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MORGAN AND MORECAMBE OFFSHORE WIND FARMS: TRANSMISSION ASSETS

Environmental Statement

Volume 3, Annex 10.4: Landscape and visual impact assessment methodology

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Term	Meaning
400 kV grid connection cables	Cables that will connect the proposed onshore substations to the existing National Grid Penwortham substation.
Baseline	The status of the environment without the Transmission Assets in place.
Cumulative effects	The combined effect of the Transmission Assets in combination with the effects from other proposed developments, on the same receptor or resource.
Designated landscapes	Areas of landscape identified as being of importance at international, national or local levels, either defined by statute or identified in development plans or other documents.
Elements	Individual parts which make up the landscape, such as, for example, trees, hedges and buildings.
Environmental Impact Assessment	The process of identifying and assessing the significant effects likely to arise from a project. This requires consideration of the likely changes to the environment, where these arise as a consequence of a project, through comparison with the existing and projected future baseline conditions.
Generation Assets	The generation assets associated with the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm include the offshore wind turbines, inter-array cables, offshore substation platforms and platform link (interconnector) cables to connect offshore substations.
Impact	Change that is caused by an action/proposed development, e.g., land clearing (action) during construction which results in habitat loss (impact).
Intertidal Infrastructure Area	The temporary and permanent areas between MLWS and MHWS.
Landfall	The area in which the offshore export cables make landfall (come on shore) and the transitional area between the offshore cabling and the onshore cabling. This term applies to the entire landfall area at Lytham St. Annes between Mean Low Water Springs and the transition joint bays inclusive of all construction works, including the offshore and onshore cable routes, intertidal working area and landfall compound(s).
Landscape	An area, as perceived by people, the character of which is a result of the action and interaction of natural and/or human factors.
Landscape Character Assessment	The process of identifying and describing variation in the character of the landscape and using this information to assist in managing change in the landscape. It seeks to identify and explain the unique combination of elements and features that make landscape distinctive. The process results in the production of a Landscape Character Assessment.
Landscape character type	These are distinct types of landscape that are relatively homogeneous in character. They are generic in nature in that they may occur in different areas in different parts of the country, but wherever they occur they share broadly similar combinations of geology, topography, drainage patterns, vegetation, historical land use, and settlement pattern.

Term	Meaning
Landscape receptors	Defined aspects of the landscape resource that have the potential to be affected by the proposal.
Maximum design scenario	The realistic worst-case scenario, selected on a topic-specific and impact specific basis, from a range of potential parameters for the Transmission Assets.
Mean High Water Springs	The height of mean high water during spring tides in a year.
Mean Low Water Springs	The height of mean low water during spring tides in a year.
Morecambe Offshore Windfarm: Generation Assets	The offshore generation assets and associated activities for the Morecambe Offshore Windfarm.
Morgan and Morecambe Offshore Wind Farms: Transmission Assets	The offshore and onshore infrastructure connecting the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm to the national grid. This includes the offshore export cables, landfall site, onshore export cables, onshore substations, 400 kV grid connection cables and associated grid connection infrastructure such as circuit breaker compounds. Also referred to in this report as the Transmission Assets, for ease of reading.
National Policy Statement(s)	The current national policy statements published by the Department for Energy Security and Net Zero in 2023 and adopted in 2024.
Offshore export cables	The cables which would bring electricity from the Generation Assets to the landfall.
Onshore export cables	The cables which would bring electricity from the landfall to the onshore substations.
Onshore export cable corridor	The corridor within which the onshore export cables will be located.
Onshore Infrastructure Area	The area within the Transmission Assets Order Limits landward of Mean High Water Springs. Comprising the offshore export cables from Mean High Water Springs to the transition joint bays, onshore export cables, onshore substations and 400 kV grid connection cables, and associated temporary and permanent infrastructure including temporary and permanent compound areas and accesses. Those parts of the Transmission Assets Order Limits proposed only for ecological mitigation/biodiversity benefit are excluded from this area.
Onshore Order Limits	See Transmission Assets Order Limits: Onshore (below).
Onshore substations	The onshore substations will include a substation for the Morgan Offshore Wind Project: Transmission Assets and a substation for the Morecambe Offshore Windfarm: Transmission Assets. These will each comprise a compound containing the electrical components for transforming the power supplied from the generation assets to 400 kV and to adjust the power quality and power factor, as required to meet the UK Grid Code for supply to the National Grid.
Photomontages	A sequence of photographs taken from representative viewpoints which illustrate the location, size, degree of visibility or appearance of a development.
Representative viewpoint	A viewpoint location that is chosen to represent a number of publicly accessible views.

Term	Meaning
Study area	This is an area which is defined for each environmental topic which includes the Transmission Assets Order Limits as well as potential spatial and temporal considerations of the impacts on relevant receptors. The study area for each topic is intended to cover the area within which an impact can be reasonably expected.
Substation	Part of an electrical transmission and distribution system. Substations transform voltage from high to low, or the reverse by means of electrical transformers.
Transmission Assets	See Morgan and Morecambe Offshore Wind Farms: Transmission Assets (above).
Transmission Assets Order Limits	The area within which all components of the Transmission Assets will be located, including areas required on a temporary basis during construction and/or decommissioning (such as construction compounds).
Transmission Assets Order Limits: Onshore	The area within which all components of the Transmission Assets landward of Mean High Water Springs will be located, including areas required on a temporary basis during construction and/or decommissioning (such as construction compounds). Also referred to in this report as the Onshore Order Limits, for ease of reading.
Visual amenity	The overall pleasantness of the views people experience in their surroundings, which provides a visual setting or backdrop for the enjoyment of activities of the people living, working, recreating, visiting or travelling through an area.
Visual receptors	Individuals and/or defined groups of people who have the potential to be affected by a proposal.
Visualisation	A computer simulation, photomontage or other technique illustrating the predicted appearance of a proposed development.
Zone of Theoretical Visibility	A map, usually digitally produced, showing areas of land within which, a development is theoretically visible.
Wirelines	A simple outline of the development included in photographs from representative viewpoints.

Acronyms

Acronym	Description
AOD	Above Ordnance Datum
CEA	Cumulative Effect Assessment
DESNZ	Department for Energy Security and Net Zero
DTM	Digital Terrain Model
EIA	Environmental Impact Assessment
ES	Environmental Statement
FoV	Field of View

Acronym	Description
GLVIA3	Guidelines for Landscape and Visual Impact Assessment (Third Edition)
HFoV	Horizontal Field of View
IEMA	Institute of Environmental Management and Assessment
LAT	Lowest Astronomical Tide
LVIA	Landscape and Visual Impact Assessment
MDS	Maximum Design Scenario
SLA	Special Landscape Area
ZTV	Zone of Theoretical Visibility

Units

Unit	Description
m	Metre
km	Kilometre
kV	Kilovolt

1 Landscape and visual impact assessment methodology

1.1 Introduction

1.1.1 Overview

1.1.1.1 This document forms Volume 3, Annex 10.4: Landscape and visual impact assessment methodology of the Environmental Statement (ES) prepared for the Morgan and Morecambe Offshore Wind Farms: Transmission Assets (hereafter referred to as the Transmission Assets). The ES presents the findings of the Environmental Impact Assessment (EIA) process for the Transmission Assets.

1.1.1.2 This document describes the methodology used to undertake the landscape and visual impact assessment (LVIA) including the collection of baseline information and the assessment of likely significant effects contained in Volume 3, Chapter 10: Landscape and visual resources of the ES.

1.1.2 Study area

1.1.2.1 The landscape and visual resources study area (hereafter referred to as 'the study area') is illustrated in **Figure 1.1**. It has been based on appropriate buffers and the findings of an analysis of the Zone of Theoretical Visibility (ZTV) and is described below.

- A 5 km buffer around the outer edge of the onshore substations which would include the area of land to be temporarily and permanently occupied during construction, operation and maintenance and decommissioning of the onshore substations. The substations comprise operational infrastructure up to 15 m high, which has the potential to influence receptors up to 5 km from the Transmission Assets. Beyond 5 km from the Transmission Assets, there is no potential for significant adverse effects to occur.
- A 1 km buffer around the area of land to be temporarily occupied during construction within the landfall, onshore export cable corridor and 400 kV grid connection cable corridor. This relates to relatively low level, temporary infrastructure that has the potential to influence receptors up to 1 km from the Transmission Assets. The 1 km buffer is based on the location of the Onshore Infrastructure Area and Intertidal Infrastructure Area as defined in Volume 1, Chapter 3: Project description of the ES. This includes the area within which all components of the Transmission Assets landward of Mean Low Water Springs will be located, including areas required on a temporary basis during construction and/or decommissioning (such as construction compounds), within which the onshore export cables, onshore substations and 400 kV grid connection cables will be located.

1.1.2.2 The LVIA study area extent is formulated in accordance with relevant best practice guidance, in particular 'Guidelines for Landscape and

Visual Impact Assessment: Third Edition, 2013, Landscape Institute and Institute of Environmental Management and Assessment (GLVIA3)'. No statutory consultation responses to the Preliminary Environmental Information Report submission regarding the approach to defining the extent of the LVIA study area were received from stakeholders. The study area has been shared with the relevant authorities/consultees during a consultation meeting on 22 February 2024 (refer to Table 10.7 of Volume 3, Chapter 10: Landscape and visual resources of the ES). A slide presentation included details of 5 km radius study area extents for permanent infrastructure. The LVIA has therefore taken the approach, as set out in the GLVIA3, paragraph 1.17: '*the emphasis is on the identification of likely significant environmental effects'*. It is considered that, due to distance, there is no potential for significant effects beyond the 5 km radius study area for the substations and the 1 km radius from the landfall, onshore export cable corridor and 400 kV grid connection cable search area and that the study area need not extend further.

Cumulative Effects Assessment Study Area

1.1.2.3 The Cumulative Effects Assessment (CEA) study area for the Transmission Assets and onshore CEA developments (excluding wind energy developments) is a 5 km buffer from the onshore substations and 1 km from the onshore cable corridor and landfall construction works.

1.1.2.4 The CEA study area for proposed offshore infrastructure is limited to the Morecambe Offshore Windfarm: Generation Assets, due to its proximity to the coastline at the landfall location. The Morecambe Offshore Windfarm: Generation Assets is a 51 km radius (1 km for the landfall works and 50 km for the wind turbines study area (based on turbines over 200 m high above Mean High Water Springs)) (see **Figure 1.2**).

1.1.2.5 The CEA study area for the Transmission Assets and onshore windfarms is 40 km (5 km around the onshore substations and 35 km for proposed onshore wind farms). The study area for onshore wind farms is reduced compared to offshore wind farms, as onshore wind farms currently have smaller turbines and so the potential impacts will be exerted over a smaller area (see **Figure 1.2**). For all other onshore development, the CEA area has been confined to 1 km from the onshore cable corridor and 5 km from the onshore substations.

1.1.2.6 In summary, the Transmission Assets will be assessed in combination with the following:

- proposed offshore wind farms (i.e., the Morecambe Offshore Windfarm: Generation Assets) and where relevant, associated substations, within 51 km of the Transmission Assets landfall;
- existing operational onshore and offshore wind farms (and where relevant, associated substations) within 40 km of the onshore substations;
- permitted and proposed major onshore developments within 10 km of the onshore substations; and

- permitted and proposed major onshore developments within 1 km of the onshore cable corridor.

