermore, only certain parts of these settlements that lie closest to the onshore cable route have the potential to be impacted. Those settlements with potential to undergo significant visual effects include parts of Ridlington, North Walsham, Banningham, Reepham and Swanton Morley. The effect on these settlements is assessed in detail in Chapter 29 of this ES. The other identified settlements have restricted visibility due to intervening vegetation at the settlement edges or within the intervening landscape, or due to the settlement not being orientated towards the onshore cable route. All of these factors limit the potential for significant visual effects to occur.

1.4.2 Roads and railways

82. The B1159 forms a link between Stalham and the A149 in the south and Bacton in the north. Despite being a 'B' road it is one of the busier roads in this area, owing to its direct route and wider carriageways. The section of relevance to the assessment lies between Old School Lane in the south and Happisburgh Road in the north as this is where the onshore cable route crosses, although visibility of the landfall further east would be precluded from the road, owing to the combination of distance and extent of intervening vegetation. Views from the B1159 are largely characterised by the surrounding arable farmland and development is typically small scale and rural. The erosion of hedgerows along sections of the B1159 allows open views, albeit with some intervening embankments and vegetation.

83. The A47 is the main trunk road between Peterborough and Great Yarmouth, via Norwich. The section of relevance to the assessment of the onshore project

substation sites lies between Little Fransham in the east and Necton in the west. This section provides access into Necton National Grid substation, although visibility of this large-scale development from the A47 is reduced by the extent of road-side planting. The bare trees filter views to some extent in the winter, while with leaves in summer months they largely screen views, although sufficient gaps currently occur to allow glimpsed views south. In the section between Top Farm access and Necton National Grid substation access, mitigation planting has been implementedin relation to Dudgeon Offshore Wind Farm in the form of an additional 10m wide belt of woodland planting set on the field side of the existing A47 road-side planting. This planting is recent, with whips no more than 1m tall, but eventually should grow to bolster the existing screen.

84. The project includes a new junction from the A47 to provide access to the onshore project substation and National Grid substation extension. This is located close to the Top Farm access and includes a slip road to allow east-bound vehicles to turn into the new access road. This will require minimal removal and replacement of certain areas of the Dudgeon Substation mitigation planting as shown in Figure 29.11a and Figure 29.20a.

85. Ivy Todd Road is a rural road to the south of the onshore project substation, which connects Necton in the west with Ivy Todd and Bradenham in the east. Much of the road is enclosed by mature hedgerows such that views of the surrounding landscape are screened.

86. Between Necton and Ivy Todd, hedgerows enclose much of the road such that views of the surrounding landscape are screened. Where the road dips into the valley around Ivy Todd, tree cover adds to increase the sense of enclosure and it is only to the east where hedgerows have been removed that views open up across the landscape.

87. 'A' and 'B' class roads within the onshore cable route study area include, the B1159, B1145 (North Walsham) and A149 within North Norfolk; the B1145 (near Aylsham); B1145 (near Cawston and Reepham), A140 and B1149 within Broadlands District; and A1067, B1146 and A47 within Breckland District.

88. Under Scenario 2, the level of disruption in terms of visual impact would be minimised due to the use of trenchless crossings on the A47, A140, A149, B1145 and Old Hall Road. This approach forms an important part of the embedded mitigation for the project and helps reduce the potential effects on landscape and visual receptors. The use of trenchless crossing would mean that roadside vegetation would remain intact and the trenchless drilling compounds and presence and activity of plant, materials, offices and welfare facilities would often be fully or partly screened by adjacent roadside vegetation.

89. Of the other roads which would be intersected by the onshore cable route Under Scenario 2, Dereham Road, B1146 (north of Dereham), B1147 (south of Swanton Morley), Lime Kiln Road, A1067 (west of Sparham), B1145 (west of Cawston) and Heydon Road, have the potential for significant visual effects. The others have restricted visibility due to successive layers of intervening roadside or field boundary vegetation within the intervening landscape or where views from the road are orientated away from the onshore cable route limiting the potential for significant effects to occur.

90. Railway lines within the onshore cable route study area include Mid Norfolk railway line which crosses the onshore cable route to the north of Dereham and the Norwich – Sheringham railway line to the north of North Walsham. Under Scenario 2, the level of disruption is minimised for these routes at the point of crossing due to the use of trenchless crossing techniques as part of the embedded mitigation of the project. The railway lines are lined with substantial vegetation and hedgerows and trees of neighbouring fields intervene in views from these railway lines. The section of Mid Norfolk Railway within the cable route study area is also in cutting. As a result, the onshore cable route that lies beyond the trenchless drilling compound would not be visible from either of these receptors and it is considered that there is no potential for significant visual effects.