1.1.2.7 The buffers used to define the landscape and visual resources study area are based on the Transmission Assets maximum design scenario (MDS) described in Table 10.18 of Volume 3, Chapter 10: Landscape and visual resources of the ES.

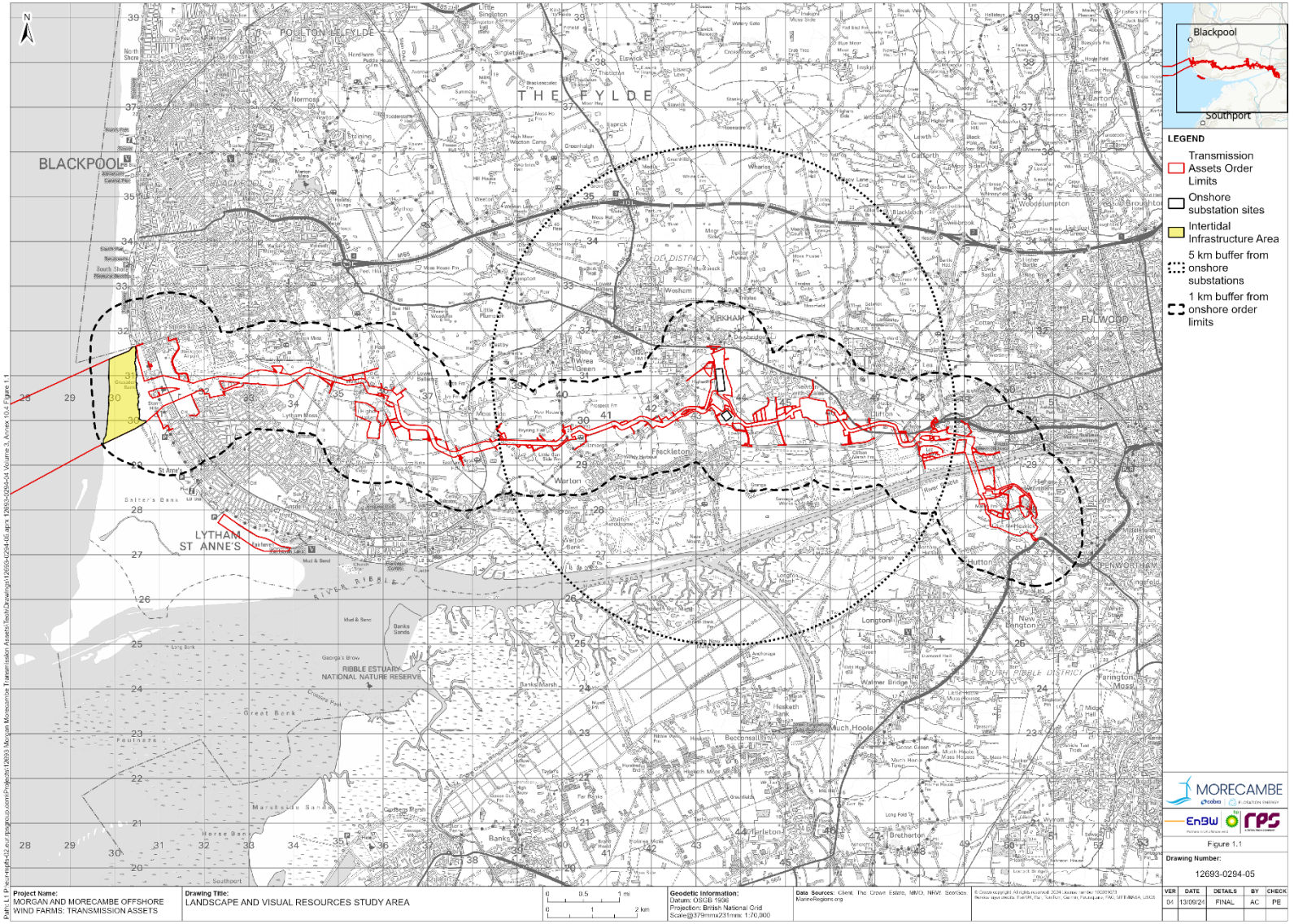

Figure 1.1: Landscape and visual resources study area

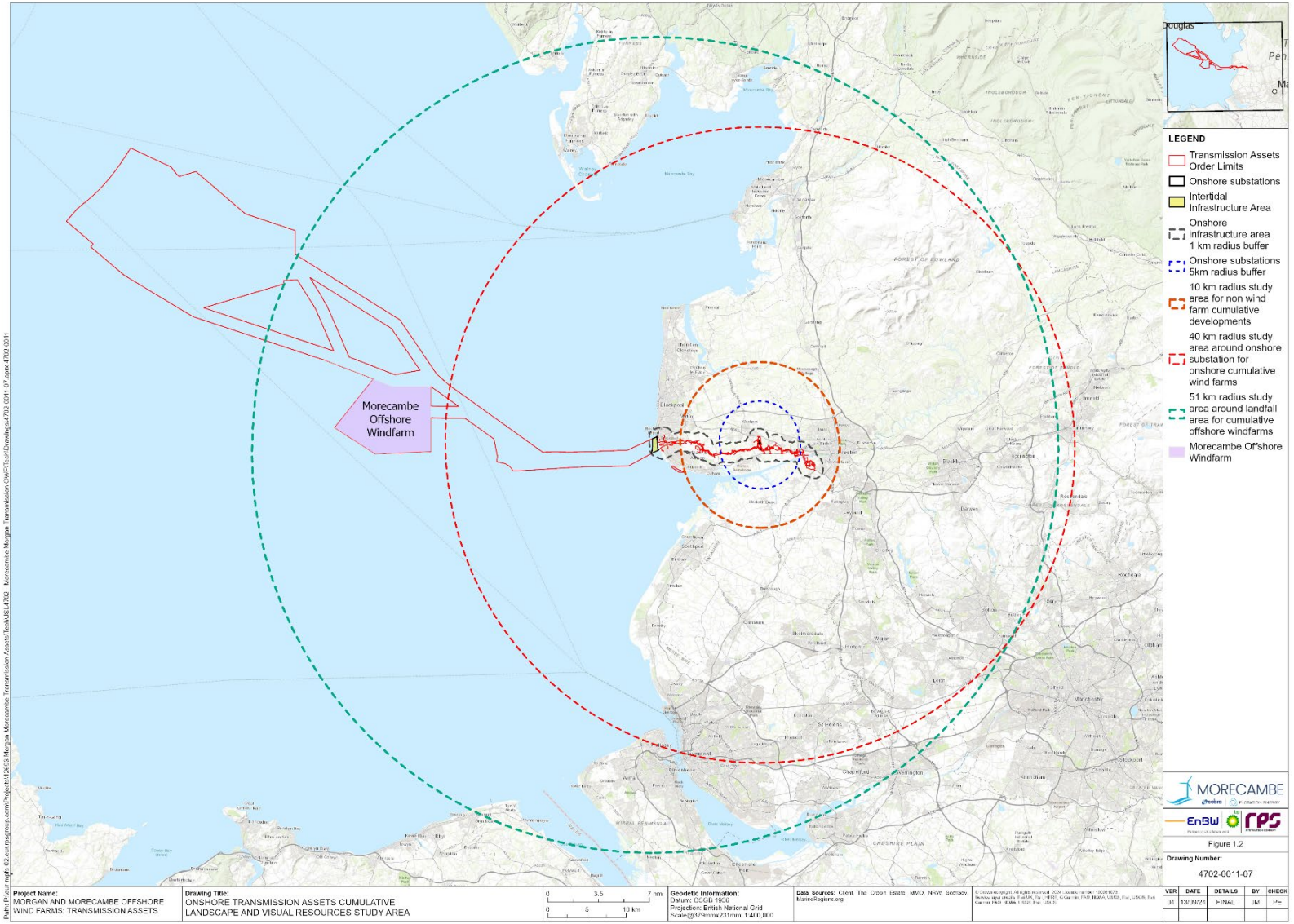

Figure 1.2: Cumulative landscape and visual resources study area

1.2 Overview of landscape and visual impact assessment methodology

1.2.1 Introduction

1.2.1.1 The LVIA methodology is based primarily on the guidance for landscape and visual impact assessment within GLVIA3, and draws on other Landscape Institute, relevant best practice guidance including:

- Technical Guidance Note 02/21: Assessing landscape value outside national designations (Landscape Institute, May 2021); and
- Technical Guidance Note 06/19: Visual Representation of Development Proposals (Landscape Institute, September 2019).

1.2.1.2 A full list of relevant guidance documents is included in **section 1.3.1.1**.

1.2.1.3 The LVIA assesses the likely significant effects of the construction, operation and maintenance, and decommissioning of the Transmission Assets on the landscape and visual receptors within the landscape and visual resources study area.

1.2.1.4 GLVIA3 sets out the need to assess landscape and visual aspects separately, notwithstanding that they are related topics. The LVIA follows the GLVIA3 guidance recommendation in treating landscape and visual matters separately throughout the assessment.

1.2.1.5 GLVIA3 sets out broad guidelines rather than detailed prescriptive methodologies. The methodologies tailored for the assessment of the Transmission Assets *'concentrates on principles and process'* and *'does not provide a detailed or formulaic recipe'* to assess effects, it being the *'responsibility of the professional to ensure that the approach and methodology are appropriate to the task in hand'* (preface to GLVIA3).

1.2.1.6 Potential landscape and visual effects (the impact of the Transmission Assets) are assessed by considering the amount or 'magnitude' of change (compared with the baseline conditions) likely to be experienced by people or a landscape as a result of implementing the proposed development. Magnitude is then weighed against the sensitivity (to the proposed development) of the landscape or visual receptor in question to arrive at a judgement on the level of effect. The sensitivity of a given receptor is assessed by considering both its inherent value and its susceptibility to the type of development proposed. Finally, a judgement is made on whether the predicted landscape or visual effect is likely to be significant or not significant.

1.2.1.7 Regarding establishing the LVIA baseline, in accordance with GLVIA3 (paragraph 7.13) and Planning Inspectorate Advice Note '*Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment'* (Planning Inspectorate, 2024), existing active/in operation development is considered as part of the baseline conditions.

1.2.1.8 The assessment methodology is summarised in **Diagram 1.1** below. These factors are determined through a combination of quantitative

(objective) and qualitative (subjective) assessment using professional judgement.

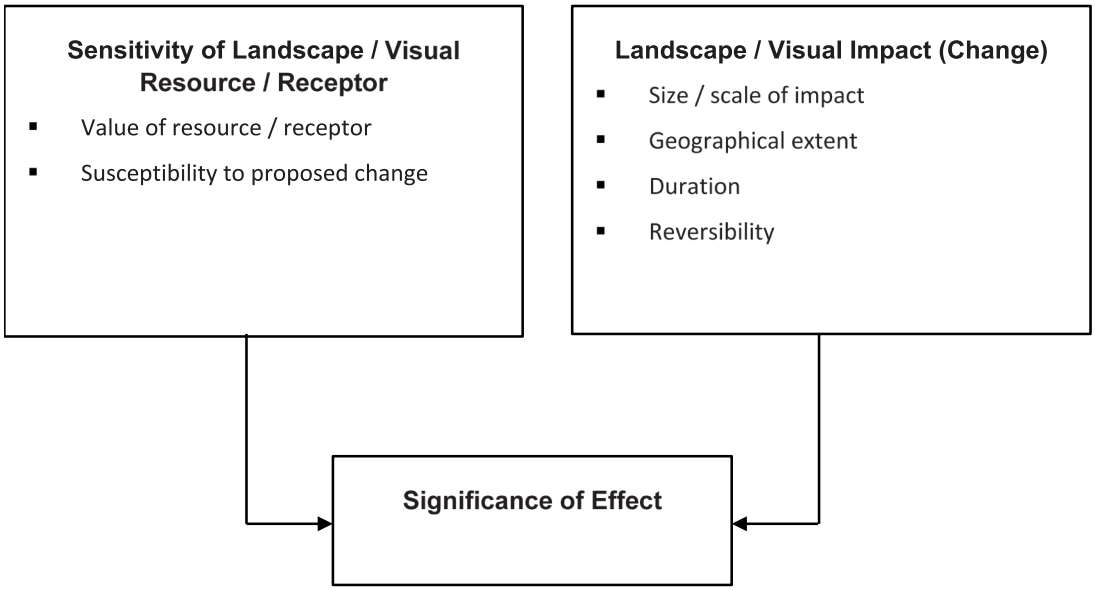

Diagram 1.1: Assessment method summary

1.2.1.9 The guidance emphasises the need for all assessments to be clear and transparent. It encourages the use of a simplified matrix of significance and warns against the use of other topics' significance criteria. The guidance also warns against reliance on significance tables alone, the emphasis should be on well-argued narrative text, for clarity and transparency.

1.2.2 Note on significance and proportionality

1.2.2.1 The purpose of carrying out this LVIA is to identify and assess the significant effects likely to arise from implementing the proposed development in question. Chapter 1: Introduction of GLVIA3 best practice guidance states:

'Identifying significant effects stresses the need for an approach that is in proportion to the scale of the project that is being assessed and the nature of its likely effects. Judgement needs to be exercised at all stages in terms of the scale of investigation that is appropriate and proportional. This does not mean that effects should be ignored, or their importance minimised but that the assessment should be tailored to the particular circumstances in each case' (paragraph 1.17).

1.2.2.1 The LVIA and its findings and conclusions are steered by the proportionality principle expressed in the paragraph quoted above. When judging the overall significance of effect, GLVIA3 explains that there are no hard or fast rules about what effects should be deemed to be significant. It is important to clearly articulate and distinguish between effects which are significant and those which are not.

1.2.3 Assumptions and limitations

1.2.3.1 The LVIA is subject to, *inter alia*, the following assumptions and limitations.

- The visual assessment is based on analysis of OS mapping of the site and surrounding area, and on field survey and analysis of views towards the Transmission Assets from publicly accessible viewpoints in the surrounding landscape. Although every effort has been made to include viewpoints in sensitive locations and from which the proposed development would be most visible, not all public viewpoints from which the proposed development would potentially be seen have necessarily been included in the assessment.
- The fieldwork and visual assessment were undertaken either during early spring when deciduous trees were not in leaf (winter scenario 2023 and 2024) or summer 2023 and 2024 when deciduous trees were in leaf. The early spring photography undertaken in March 2024 has allowed an accurate projection of the MDS i.e., the most visible conditions. However, visibility in some months can be more limited due to weather conditions (see **Appendix B**).
- The term 'host' landscape is understood to mean the landscape character unit in which the Transmission Assets are located. In other words, the landscape character unit that is 'hosting' the proposed development.
- The Transmission Assets are treated as a permanent form of development with the potential of being reversed at some point in the future, although not necessarily at the end of its design life (i.e., 35 years).
- A 'defining' change is understood to mean one that substantially and/or materially alters the existing situation. In this LVIA, a 'defining' change to the existing landscape or visual resource will typically lead to a significant effect being recorded, whereas a 'non-defining' change will not.
- Assumptions and limitations relating to the visualisations and graphics production generally are set out in **Appendix A** of this document.

1.2.4 Iterative assessment and design

1.2.4.1 As described in Volume 1, Chapter 5: Environmental assessment methodology of the ES, the LVIA is part of an ongoing iterative design process which aims to *'avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment'*. This iterative approach involves a feedback loop whereby if the initial assessment of a potential landscape and/or visual effect is deemed likely to result in a significant adverse effect, changes to the design of the Transmission Assets is made (where reasonably practical) to avoid, reduce or offset that impact. The assessment is then repeated, and the process

continues until the effect has been reduced to a level that is judged to be not significant or, having regard to other constraints, no further changes may be made to the Transmission Assets in order to reduce the magnitude of impact (and hence its potential landscape and visual significance of effect). In such cases, an overall effect that is still significant may be presented in the LVIA section of the ES.

1.2.4.2 This iterative design process has been used to inform the design of the Transmission Assets through the identification of likely significant landscape and/or visual effects, and where possible within operation constraints, the development of mitigation measures to address these. Where practicable, these measures have been incorporated into the design of the Transmission Assets. They are referred to throughout the ES as measures adopted within Volume 1, Annex 5.3: Commitments Register of the ES. They are also referred to within the Outline Landscape Management Plan (document reference J2) and the Outline Design Principles Document (document reference J3).

1.2.5 Potential impacts during construction and decommissioning

1.2.5.1 Potential impacts on the landscape and visual resources that may occur during the construction and decommissioning phases of the Transmission Assets include the following impacts.

1.2.5.2 Landscape impacts include:

- potential impacts on landscape character (including designated landscapes), which may arise as a result of the construction and decommissioning phase of the Transmission Assets.

1.2.5.3 Visual impacts include:

- potential impacts on views and visual amenity experienced by people, which may arise as a result of the construction and decommissioning phases of the Transmission Assets.

1.2.6 Potential impacts during operation and maintenance

1.2.6.1 Potential impacts on the landscape and views that may occur during the operations and maintenance phase of the Transmission Assets, include the following.

- Landscape impacts include:
  - potential impacts on landscape character (including designated landscapes), arising as a result of the operation of the above ground Transmission Assets, and maintenance activities.
- Visual impacts include:
  - potential impacts on views and visual amenity experienced by people, which may arise as a result of the operation of the Transmission Assets and maintenance activities, including marine navigation and aviation lighting.

- Cumulative impacts are also included.
  - The assessment also considers the cumulative effects likely to result from additional changes to landscape and visual resources caused by the Transmission Assets in association with other relevant existing developments and planned developments that are likely to occur in the foreseeable future.

1.3 Guidance, data sources and site surveys

1.3.1 Guidance

1.3.1.1 As well as relevant planning policy and guidance detailed in Volume 3, Chapter 10: Landscape and visual resources of the ES, the methodology used for the LVIA has regard to the following relevant guidance and requirements contained in published documents:

- Council of Europe, The European Landscape Convention (2000, ratified 2006) ETS No. 176;
- Countryside Agency and Scottish Natural Heritage (2004), Topic Paper 6: Techniques and Criteria for judging Capacity and Sensitivity;
- Overarching NPS for Energy (NPS EN-1) which sets out the UK Government's policy for the delivery of major energy infrastructure (Department for Energy Security and Net Zero (DESNZ), 2023a);
- NPS for Renewable Energy Infrastructure (NPS EN-3) (DESNZ, 2023b);
- NPS for Electricity Networks Infrastructure (NPS EN-5) (DESNZ, 2023c);
- Department of Energy and Climate Change, (2016), Offshore Energy Strategic Environment Assessment 3;
- Department of Trade and Industry, (2005), Guidance on the Assessment of the Impact of Offshore Wind Farms: Seascape and Visual Impact Report;
- Department of Trade and Industry, BMT Cordah (2003), Offshore Wind Energy Generation: Phase 1 Proposals and Environment Report;
- Landscape Institute and Institute of Environmental Management and Assessment 'Guidelines for Landscape and Visual Impact Assessment: Third Edition, 2013, (GLVIA3) ;
- Landscape Institute (2019). Technical Guidance Note 6/19: Visual Representation of Development Proposals;
- Landscaper Institute (2021) Technical Guidance Note 02/21: Assessing landscape value outside national designations;
- Natural England (2014). An Approach to Landscape Character Assessment;

- NatureScot (2021). Assessing the Cumulative Landscape and Visual Impacts of Onshore Wind Energy Developments;
- NatureScot (2017). Visual Representation of Wind farms, Guidance (Version 2.2);
- Various, (2021), Offshore Wind Marine Environmental Assessments: Best Practice Advice for Evidence and Data Standards – Phase III: Expectations for Data Analysis and Presentation at Examination for Offshore Wind Applications – Draft Report; and
- Parker, J., Banks, A., Fawcett, A., Axelsson, M., Rowell, H., Allen, S., Ludgate, C., Humphrey, O., Baker, A. and Copley, V. (2022a). Offshore Wind Marine Environmental Assessments: Best Practice Advice for Evidence and Data Standards. Phase I: Expectations for pre-application baseline data for designated nature conservation and landscape receptors to support offshore wind applications. Natural England. Version 1.1. 79 pp.

1.3.2 Data sources

1.3.2.1 The data sources that have been collected and used to inform the LVIA are summarised in **Table 1.1**. A review of relevant planning policy related to landscape and visual issues is included in Volume 3, Annex 10.1: Landscape and visual resources planning policy context of the ES.

Table 1.1: Data sources used to inform the LVIA

Title	Source	Year	Author
A Landscape Strategy for Lancashire	Lancashire County Council	2000	Lancashire County Council
National Character Area Profile	Natural England	Various (2012 to 2014)	Natural England

1.3.3 Desk-based studies and site survey work

1.3.3.1 The LVIA has been informed by desk-based studies, field survey work undertaken as described in **Table 1.2**, and has been informed by stakeholder consultation as part of the EIA process (see Table 10.7 of Volume 3, Chapter 10: Landscape and visual resources of the ES).

Table 1.2: Summary of surveys undertaken to inform LVIA

Title	Extent of survey	Overview of survey	Date
LVIA fieldwork and photography (see **Appendix A**)	Lancashire	Onshore candidate viewpoint photography and field survey work	21/03/2022 21/03/2023
LVIA fieldwork and photography (see **Appendix A**)	Onshore export cable corridor study area	Onshore cable route context photography and field survey work	16/05/2023

Title	Extent of survey	Overview of survey	Date
LVIA fieldwork and photography (see **Appendix A**)	Onshore substations study area	Onshore candidate viewpoint photography and field survey work	21/06/2023
LVIA fieldwork and photography (see **Appendix A**)	Landfall, onshore cable corridor and onshore substations study area	Onshore Representative Viewpoint and landscape character photography and field survey work	6/03/2024 to 9/03/2024

1.4 Assessment of visual effects

1.4.1 Introduction

1.4.1.1 Visual effects are concerned with effects on views and visual amenity, defined as '*the overall pleasantness of the views people enjoy of their surroundings…'* (GLVIA3, p.158). They relate to the effects on views experienced by visual receptors (e.g., footpath users, road users, people in their places of work etc).

1.4.1.2 Visual receptors are always people: *'An assessment of visual effects deals with the effects of change and development on the views available to people and their visual amenity'* (GLVIA3, paragraph 6.1). The assessment of visual effects is thus concerned with the potential visual change experienced by people as a result of implementing the Transmission Assets and may include changes to existing static and sequential views, or the wider visual amenity.

1.4.1.3 The level of visual effect (and whether this is significant or not) is determined through consideration of the sensitivity of each visual receptor (or group) and the magnitude of impact that will potentially be brought about by the construction, operation and maintenance, and decommissioning of the Transmission Assets.