1.4.3 PRoWs and other footpaths

91. The Norfolk Coastal Path is a long-distance footpath that follows the coastline of Norfolk over 62.5 miles between Hunstanton and Sea Palling. It is designated as a National Trail, making it of national importance. It is the section of path between Happisburgh and Eccles on Sea that has potential to be affected by the proposed project owing to its proximity to the landfall. This section of the Coastal Path sits on top of the low cliffs and comprises a narrow dirt path. The sandy beach lies below the crumbling cliffs and is defined by the old timber groynes that extend out into the sea. On the landward side, the rolling landform is at its highest next to Happisburgh and then dips in the middle before rising towards Eccles-on-Sea. The land cover is arable farmland which extends right up to the cliff edge and, with no hedgerow enclosure, the fields appear large and exposed.

92. In the area around the onshore project substation there is very limited access into the landscape. The only route of relevance to the assessment is Lodge Lane, a track leading north to Lodge Farm from the hamlet of Ivy Todd. Hedgerow erosion is widespread in this area and this means that beyond the enclosure provided by vegetation around Ivy Todd, the landscape to the north is exposed in views from the path. The overhead lines form a prominent feature on the skyline and the existing Necton National Grid substation and Dudgeon substation are visible towards the background of views.

93. Long distance recreational routes within the onshore cable route study area include: Sea Palling to Weybourne National Trail and the Norfolk Coast Cycleway within North Norfolk; Aylsham to Felbrigg Hall Regional Cycle Route 33, Marriott's Way, and National Cycle Route 1 within Broadlands District; and National Cycle Route 13 within Breckland District. There are also a series of shorter circular recreational routes within the cable route study area including Paston's Way within North Norfolk; Weavers Way within Broadlands; and Wensum Way within Breckland.

94. The Sea Palling to Weybourne National Trail is located close to the coastline and 500m from the onshore cable route. Views of the onshore cable route from the coastline are extremely limited and therefore not considered to have potential to lead to a significant visual effect. The hedgerows that enclose National Cycle Route 13, National Cycle Route 1, Regional Cycle Route 33 and Weavers Way would be removed for a 13 to 16.5m working width where the onshore cable route crosses, allowing views of the construction activity through these hedgerow gaps. Other field boundary vegetation further limits views locally and as a result there is very little opportunity for views of construction activities from elsewhere on these routes. Potential visual effects experienced from these routes are therefore not considered to have the potential to lead to a significant visual effect. Of the recreational routes identified, Norfolk Coast Cycleway, Marriott's Way, Wensum Way and Paston Way have the potential for significant visual effects.

95. Under Scenario 2, the onshore cable route would cross 28 PRoWs. The vast majority (23) of these PRoWs are footpaths but there are also two Restricted Byways and three Bridleways. Within the context of the study area, the PRoWs are relatively short sections of path connecting to the minor roads across the rural pattern of agricultural fields. Some of the PRoWs follow the alignment of existing field boundaries and hedgerows whilst others cut straight across open fields. Where PRoWs cross open fields, the scale of construction activity would be similar to the scale of agricultural activity in terms of the size of plant and machinery. Where PRoWs include hedgerows that the onshore cable route crosses, hedgerow vegetation would be removed allowing views of the construction activity through hedgerow gaps. These changes would be localised, in short sections of the 13 to 16.5m working width and not considered to have potential to lead to a significant visual effect. Where the onshore cable route crosses these PRoWs, the footpath would be temporarily diverted, and this would reduce the potential for effects on the visual amenity of walkers to arise. Post-construction, the PRoW would be reinstated and as a result, it is considered that there is no potential for significant effects to arise in relation to PRoWs. The physical effects of hedgerow removal in respect of the onehsore cable route are assessed in Table 29.11.

1.4.4 Summary of principal visual receptors

96. This section has reviewed the baseline characteristics of the principal visual receptors within the study areas associated with the landfall, onshore cable route, onshore project substation, and National Grid substation extension in order to understand how landform, land cover and land uses define the visual experience of the landscape, how these views are valued and how viewers would be susceptible to the potential impacts of the project.

97. This information informs the assessment of potential impacts on these principal visual receptors presented in section 29.7 of Chapter 29 Landscape and Visual Impact Assessment. The assessment considers the sensitivity and the magnitude of change that would arise as a result of the project and whether the resultant effect would be significant or not significant. Representative viewpoints have been used in the assessment of the onshore project substation and National Grid substation extension.

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