1.4.2 Zone of Theoretical Visibility

1.4.2.1 Plans mapping the ZTVs for the Transmission Assets (see **Appendix A** visual representation methodology) are used to establish the extent of its theoretical visibility throughout the study area and to assist with representative viewpoint selection. The ZTVs take account of the screening effects of buildings, landform and significant vegetation, as shown on the 1:25,000 Ordnance Survey mapping. They do not reflect local topographical variations, hedgerows, individual trees or smaller built structures, such as walls. A ZTV is only an indication of where a proposed structure might be seen from. It does not indicate how much of the proposed development can be seen or reflect the effects of perspective. It simply shows that part of the development is visible, however small or distant. As such it is a worse case scenario , a tool to be followed up by fieldwork, which verifies what extent the Transmission Assets might actually be visible.

1.4.3 Representative viewpoints

1.4.3.1 Representative viewpoints, prepared in accordance with **Appendix A**, are used to assist the assessment and cover a range of viewpoints within the landscape and visual resources study area at differing distances and orientations relative to the Transmission Assets. The purpose of these is to help assess both the level of visual effect for particular visual receptors and guide the design process, and generally focus the assessment.

1.4.3.2 The representative viewpoints used in the LVIA have been agreed with the relevant consultees during a meeting on 22 February 2024 and they have informed the assessment. Five additional representative viewpoints requested by Fylde Council form part of the LVIA. A summary of key consultation comments raised during consultation activities undertaken for the Transmission Assets relevant to landscape and visual resources are recorded in Table 10.7 of Volume 3, Chapter 10: Landscape and visual resources of the ES.

1.4.3.3 The assessment process involved visiting the representative viewpoint location and undertaking panoramic photography. The fieldwork was conducted in periods of favourable visibility, during both the summer and winter months to take account of the seasonal variation in vegetation cover. The changes in visibility over the year are set out in **Appendix B**.

1.4.4 Evaluating sensitivity to change

1.4.4.1 The sensitivity of a visual receptor to change varies according to the nature of the existing view and the nature of the proposed change. Considerations of value, susceptibility, integrity and capacity are all relevant when assessing sensitivity. For the purpose of this assessment, these terms are defined as per the below.

- Value: the relative value that is attached to different landscapes by society. A landscape may be valued by different stakeholders for a whole variety of reasons. Landscapes can be recognised through national, regional or local designation. Views tend not to be designated, but value can be recognised through a named location shown on a map, or through the creation of a parking lay-by or location of a bench to appreciate a view. Influences such as the number of receptors affected, popularity of views and the significance of the views in relation to valued landscapes or features also determines the importance of views.
- Susceptibility: the occupation or activity of people experiencing the view at particular locations and the extent to which their attention or interest maybe focused on views, whether views are continuous, fragmented, or intermittent (i.e., the dynamic nature of a view gained while travelling through an area) and the visual amenity they experience at particular locations.
- Integrity: the degree to which the value or importance has been retained, the integrity of the view.

- Capacity: the ability of a landscape or view to accommodate the proposed change while retaining the essential characteristics which define it.

Visual sensitivity criteria

1.4.4.2 Sensitivity is not readily graded in bands and GLVIA notes, with regards to visual sensitivity, that the division of who may or may not be sensitive to a particular change *'is not black and white and in reality, there will be a gradation in susceptibility to change'* (GLVIA, para 6.35). In order to provide both consistency and transparency to the assessment process, **Table 1.3** defines the criteria which have guided the judgement as to the intrinsic susceptibility and value of the visual receptor and their subsequent sensitivity to changes to views brought about by the Transmission Assets.

Table 1.3: Visual sensitivity criteria

Sensitivity	Definition
Very high	Large number of viewers whose attention is very likely to be focused on the landscape within nationally designated landscapes where high levels of tranquillity are most likely to be experienced e.g., users of strategic recreational footpaths and cycleways; people experiencing views from important landscape features of physical, cultural or historic interest, beauty spots and picnic areas.
High	Large number of viewers whose attention is likely to be focused on the landscape. Includes areas within nationally designated landscapes where high levels of tranquillity may be experienced e.g., residents experiencing views from dwellings; users of strategic recreational footpaths and cycleways; people experiencing views from important landscape features of physical, cultural or historic interest, beauty spots and picnic areas. Occupiers of vehicles in highly scenic areas or on recognised tourist routes.
Medium	Viewers' attentions may be focused on landscape, such as users of pavements, footways and secondary footpaths in urban areas, and people engaged in outdoor sport or recreation e.g., horse riding or golf. Occupiers of vehicles in rural areas.
Low	People at their place of work, or engaged in similar activities, whose attention may be focused on their work or activity and who may therefore be potentially less susceptible to changes in view. Occupiers of vehicles whose attention may be focused on the road.
Negligible	People at their place of work, or engaged in similar activities, whose attention is most likely to be focused on their work or activity and who therefore are potentially less susceptible to changes in view. Occupiers of vehicles in urban areas.

1.4.5 Evaluating visual magnitude of impact

1.4.5.1 The magnitude of an impact affecting visual receptors depends on the size or scale of the development, the geographical extent of the area influenced and its duration and reversibility. These factors are described below:

Size or scale

1.4.5.2 An assessment is made about the size or scale of change in the view that is likely to be experienced as a result of the introduction of the Transmission Assets, based on the following criteria.

- Distance: the distance between the visual receptor/viewpoint and the Transmission Assets. Generally, the greater the distance, the lower the magnitude of impact, as the Transmission Assets may constitute a smaller scale component of the view. Distance can be quantified and described objectively.
- Size: the amount and size of the Transmission Assets that will be seen. Visibility may range from small or partial visibility of the Transmission Assets to all elements being visible. Generally, the closer and greater the number of elements within the Transmission Assets appearing in the view, the higher the magnitude of impact. This is also related to the degree to which the Transmission Assets may be wholly or partly screened by landform, vegetation (seasonal) and/or built form. Conversely open views are likely to reveal more of the Transmission Assets, particularly where this is a key characteristic of the landscape. The amount of development visible can be described objectively in part by reference to the proportion of the whole in view.
- Scale: the scale of change in the view with respect to the loss or addition of features in the view and changes in its composition. The scale of the Transmission Assets may appear larger or smaller relative to the existing view composition.
- Field of view (FoV): the extent or proportion of the view that is affected by the Transmission Assets. Generally, the greater the extent or proportion impacted, the higher the impact magnitude will be. If the Transmission Assets extends across the whole of the view, the magnitude of impact will generally be higher. Conversely, if the Transmission Assets occupies just a narrow portion of the view, the magnitude of impact is likely to be reduced. This can in part be described objectively by reference to the horizontal and vertical FoVs affected relative to the extent available view.
- Contrast: the character and context within which the Transmission Assets will be seen and the degree of contrast or integration of any new features with existing landscape elements, in terms of scale, form, mass, line, height, colour, luminance and (e.g., in the case of wind turbines) motion. Developments which contrast or appear incongruous in terms of colour, scale and form are likely to be more visible and have a higher magnitude of impact. Conversely, congruity with existing surroundings is likely to be less impactful.
- Consistency of image: the consistency of image of the Transmission Assets in relation to other developments. The magnitude of impact is likely to be lower if a development is broadly similar to other developments in the landscape in terms of its scale, form and general appearance.

- Skyline/background: whether the Transmission Assets will be viewed against the skyline, or a landform backdrop may affect the level of contrast and magnitude. If it adds to an already developed backdrop or skyline the magnitude of impact will tend to be lower.
- Number: generally, the greater the number of separate elements within a proposed development seen simultaneously or sequentially, the higher the magnitude of impact. This can usually be quantified and described objectively.
- Nature of visibility: the nature of visibility is a further factor for consideration. The Transmission Assets may be subject to various phases of development and the way it is viewed will vary throughout the year due to differing weather and atmospheric conditions/visibility (see **Appendix B**) and seasonal variations including vegetation cover.

Geographical extent

1.4.5.3 The geographic extent over which the visual effect will be experienced is distinct from the size or scale of effect and is described in terms of the physical area or location over which it will be experienced (quantifiable as a linear or area measurement). The extent of effects will vary according to the specific nature of the Transmission Assets and is principally assessed through consideration of the ZTV, field survey and analysis of the extent of visibility likely to be experienced by visual receptors on the ground at the representative viewpoints.

Duration and reversibility

1.4.5.4 The duration and reversibility of visual effects are based on the period over which the Transmission Assets are likely to exist (i.e., during construction, operation and decommissioning), with effects being reversed at the end of that period.

1.4.5.5 Long-term, medium-term and short-term visual effects are defined as follows:

- short term: a period of months, up to one year (reversible);
- medium term: a period of more than one year, up to five years (reversible); or
- long term: a period of greater than five years (permanent or reversible).

Visual magnitude of impact rating

1.4.5.6 The magnitude of impact resulting from the Transmission Assets is described as high, medium, low, negligible and no change as defined in **Table 1.4** below, and summarised in Table 10.20 of Volume 3, Chapter 10: Landscape and visual resources of the ES.

Table 1.4: Visual magnitude of impact criteria

Magnitude of Impact	Definition
High	The proposed change forms a dominant or immediately apparent feature that would significantly alter and change view. Where there are substantial changes affecting the character of the view through loss of or severe damage to key existing or elements. Scale, mass and form of development out of character with existing elements within view. Substantial change to perception of tranquillity due to proposed disturbance (adverse) Large scale or major improvement of view; extensive restoration or enhancement of visual quality (beneficial).
Medium	The proposed change forms a prominent new element that would affect and change the view. The proposed development forms a visible and recognisable feature in the landscape. Scale of development fits with existing features within view, some loss of or alterations to elements. Prominent change to perception of tranquillity due to proposed disturbance (adverse). Moderate scale improvement of view; partial restoration or enhancement of visual quality (beneficial).
Low	The proposed change constitutes only a minor component of view, which is recognisable, although might be missed by the casual observer. Awareness of the proposed change would not change the overall nature and character of the view. Receptor may be located at distance from the development. Minor loss of, or alteration to, one (maybe more) key elements within view. Minor change to perception of tranquillity due to proposed disturbance (adverse). Minor benefit to, or improvement in quality of view due to partial restoration or enhancement (beneficial).
Negligible	Only a very small part of the proposed change would be discernible, and/or it is at such a distance that it would be scarcely appreciated. Consequently, it would have very little effect on view. The effect of change on the perception of the visible landscape is barely discernible. Barely discernible change to perception of tranquillity due to proposed disturbance (adverse). Very minor benefit to or improvement in quality of view due to partial restoration or enhancement (beneficial).
No change	No visible loss of or alteration to visible landscape or perception of tranquillity; no observable adverse or beneficial impact.

1.4.6 Evaluating significance of visual effect

1.4.6.1 The significance of a visual effect is evaluated through the combination of visual sensitivity and magnitude of impact. Where a range of significance levels are presented, the final assessment for each effect is based upon expert judgement.

1.4.6.2 In all cases, the evaluation of receptor sensitivity, impact magnitude and significance of effect has been informed by professional judgement and is underpinned by narrative to explain the conclusions reached.

1.4.6.3 Once the level of effect has been established, a judgement is then made as to whether the effect is 'significant' as required by the relevant EIA Regulations. This process is assisted by the matrix in **Table 1.8** which is used to guide the assessment.

1.4.6.4 A significant effect is more likely to occur where a combination of the variables results in the Transmission Assets having a defining effect on the view or visual amenity, or where changes materially affect a visual receptor of high or very high sensitivity. An effect is more likely to be assessed as not significant when the combination of variables results in the Transmission Assets having a non-defining effect on the view or visual amenity, or where predicted changes affect a low sensitivity visual receptor.

1.5 Assessment of landscape effects

1.5.1 Introduction

1.5.1.1 National Character Areas and regional landscape character areas defined by Lancashire County Council are considered to be appropriate baseline sources of information for the assessment of effects on landscape character.

1.5.1.2 Other sources of landscape character information which have informed this assessment are listed above in **Table 1.1**.

1.5.2 Evaluating landscape sensitivity to change

1.5.2.1 The sensitivity of a landscape receptor is a combination of *'judgements of their susceptibility to the type of change or development proposed and the value attached to the landscape'* (GLVIA3, para 5.39). In this LVIA, susceptibility and value of landscape receptors are defined as follows.

- Landscape susceptibility: '*the ability of the landscape receptor (whether it be the overall character or quality/condition of a particular landscape type or area, or an individual element and/or feature, or a particular aesthetic and perceptual aspect) to accommodate the proposed change without undue consequences for the maintenance of the baseline situation and/or the achievement of landscape planning policies and strategies*' (GLVIA3, para 5.40).
- Value of the landscape receptor: *'The value of the Landscape Character Types or Areas that may be affected, based on review of designations at both national and local levels, and, where there are no designations, judgements based on criteria that can be used to establish landscape value; and, the value of individual contributors to landscape character, especially the key characteristics, which may include individual elements of the landscape, particularly*

landscape features, notable aesthetic, perceptual or experiential qualities, and combinations of these contributors' (GLVIA3, para 5.44).

1.5.2.2 The assessment of landscape sensitivity has regard to published landscape sensitivity studies.

Value of the landscape receptor

1.5.2.3 As part of the baseline description of the study area the value of the landscape that would be affected has been established in accordance with paragraph 180 of the National Planning Policy Framework (Ministry of Housing, Community and Local Government, 2023). The value of certain landscapes has been recognised, e.g. the national designations of National Park. Some landscapes are locally designated, e.g. Special Landscape Area (SLA). The aspects/special qualities of the landscape that led to the designations have been noted, as has the degree to which that aspect is present in the particular area under consideration.

1.5.2.4 Other landscapes are undesignated but are valued locally for specific reasons or specific elements /features. GLVIA3 includes a list of eight factors within Box 5.1. The Landscape Institute's Guidance Note: Assessing Landscape Value Outside National Designations' (Landscape Institute, May 2021) also includes these factors and additionally includes 'functionality'. These have been used to identify landscape value. These have been used as factors throughout the assessment to establish value within the study area.

- Landscape quality.
- Scenic quality.
- Rarity.
- Representativeness.
- Conservation interest.
- Recreation value.
- Perceptual aspects (including tranquillity).
- Associations.
- Functionality.

1.5.2.5 How that value might be affected by a development is classified on a four point scale (low, medium, high and very high) as set out in **Table 1.5** below. The table can only illustrate general categories, as the effects on an area or element of landscape is specific to the development proposed and the particular aspect affected.

Table 1.5: Landscape value criteria

Value	Designation	Definition
Very high	International/ National	Exceptional scenic quality (and/or special qualities), no or limited potential for substitution, e.g., World Heritage Site, National Landscape or key elements features within them well known to the wider public.

Value	Designation	Definition
High	National/ Regional/Local	Very attractive or attractive scenic quality, high or good landscape quality, limited potential for substitution, e.g., National Landscape, SLA or key elements within them.
Medium	Regional/Local	Typical and commonplace or in part unusual scenic quality, ordinary landscape quality, potential for substitution, e.g., Locally designated (SLA) or undesignated, but value expressed through literature and cultural associations or through demonstrable use.
Low	Local	Dull, degraded or damaged scenic quality, poor landscape quality, can be readily substituted, e.g., Undesignated. Certain individual landscape elements or features may be worthy of conservation or landscape identified would benefit from restoration or enhancement.

1.5.2.6 The assessment has been made using evidence and professional judgement based on the following criteria.

- Landscape designations: A receptor that lies within the boundary of a recognised landscape related planning designation will be of increased value, depend on the proportion of the receptor that is so influenced and the level of importance of the designation (i.e., international, national, regional or local). The absence of designations does not however preclude value, as an undesignated landscape character receptor may be valued as a resource in the local or immediate environment. The Landscape Institute Guidance Note: Assessing landscape value outside national designations (Landscape Institute, May 2021) is helpful when considering the value of landscape receptors.
- Landscape quality: The quality of a landscape character receptor is a reflection of its attributes, such as scenic quality, sense of place, rarity and representativeness, and the extent to which its valued attributes have remained intact. A landscape with consistent, intact, well-defined and distinctive attributes is considered to be of higher quality and, in turn, higher value, than a less intact landscape containing elements that detract from its character.
- Landscape experience: The experiential qualities evoked by a landscape receptor can add to its value. This relates to a number of factors including the perceptual responses it evokes, the cultural associations that may exist in literature or history, or the iconic status of the landscape in its own right. Other factors include the recreational value of the landscape and those relating to the nature conservation and/or archaeology value of the area.

1.5.2.7 There are no nationally or internationally designated landscapes within the study area for the Transmission Assets, therefore these have not been considered within the ES.

Landscape susceptibility to change

1.5.2.8 The susceptibility of a landscape character receptor to change is a reflection of its ability to accommodate the changes that would result from the introduction of the Transmission Assets without detrimental

consequences for the maintenance of the baseline situation and/or fulfilment of landscape planning policies and strategies. Some landscape receptors are better able to accommodate development than others due to certain characteristics indicative of their capacity to accommodate change.

1.5.2.9 The susceptibility of a landscape receptor to change has been classified as very high, high, medium, low or negligible. The assessment has been made using evidence and professional judgement based on the following criteria.

1. Overall strength and robustness: Collectively the overall characteristics and qualities of a particular landscape result in a strong and robust character that is capable of reasonably accommodating the influence of the Transmission Assets without undue adverse effects on the special qualities (in the case of a designated landscape), or the key characteristics for which an area of landscape character is valued.
2. Landscape scale and topography: The scale and topography are large enough to physically accommodate the influence of the Transmission Assets. Topographical features such as more complex, distinctive or small-scale landforms are likely to be more susceptible than larger scale, simple, expansive and homogenous landforms.
3. Openness and enclosure: Openness in the landscape may increase susceptibility to change because it can result in wider visibility. However, an open landscape may also be larger scale and simple which will decrease its susceptibility. Conversely, enclosed landscapes can offer more screening potential, limiting visibility to a smaller area. However, they may also be smaller scale and more complex which will increase susceptibility. In general, broad and open landscapes are likely to be less susceptible to the Transmission Assets than more enclosed, complex landscapes (such as indented bays, headlands, small-scale and varied coastal landscapes, etc).
4. Skyline: Prominent and distinctive skylines and horizons with important landmark features identified in landscape character assessments are generally considered to be more susceptible to development compared with broad, simple skylines/horizons which lack landmark features or contain built features and human activities.
5. Relationship with other development and landmarks: Contemporary landscapes where there are existing similar developments and related activities (industry, mineral extraction, masts, urban fringe/large settlement and major transport/shipping routes) that already have a characterising influence result in a lower susceptibility to development as opposed to areas characterised by smaller scale, historic development and landmarks.

6. Perceptual qualities: Notable landscapes acknowledged to be particularly scenic, wild or contribute to the perception of a high level of tranquillity are generally considered to be more susceptible to development in comparison to ordinary, cultivated, farmed or developed landscapes where perceptions of 'wildness' and tranquillity are less tangible or more diluted. However, landscapes which are either remote or appear natural may vary in their susceptibility to development. Dynamic landscapes (i.e., supporting human generated activity/movement) are considered less susceptible than the converse described above.
7. Landscape context and association: the extent to which the Transmission Assets influence the character of the landscape and visual resource study area relates to existing associations between the host landscape receptor and the receptor from which it is being experienced. In some situations, this association will be strong (i.e. where the landscapes are directly related) whereas in others it will be less marked (i.e. where the landscape association is weak). The landscape context and visual connections with areas of adjacent landscape character or designations has a bearing on the susceptibility to development.

Landscape sensitivity rating

1.5.2.1 As with visual sensitivity described above, landscape sensitivity is not readily graded into bands. That said, in order to provide both consistency and transparency to the assessment process, descriptions of landscape susceptibility and value are based on the same sliding scale as visual receptors (i.e., negligible, low, medium, high and very high) as set out in **Table 1.6** below.

Table 1.6: Landscape sensitivity criteria

Sensitivity	Definition
Very high	Landscape value recognised by international or national designation. The landscape resource has very little ability to absorb change of the type proposed without fundamentally altering its present character and is of very high importance, rarity and value. Sense of relatively high levels of tranquillity or remoteness specifically noted in landscape character/tranquillity assessment. High sensitivity to disturbance specifically noted in landscape character assessment. The qualities for which the landscape is valued are in very good or good condition, with a clearly apparent distinctive character and absence of detractors. Very limited potential for substitution.
High	Landscape value recognised by national designation. The landscape resource has little ability to absorb change of the type proposed without fundamentally altering its present character and/or is of high importance, rarity or value. Sense of relatively high levels of tranquillity or remoteness specifically noted in landscape character/tranquillity assessment. High sensitivity to disturbance specifically noted in landscape character assessment. The qualities for which the landscape is valued are in good condition, with a clearly apparent distinctive character and absence of detractors. Limited potential for substitution.

Sensitivity	Definition
Medium	Landscape value is recognised or designated locally. The landscape resource has moderate capacity to absorb change of the type proposed without significantly altering its present character and/or is of medium importance, rarity or value. The landscape is relatively intact, with a distinctive character and some detractors; and is reasonably tolerant of change. Sense of moderate levels of tranquillity or remoteness noted in landscape character/tranquillity assessment. Medium sensitivity to disturbance. Limited potential for substitution.
Low	The landscape resource is tolerant of change of the type proposed without detriment to its character and/or is of low importance, rarity or value. landscape integrity is low, with a poor condition with the presence of detractors; and the landscape has the capacity to potentially accommodate high levels of change. Sense of relatively low levels of tranquillity or remoteness noted in landscape character/tranquillity assessment. Low sensitivity to disturbance.
Negligible	The landscape resource is tolerant of change of the type proposed without detriment to its character and/or is of low importance, rarity or value. Landscape integrity is low, with a poor condition and a degraded character with the presence of detractors such as dereliction; and the landscape has the capacity to potentially accommodate considerable change. Sense of relatively low levels of tranquillity or remoteness noted in landscape character/tranquillity assessment. Negligible sensitivity to disturbance.

1.5.3 Landscape magnitude of impact

1.5.3.1 As with the magnitude of visual impacts, the magnitude of impact or change affecting the landscape resource depends on the size or scale, geographical extent of the area influenced and its duration and reversibility. These factors are described below:

Size or scale of change

1.5.3.2 This criterion relates to the size or scale of change to the landscape resource that will arise as a result of a proposed development, based on the following factors.

- Landscape elements: The degree to which the pattern of elements that makes up the landscape character will be altered by the Transmission Assets, by removal or addition of elements compared with the baseline situation. The magnitude of impact will generally be higher if the landscape features are extensively removed or altered, and/or if many new elements are added to the landscape.
- Landscape characteristics: This relates to the extent to which the effect of the Transmission Assets change, physically or perceptually, the key characteristics of the landscape that may be important to its distinctive character. This may include, for example, the scale of the landscape, its relative simplicity or irregularity, and the landscape context. Also relevant are the grain or orientation of the landscape, the degree to which the receptor is influenced by external features, and the juxtaposition of the Transmission Assets in relation to these and other baseline characteristics. If the

Transmission Assets are located in a landscape resource that is already affected by other similar development, this may reduce the magnitude of impact.

- Landscape designation: In the case of designated Landscapes, the degree of change is considered in light of potential effects on the special qualities for which the area is designated which in turn underpin the integrity of the designation. All landscapes change over time and much of that change is managed or planned. Designated landscapes often have management objectives for 'protection' from or 'accommodation' of development. The scale of change may be localised, occurring over limited parts of a designated area, or more widespread affecting a large part of designation, in which latter case the overall integrity of the designated area may potentially be affected.
- Distance: The size and scale of change is also strongly influenced by the proximity of the Transmission Assets to the receptor and the extent to which the development has a characterising influence on the landscape. Consequently, the scale or magnitude of impact is likely to be lower in respect of receptors that are distant from the Transmission Assets and/or screened by intervening landform, vegetation and built form. This is because the scale of its influence on such landscape receptors is small or limited. Conversely, landscapes closest to the development are likely to be most affected. Host landscapes will be directly affected whilst adjacent areas of landscape character will be indirectly affected.
- Amount and nature of change: The amount of development components and context in which the Transmission Assets will be seen has a bearing on impact magnitude. Visibility of the above ground infrastructure may range from glimpses, to visibility of all of the Transmission Assets, particularly during construction work when the cable corridor will be more visible. Broadly speaking, the greater the amount of development that can be seen, the higher the scale of change. The degree to which the Transmission Assets is perceived to be on the horizon within the landscape also has a bearing on the amount and nature of change. In general, the magnitude of impact is likely to be lower when the Transmission Assets is perceived to be on the horizon, or beyond it, at distance.

Geographical extent

1.5.3.3 The geographic extent over which the landscape effects would be experienced is distinct from the size or scale of effect. This evaluation is an expression of the geographic extent of the receptor that will experience a particular magnitude of impact and the corresponding extents of potential significant and non-significant effect. This will vary depending on the specific nature of the Transmission Assets and is principally assessed through analysis of the extent of its visibility and the likely geographic extent of perceived changes to landscape character.

Duration and reversibility

1.5.3.4 The duration and reversibility of landscape effects has been based on the period over which the Transmission Assets is likely to exist (during construction, operation and decommissioning) and the extent to which it has been removed and its effects reversed at the end of that period (during decommissioning). Long-term, medium-term and short-term landscape effects are defined as follows:

- long-term: more than five years (may be defined as permanent or reversible);
- medium-term: one to five years (reversible); and
- short-term: up to one year (reversible).

Landscape magnitude of impact rating

1.5.3.5 The magnitude of impact resulting from the Transmission Assets described as high, medium, low, negligible or no change. In assessing magnitude of impact, the assessment focuses on the size or scale of change. The geographic extent, duration and reversibility are stated separately in relation to the assessed effects (i.e., as short/medium/long-term and temporary/permanent in the case of the latter two). The assessment of magnitude for each receptor is based on evidence and professional judgement. The levels of magnitude of impact that can occur are defined in **Table 1.7** below.

Table 1.7: Definition of terms relating to the magnitude of impact upon landscape receptors

Magnitude of Impact	Definition
High	Proposed development within affected landscape. Total loss, or/very substantial loss or addition of key elements/features/patterns of the baseline (i.e., pre-development landscape) and/or introduction of dominant, uncharacteristic elements compared with the attributes of the receiving landscape. Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements (adverse). Large scale or major improvement of landscape character; extensive restoration or enhancement of quality (beneficial).
Medium	Proposed development is within or adjacent to affected landscape. Partial loss or addition of, or moderate alteration to, one or more key elements/features/patterns of the baseline (i.e., pre-development landscape) and/or introduction of elements that may be prominent but would not be substantially uncharacteristic in comparison to the attributes of the receiving landscape. Partial loss of/damage to key characteristics, features or elements, but not adversely affecting the integrity of landscape (adverse). Moderate scale improvement of landscape character; partial restoration or enhancement of quality (beneficial).

Magnitude of Impact	Definition
Low	Minor loss or addition of, or alteration to, one or more key elements/features/patterns of the baseline, i.e., pre-development landscape and/or introduction of elements that may not be uncharacteristic compared with the surrounding landscape. Minor loss of, or alteration to, one (maybe more) key characteristics, features or elements (adverse). Minor benefit to, or addition of, one (maybe more) key landscape characteristics, features or elements due to partial restoration or enhancement (beneficial).
Negligible	Very minor loss or addition of, or alteration to, one or more key elements/features/patterns of the baseline (i.e., pre-development landscape) and/or introduction of elements that are not uncharacteristic in comparison to the surrounding landscape; approximating to a 'no-change' situation. The effect of change on the landscape, the physical characteristics, features or elements is barely discernible (adverse). Very minor benefit to or positive addition of one or more landscape characteristics, features or elements (beneficial).
No change	No loss, alteration or addition to the receiving landscape resource.

1.5.4 Evaluating landscape significance of effect

1.5.4.1 The level of landscape effect is evaluated through the combination of receptor sensitivity and magnitude of impact. Once the level of effect has been assessed, a judgement is then made as to whether the level of effect is 'significant' or 'not significant' as required by the relevant EIA Regulations. This process is assisted by the matrix in **Table 1.8** which is used to guide the assessment.

1.5.4.2 A significant effect would occur where the combination of the variables results in the Transmission Assets having a defining effect on the landscape receptor, or where changes of a lower magnitude clearly and demonstrably affect a landscape receptor of particularly high sensitivity. A major loss or irreversible effect over an extensive area of landscape character, affecting nationally or internationally valued elements, characteristics and/or perceptual aspects is likely to be significant.

1.5.4.3 An effect that is not significant would occur where the Transmission Assets are not defining, and the landscape receptor continues to be characterised principally by its baseline character. Equally, a small-scale change experienced by a receptor of high sensitivity may not significantly affect the special landscape qualities or integrity of a designation. Reversible landscape effects that are of small-scale or affecting lower value receptors are unlikely to be significant.

1.6 Evaluation of significance of effect

1.6.1.1 The significance of an effect upon landscape and visual receptors is determined by correlating the magnitude of the impact and the sensitivity of the receptor, as presented in **Table 1.8**.

1.6.1.2 For the purposes of this assessment, any effects with a significance level of major have been deemed significant. An accumulation of

individual moderate effects, for instance experienced during a journey undertaken by the same visual receptor, may also be judged as significant in some circumstances.

1.6.1.3 Effects are assessed as being adverse, neutral or positive. The judgements regarding the significance of effect and that relating to whether an effect is beneficial or adverse are entirely separate. The assessment of whether an effect is positive, neutral or adverse is based on professional judgement having regard to the relevant objective factors.

Table 1.8: Assessment of significance of effect matrix

Sensitivity of Receptor	Magnitude of Impact			
	Negligible	Low	Medium	High
Negligible	Negligible	Negligible or Minor	Negligible or Minor	Minor
Low	Negligible or Minor	Negligible or Minor	Minor	Minor or Moderate
Medium	Negligible or Minor	Minor	Moderate	Moderate or Major
High	Minor	Minor or Moderate	Moderate or Major	Major
Very High	Minor	Moderate or Major	Major	Major

1.6.1.1 A description of these terms is provided in **Table 1.9**.

Table 1.9: Definitions of significance criteria

Level of significance	Typical descriptors	
	Landscape resource	Visual resource
Major	Where proposed changes would be uncharacteristic and/or would significantly alter a valued aspect of (or a high quality) landscape.	Where proposed changes would be uncharacteristic and/or would significantly alter a valued view or a view of high scenic quality.
Moderate	Where proposed changes would be demonstrably out of scale or at variance with the character of an area.	Where proposed changes to views would be demonstrably out of scale or at variance with the existing view.
Minor	Where proposed changes would be at slight variance with the character of an area.	Where proposed changes to views, although discernible, would only be at slight variance with the existing view.
Negligible	Where proposed changes would have an indiscernible effect on the character of an area.	Where proposed changes would have a barely noticeable effect on views/visual amenity.

1.7 Assessment of night-time effects

1.7.1 Introduction

1.7.1.1 The assessment of night-time effects is based on the description of lighting for the Transmission Assets as set out in the project description within Volume 1, Chapter 3: Project description of the ES and Volume 3, Chapter 10: Landscape and visual resources of the ES.

1.7.1.2 The landscape and visual resources study area for the assessment of night-time effects is the same as that for daytime, informed by the likely patterns of human use or activities at night-time. The assessment of night-time effects considers the potential effects upon night-time views and landscape for the Transmission Assets during its construction, operation and maintenance, and decommissioning phases. Having regard to the proportionality principle, the focus of the night-time assessment is on areas/locations where potential landscape and visual effects are likely to be experienced by the greatest number of people.

1.7.2 Evaluating night-time effects and significance of effect

1.7.2.1 As with the assessment of daytime effects, the significance of the potential night-time effects of the Transmission Assets are assessed through a correlation of the landscape or visual receptor sensitivity and the magnitude of impact that would result from lighting of the Transmission Assets.

1.7.2.2 A significant night-time effect is likely where implementation of the Transmission Assets would have a defining influence on a landscape or visual receptor at night. In contrast, a not significant night-time effect is likely to occur when the effect of lighting is non-defining, and the existing baseline characteristics of the night-time view, visual receptor or area of landscape continue to provide the defining influence.

1.8 Cumulative landscape and visual effects

1.8.1 Introduction

1.8.1.1 This section should be read in association with the relevant CEA section of Volume 1, Chapter 5: Environmental assessment methodology of the ES. The CEA is concerned with the potential cumulative effects that may result from incremental changes caused by other reasonably foreseeable proposed projects, plans and activities, that were not present at the time of data collection or survey, considered alongside the project in question. It also considers the 'in combination' and 'sequential effects of adding the same type of development to the existing situation.

1.8.1.2 GLVIA3 (p.120) defines cumulative landscape and visual effects as those that *'result from additional changes to the landscape and visual amenity caused by the proposal in conjunction with other developments (associated with or separate to it), or actions that occurred in the past, present or are likely to occur in the foreseeable future.'*

1.8.1.3 The approach to cumulative assessment adopted in this LVIA and outlined below accords with the recommendations set out in GLVIA3. Both the likely daytime and night-time cumulative effects of the Transmission Assets are considered in the cumulative LVIA.

1.8.2 Tiered approach to the CEA

1.8.2.1 As stated in Volume 1, Chapter 5: Environmental assessment methodology of the ES, a tiered approach to the CEA has been adopted by identifying a set of appropriate cumulative development scenarios. This approach takes into account the different stages that other planned projects are at in the planning/consenting process and the varying potential of each for proceeding to an operational stage, and hence their differing potential to ultimately contribute to a cumulative impact in conjunction with the Transmission Assets, within the study area stated in **section 1.1.2** for the cumulative effects assessment.

1.8.2.2 The tiered CEA approach, set out in the Planning Inspectorate Advice Note regarding cumulative effects assessment (2024) has been adopted to assess the complexity of cumulative development scenarios, keeping in mind the principle of proportionality, is summarised as follows:

- Tier 1
  - Under construction;
  - Permitted application; or
  - Submitted application.
- Tier 2
  - Scoping report has been submitted.
- Tier 3
  - Scoping report has not been submitted;
  - Identified in a relevant development plan; or
  - Identified in other plans and programmes.

1.8.2.3 The development projects selected as relevant to the CEA and included in the LVIA are based upon the results of a screening exercise and informed by consultations with the relevant authorities (see Volume 1, Annex 5.5: Cumulative screening matrix and location plan of the ES).

1.8.3 Assessing cumulative landscape and visual effects

1.8.3.1 The same conclusions as to the assessment of sensitivity of the various landscape and visual receptors are carried forward from the LVIA and applied in the cumulative LVIA.

1.8.3.2 The same method as in the LVIA is used to assess the magnitude and significance of cumulative effect of the Transmission Assets, considered in conjunction with each of the cumulative development scenarios, using the tiered approach referred to previously.

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Appendix A: Visual representations methodology

A.1 Visual representations

A.1.1 Overview

ZTVs and visualisations (wirelines or wirelines and photomontages) are graphical images produced to assist and illustrate the LVIA and the cumulative assessment. The methodology used for viewpoint photography and photomontages has been produced in accordance with the NatureScot guidance on Visual Representation of Wind Farms, Version 2.2 (2017), the Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA 3) (Landscape Institute and IEMA, 2013) and the Landscape Institute Technical Guidance Note on Visual Representation of Development Proposals (Landscape institute, 2019).

A.1.2 Zone of Theoretical Visibility (ZTV)

The ZTVs have been calculated using GIS software to generate a ZTV of Transmission Assets to demonstrate the theoretical extent of visibility from any point in the study area.

Within England, the Ordnance Survey Terrain 50 Digital Terrain Model (DTM) was used.

Each source DTM was reprojected to the UTM Zone 30N coordinate system at a 50 m sampling using bilinear interpolation.

The computer model includes the entire study area and takes account of atmospheric refraction and the Earth's curvature. The resulting ZTV plots have been overlaid on mapping at an appropriate scale and presented as figures using desktop publishing or graphic design software.

Cumulative ZTV plots based on the intervisibility of the Transmission Assets area and other relevant developments within the study area have also been produced.

There are limitations which should be considered in the interpretation and use of the ZTV as follows.

- The ZTV does not account for the screening effects of vegetation or built form.
- The ZTVs are based on theoretical visibility from 2m above ground level.

These limitations mean that, while the ZTV is useful as a starting point and aid to assessment, providing an indication of where the Transmission Assets will be theoretically visible, it will tend to present a MDS or over-estimate the actual visibility. The information drawn from the ZTV is checked by field survey observation and interpreted using professional judgement.

The LVIA includes a Horizontal Angle ZTV to show the horizontal field of view (in degrees) that may be affected by views of the Transmission Assets.

A.1.3 Baseline photography

A.1.3.1 Overview

Once a view has been selected, the location is visited, confirmed, and assessed with the aid of a wireline or similar visualisation in the field. A photographic record is taken to record the view and the details of the viewpoint location and associated data are recorded to assist in the production of visualisations and to validate their accuracy.

The following photographic information is recorded:

- date, time, weather conditions and visual range;
- GPS recorded 12 figure grid reference accurate to ~5-10 m;
- GPS recorded Above Ordnance Datum (AOD) height data;
- use of a fixed 50 mm focal length lens is confirmed;
- horizontal field of view (in degrees); and
- bearing to Transmission Assets.

The photographs have been used to produce the photomontages for the ES and have been taken at the locations using Canon EOS 5D and 6D Digital SLR cameras, with a fixed lens and a full-frame (35 mm negative size) complementary metal oxide semiconductor (CMOS) sensor. The photographs were taken on a tripod with a pano-head at a height of approximately 1.5 m above ground.

Whilst no two-dimensional image can fully represent the real viewing experience, the visualisation aims to provide a realistic representation of the Transmission Assets, based on current information and photomontage methodology.

Guidelines for LVIA (GLVIA3) para 8.22 state – '*In preparing photomontages, weather conditions shown in the photographs should (with justification provided for the choice) be either:*

- *representative of those generally prevailing in the area; or*
- *taken in good visibility, seeking to represent a maximum visibility scenario when the development may be highly visible*'.

In preparing photomontages for the LVIA, as far as possible in order to represent when the Transmission Assets may be most visible (a maximum visibility scenario), photographs have been taken in favourable weather conditions during periods of good or better visibility. The time of day that the views were taken was mainly governed by the position of the sun relative to the viewpoint location, and that part of the Transmission Assets for which an existing view photograph was being taken.

Various weather forecasts were checked in advance of field survey in order to ensure favourable weather conditions. These included the Met Office, however, visibility changes throughout the year. Meteorological Office visibility data is presented in **Appendix B** and provides analysis of 10 years of visibility data from the weather station at Walney Island.

A.1.4 Visualisations

Photomontages and wirelines for the Transmission Assets have been produced for the ES and are presented in Volume 3, Chapter 10: Landscape and visual resources of the ES.

A.1.4.1 Onshore substations photomontages and wirelines

Onshore photomontages and wirelines of the Transmission Assets for use in the ES have been produced in accordance with Visualisation Type 3 from the Landscape Institute (2019) Technical Guidance Note (TGN) 06/19 Visual Representation of Development Proposals.

A photomontage is a visualisation which superimposes an image or wireline of a proposed development upon a photograph or series of photographs. Photomontage is a widespread and popular visualisation technique which allows changes in views and visual amenity to be illustrated and assessed, as well as being compared and tested with existing views on the ground.

To create the baseline panorama, individual frames are cylindrically projected and then digitally joined to create a fully cylindrically projected panorama using Adobe Photoshop or PTGui software. Tonal alterations are made using Adobe software to create an even range of tones across the photographs once joined. The baseline photographs for each selected viewpoint cover a 180° and 90° HFoV These are cylindrically projected images for context only.

Onshore photomontages and wirelines are produced using AutoCAD software. 1 metre resolution pointcloud surface data is used to generate a 3d site. Camera viewpoints are then aligned using the high-resolution data. The use of 1 metre resolution surface data increases the accuracy of the photomontages/wirelines. Illustrative models are produced in a combination of AutoCAD and Sketchup software. Renders are produced to match the date and time for correct shadow settings.

‘Panoramic photomontages’ presented in the LVIA are produced with a cylindrically projected, 90° HFoV. This format is used for context due to its suitability to encompass the horizontal spread of the Transmission Assets. These images will be printed on paper 841 x 297 mm (half A1). In addition, 39.6° HfoV, single frame photomontages are produced on a planar projected image and should be viewed flat at a comfortable arm’s length. These images will be printed on A3 size paper. These formats are suitable to meet Landscape Institute (2019) Technical Guidance Note (TGN) 06/19 Visual Representation of Development Proposals, Type 3: Photomontage/Photowire.

A.1.4.2 Offshore windfarm cumulative wirelines

Wind farm wirelines have been produced in accordance with NatureScot Visual Representation of Windfarms Guidance (NatureScot, 2017).

Wind farm wireline representations illustrating the Transmission Assets are set within a computer-generated image of the landform. These are used in the LVIA to predict the appearance of the Transmission Assets and assess the likely visual effect arising. The wirelines are produced with Resoft WindFarm software and are based on OS Terrain 5 DTM. There are limitations in the accuracy of DTM data so that landform may not be picked up precisely and may result in wind turbine generators being more or less visible than is shown. However, the use of OS Terrain 5 minimises these limitations. Where descriptions within the assessment identify the extent of the Transmission Assets visible, these refer to the illustrations generated (as described above) and therefore the reality on the ground may differ to a minor degree from these impressions.

Daytime visualisations and wirelines show a model which represents the maximum development scenario of the Transmission Assets. The visualisations allow the potential proportions of the Transmission Assets to be appreciated and assessed.

Cumulative wireline visualisations are shown for selected viewpoints with a 53.5° HFoV. This format is based on relevant guidance (NatureScot, 2017). The 53.5° HFoV wirelines are prepared using a planar projected image and should also be viewed flat at a comfortable arm's length. These images should be printed on paper 841 x 297 mm (half A1) which provides for a relatively large-scale image. Cylindrically projected, 180° HFoV are for context only.

A.1.5 Information on limitations of visualisations

The photographs and other graphic material such as wirelines used in this assessment are for illustrative purposes only and, whilst useful tools in the assessment, are not considered to be completely representative of what is now, or will be in the future, apparent to the human eye. The assessments are carried out from observations in the field and therefore may include elements that are not visible in the photographs. Limitations of photomontages are set out further below.

The photomontage visualisations of the Transmission Assets have a number of limitations when using them to form a judgement on visual impact. These include the following limitations.

- A visualisation can never show exactly what the Transmission Assets will look like in reality due to factors such as: different lighting, weather and seasonal conditions which vary through time and the resolution of the image.
- The images provided give a reasonable impression of the scale and distance to the development, but can never be 100% accurate.
- A static image cannot convey movement, or flicker or reflection from the sun.

- The viewpoints illustrated are representative of views in the area, but cannot represent visibility at all locations.
- To form the best impression of the impacts of the Transmission Assets these images are best viewed at the viewpoint location shown.
- The images must be printed and viewed at the correct size (260 mm by 820 mm).
- Images should be held flat at a comfortable arm's length. If viewing these images on a wall or board at an exhibition, stand at arm's length from the image presented to gain the best impression.
- It is preferable to view printed images rather than view images on screen. Images on screen should be viewed using a normal PC screen with the image enlarged to the full screen height to give a realistic impression.
- There are practical limitations to shooting viewpoint photographs only in very good or excellent visibility and at particular times of day. The photographs shown in the visualisations show the most favourable weather conditions available during photographic survey work.

A.1.6 Technical data – visualisations

Table A1.1: Technical data - visualisations

Category	Details
Photography	
Visualisation Type	Type 4 – where survey of viewpoint locations is not required
Camera location	Established via hand-held Garmin GPS
Level of accuracy of location	1-3 m (depending on satellites)
Camera	Canon EOS 5D Mark II and Canon EOS 6D Digital SLR. Full-frame (35mm negative size) CMOS sensor.
Lens	50 mm fixed f1.4 lens
Tripod	Set to approximately 1.5 m. Nodal Ninja panoramic head with Adjust Leveller. Nodal Ninja panoramic head set to take photographs at 20 degree increments.
Photography process	Camera used on fully manual settings. Photographs taken in RAW image format. Bracketed exposures are taken for each view and those depicting the clearest images are selected to prepare the panoramic image.
Preparation of panoramic photographs	PTGUI v12.8 is used to join and cylindrically project the images. Adobe Photoshop 2021 used to correct tonal alterations and create an even range of exposure across the photographs so that the individual photographs are not apparent. Planar panoramic images are prepared using Resoft Windfarm software or Hugin Panorama Stitcher.
3D Model /Visualisation	

Category	Details
Topographic height data	Ordnance Survey Terrain 5 (5m resolution). Ordnance Survey Terrain 50 (50m resolution).
Use of coordinates in software	Coordinates are brought in from the surveyed GPS coordinates. Positions checked using aerial photography.
Markers for horizontal alignment	Existing offshore wind farms and wind turbine generators and their known coordinates.
Markers for vertical alignment	Existing offshore wind farms and wind turbine generators and their known coordinates.
Rendering software	Resoft Windfarm v.5.2.5.3 (Wind turbines in wirelines and photomontages). Sketchup or AutoCAD Map 3D 2018 (OSPs, Met Mast and jacket foundations). Autodesk 3ds Max 2018. Visual Nature Studio V 3.10.
Limitations	
Terrain data	Therefore there may be local, small-scale landform that is not reflected in the data and subsequently the visualisation but may alter the real visibility of the Transmission Assets, either by screening theoretical visibility or revealing parts of the Transmission Assets that are not theoretically visible.
Movement	Static images are unable to capture the movement within the view

Appendix B: Meteorological office data

B.1 Meteorological office visibility data

B.1.1 Introduction

Visibility analysis reports were requested from one Meteorological Office weather station:

- Walney Island (54.124387, -3.2577383).

The analysis report uses ten years of historical data (2012 to 2021). The data is given both as meters (broken as follows: 0-999 m, 1000 to 1999 m, 2000 m to 2999 m etc, to 70,000 m or more) and percentages. The data goes beyond the cumulative study area for the Transmission Assets study area and has been used to provide a general context for visibility within marine and coastal locations relevant to the LVIA.

The data allows analysis of the different visibility conditions for each month of the year. This allows the visibility during the holiday seasons.

The data for the weather station is set out in Table B.15.1 and B.15.2 below.

B.1.2 Meteorological office explanatory notes

Visibility is defined as the greatest distance at which an object can be seen and recognized in daylight, or at night could be seen and recognized if the general illumination were raised to daylight level. It is measured using visiometer at automatic sites but used to be undertaken by observers at manual stations except at some Weather Centres and Climate Data Logger stations, where observations are made from a non-standard roof top exposure. The following notes apply:

- visibility is measured horizontally;
- values are noted in metres;
- a dash indicates data not available; and
- a value of 0.0 indicates less than 0.05%.

B.1.3 High level analysis of visibility data

The closest part of the Transmission Assets (landfall) lies approximately 30 km from the Morecambe Offshore Windfarm: Generation Assets.

Table B.1.1: Walney Island frequency of visibility

	Month												
Visibility (metres)	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**ALL OBS**
< 1000	108	43	62	65	26	12	2	3	39	13	35	101	**509**
1000 to 1999	73	67	31	31	18	9	9	9	25	19	48	59	**398**
2000 to 2999	138	100	90	42	34	32	22	33	50	48	95	115	**799**
3000 to 3999	147	122	126	57	39	54	57	49	75	97	111	146	**1080**
4000 to 4999	157	124	155	59	50	66	61	73	77	111	128	166	**1227**
5000 to 5999	208	153	181	57	58	60	66	56	85	133	136	219	**1412**
6000 to 6999	233	176	163	69	53	59	59	70	111	127	153	218	**1491**
7000 to 7999	291	211	190	96	65	68	85	62	110	140	189	290	**1797**
8000 to 8999	326	219	228	127	82	74	75	82	100	131	156	293	**1893**
9000 to 9999	336	254	287	125	109	72	86	85	132	190	183	312	**2171**
10000 to 10999	381	293	284	134	105	101	85	115	173	176	182	326	**2355**
11000 to 11999	344	271	275	135	101	113	96	111	170	199	204	307	**2326**
12000 to 12999	343	284	244	153	128	129	121	132	165	194	201	328	**2422**
13000 to `13999	349	283	214	161	132	143	125	109	183	207	217	303	**2426**
14000 to 14999	287	282	239	146	144	134	121	141	178	207	218	279	**2376**
15000 to 15999	278	252	209	151	160	123	110	132	174	195	211	295	**2290**
16000 to 16999	254	225	204	136	144	141	120	127	180	186	199	243	**2159**
17000 to 17999	223	217	204	157	158	149	124	134	164	158	188	208	**2084**
18000 to 18999	194	178	212	141	132	142	124	142	179	171	166	198	**1979**
19000 to 19999	177	187	161	153	133	136	135	173	160	173	169	210	**1967**
20000 to 20999	196	167	165	156	117	124	111	163	161	163	150	168	**1841**
21000 to 21999	150	132	150	144	148	130	121	134	166	159	172	158	**1764**
22000 to 22999	151	114	124	137	144	144	132	148	141	115	123	131	**1604**
23000 to 23999	118	98	128	121	143	159	129	138	149	155	127	129	**1594**
24000 to 24999	118	107	95	109	147	133	130	137	136	137	132	141	**1522**
25000 to 25999	94	97	122	112	130	141	143	157	144	130	122	93	**1485**
26000 to 26999	89	94	90	105	139	139	159	127	153	142	111	112	**1460**
27000 to 27999	67	88	105	114	139	152	138	143	137	114	98	107	**1402**
28000 to 28999	66	76	99	130	136	143	126	138	141	111	112	99	**1377**
29000 to 29999	64	92	92	117	123	119	157	153	128	105	103	71	**1324**
30000 to 34999	363	344	447	477	696	660	690	688	619	545	498	337	**6364**
35000 to 39999	259	316	356	548	672	637	755	662	606	541	465	278	**6095**
40000 to 44999	238	327	407	525	686	612	739	619	585	572	452	261	**6023**
45000 to 49999	233	321	382	621	644	668	750	659	607	654	510	298	**6347**
50000 to 59999	380	476	437	867	757	697	721	725	728	914	832	439	**7973**
60000 to 69999	0	0	0	0	0	0	0	0	0	0	0	0	**0**
>= 70000	0	0	0	0	0	0	0	0	0	0	0	0	**0**
ALL OBS	**7433**	**6790**	**6958**	**6478**	**6692**	**6475**	**6684**	**6629**	**7131**	**7432**	**7196**	**7438**	**83336**

Table B.1.2: Walney Island – percentage visibility

	Month												
Visibility (metres)	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**ALL OBS**
< 1000	1.45	0.63	0.89	1.00	0.39	0.19	0.03	0.05	0.55	0.17	0.49	1.36	**0.61**
1000 to 1999	0.98	0.99	0.45	0.48	0.27	0.14	0.13	0.14	0.35	0.26	0.67	0.79	**0.48**
2000 to 2999	1.86	1.47	1.29	0.65	0.51	0.49	0.33	0.50	0.70	0.65	1.32	1.55	**0.96**
3000 to 3999	1.98	1.80	1.81	0.88	0.58	0.83	0.85	0.74	1.05	1.31	1.54	1.96	**1.30**
4000 to 4999	2.11	1.83	2.23	0.91	0.75	1.02	0.91	1.10	1.08	1.49	1.78	2.23	**1.47**
5000 to 5999	2.80	2.25	2.60	0.88	0.87	0.93	0.99	0.84	1.19	1.79	1.89	2.94	**1.69**
6000 to 6999	3.13	2.59	2.34	1.07	0.79	0.91	0.88	1.06	1.56	1.71	2.13	2.93	**1.79**
7000 to 7999	3.91	3.11	2.73	1.48	0.97	1.05	1.27	0.94	1.54	1.88	2.63	3.90	**2.16**
8000 to 8999	4.39	3.23	3.28	1.96	1.23	1.14	1.12	1.24	1.40	1.76	2.17	3.94	**2.27**
9000 to 9999	4.52	3.74	4.12	1.93	1.63	1.11	1.29	1.28	1.85	2.56	2.54	4.19	**2.61**
10000 to 10999	5.13	4.32	4.08	2.07	1.57	1.56	1.27	1.73	2.43	2.37	2.53	4.38	**2.83**
11000 to 11999	4.63	3.99	3.95	2.08	1.51	1.75	1.44	1.67	2.38	2.68	2.83	4.13	**2.79**
12000 to 12999	4.61	4.18	3.51	2.36	1.91	1.99	1.81	1.99	2.31	2.61	2.79	4.41	**2.91**
13000 to `13999	4.70	4.17	3.08	2.49	1.97	2.21	1.87	1.64	2.57	2.79	3.02	4.07	**2.91**
14000 to 14999	3.86	4.15	3.43	2.25	2.15	2.07	1.81	2.13	2.50	2.79	3.03	3.75	**2.85**
15000 to 15999	3.74	3.71	3.00	2.33	2.39	1.90	1.65	1.99	2.44	2.62	2.93	3.97	**2.75**
16000 to 16999	3.42	3.31	2.93	2.10	2.15	2.18	1.80	1.92	2.52	2.50	2.77	3.27	**2.59**
17000 to 17999	3.00	3.20	2.93	2.42	2.36	2.30	1.86	2.02	2.30	2.13	2.61	2.80	**2.50**
18000 to 18999	2.61	2.62	3.05	2.18	1.97	2.19	1.86	2.14	2.51	2.30	2.31	2.66	**2.37**
19000 to 19999	2.38	2.75	2.31	2.36	1.99	2.10	2.02	2.61	2.24	2.33	2.35	2.82	**2.36**
20000 to 20999	2.64	2.46	2.37	2.41	1.75	1.92	1.66	2.46	2.26	2.19	2.08	2.26	**2.21**
21000 to 21999	2.02	1.94	2.16	2.22	2.21	2.01	1.81	2.02	2.33	2.14	2.39	2.12	**2.12**
22000 to 22999	2.03	1.68	1.78	2.11	2.15	2.22	1.97	2.23	1.98	1.55	1.71	1.76	**1.92**
23000 to 23999	1.59	1.44	1.84	1.87	2.14	2.46	1.93	2.08	2.09	2.09	1.76	1.73	**1.91**
24000 to 24999	1.59	1.58	1.37	1.68	2.20	2.05	1.94	2.07	1.91	1.84	1.83	1.90	**1.83**
25000 to 25999	1.26	1.43	1.75	1.73	1.94	2.18	2.14	2.37	2.02	1.75	1.70	1.25	**1.78**
26000 to 26999	1.20	1.38	1.29	1.62	2.08	2.15	2.38	1.92	2.15	1.91	1.54	1.51	**1.75**
27000 to 27999	0.90	1.30	1.51	1.76	2.08	2.35	2.06	2.16	1.92	1.53	1.36	1.44	**1.68**
28000 to 28999	0.89	1.12	1.42	2.01	2.03	2.21	1.89	2.08	1.98	1.49	1.56	1.33	**1.65**
29000 to 29999	0.86	1.35	1.32	1.81	1.84	1.84	2.35	2.31	1.79	1.41	1.43	0.95	**1.59**
30000 to 34999	4.88	5.07	6.42	7.36	10.40	10.19	10.32	10.38	8.68	7.33	6.92	4.53	**7.64**
35000 to 39999	3.48	4.65	5.12	8.46	10.04	9.84	11.30	9.99	8.50	7.28	6.46	3.74	**7.31**
40000 to 44999	3.20	4.82	5.85	8.10	10.25	9.45	11.06	9.34	8.20	7.70	6.28	3.51	**7.23**
45000 to 49999	3.13	4.73	5.49	9.59	9.62	10.32	11.22	9.94	8.51	8.80	7.09	4.01	**7.62**
50000 to 59999	5.11	7.01	6.28	13.38	11.31	10.76	10.79	10.94	10.21	12.30	11.56	5.90	**9.57**
60000 to 69999	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
>= 70000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
ALL OBS	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**