

Appendix 8A

Landscape and Visual Impact Assessment Methodology

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1. Landscape and Visual Impact Assessment Methodology

1.1 Overview

- 1.1.1 This appendix sets out the approach and methodology used to provide an assessment of effects on landscape and visual receptors as a result of the Project, during the construction, operation and decommissioning stages. The Landscape and Visual Impact Assessment (LVIA) methodology and approach outlined in this appendix has been undertaken in accordance with the Guidelines for Landscape and Visual Impact Assessment, Third Edition (2013) (GLVIA3) by the Landscape Institute and Institute of Environmental Management & Assessment¹.
- 1.1.2 The assessment of the significance of landscape and visual effects is, according to GLVIA3 at paragraph 3.23 *“an evidence-based process combined with professional judgement”*¹. All assessments and judgements must be transparent and capable of being understood by others. Levels of landscape and visual effects are determined by consideration of the nature or ‘sensitivity’ of each receptor or group of receptors and the nature of the effect or ‘magnitude of change’ that would result from the Project.
- 1.1.3 The EIA Regulations² require a final judgement on whether or not each effect is likely to be significant. In this context GLVIA3¹ states at paragraph 3.33 that *“it is not essential to establish a series of thresholds for different levels of significance of landscape and visual effects, provided that it is made clear whether or not they are considered significant”*¹. GLVIA3¹ goes on to state at paragraph 3.34 that *“... effects not considered to be significant will not be completely disregarded”*¹.
- 1.1.4 The assessments reported in the LVIA represent the culmination of an iterative design and assessment process and therefore relate to the remaining residual effects that could not otherwise be mitigated or ‘designed out’. Embedded environmental measures relating specifically to the LVIA are reported in **Table 8.6** in **Chapter 8: Landscape and visual** of the Draft ES, which details how the measures would be secured.

1.2 Landscape Effects

Introduction

- 1.2.1 Landscape effects are defined by the Landscape Institute in GLVIA3¹, paragraphs 5.1 and 5.2 as follows:

¹ Landscape Institute and Institute of Environmental Management & Assessment, (2013). Guidelines for landscape and visual impact assessment. London: Routledge.

² UK Government (2017). The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. (online) Available at: <https://www.legislation.gov.uk/ukxi/2017/572/contents> (Accessed 01 August 2024).

“An assessment of landscape effects deals with the effects of change and development on landscape as a resource. The concern ... is with how the proposal will affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character. ... The area of landscape that should be covered in assessing landscape effects should include the site itself and the full extent of the wider landscape around it, which the proposed development may influence in a significant manner.”¹

- 1.2.2 The potential landscape effects, occurring during the construction and operation periods of the Project may include, but are not restricted to the following:
- Effects on landscape elements, features, and patterns (including, but not limited to ground vegetation, hedgerows/field boundaries, trees, woodland and buildings) as a result of the Project.
 - Effects on landscape character and key characteristics, including perceptual characteristics and qualities as a result of the Project.
 - Effects on the special landscape qualities and integrity of designated landscapes as a result of the Project.
- 1.2.3 The Project will have direct effects on landscape elements and character. Indirect and secondary effects could also arise that represent consequential changes from the Project for example, an increase in traffic and reduction in tranquillity.
- 1.2.4 The types of landscape effect covering the following considerations, are described in detail at **Section 4** of the methodology:
- Direct or Indirect effects;
 - Duration;
 - Beneficial, adverse or neutral; and
 - Cumulative effects (see **Section 5**).

Evaluating Landscape Sensitivity to Change

- 1.2.5 The sensitivity of a landscape receptor for example, a Landscape Character Area, to the Project is determined by the value of the landscape receptor and its susceptibility to the type of change proposed. The methodology describes landscape sensitivity as high, medium, or low and is assessed by considering the landscape receptor's landscape value and susceptibility to the changes identified as the result of the Project.
- 1.2.6 Further guidance on the evaluation of landscape sensitivity and the criteria for assessing value and susceptibility is set out in paragraphs 5.39 – 5.47 of GLVIA3¹ and is summarised below.

Landscape Value

- 1.2.7 GLVIA3¹ defines landscape value at paragraph 5.19 as:

“The relative value that is attached to different landscapes by society, bearing in mind that a landscape may be valued by different stakeholders for a whole variety of reasons.”¹

1.2.8 Published information that has informed the understanding of landscape value has included:

- The extent, description and policies related to any statutory and non-statutory landscape designations located within the Study Area;
- The extent, description and any policies related to landscapes demonstrably valued by the local community including, but not confined to, designated open space, village greens, memorials, allotments etc;
- Art and literature sources, if present, including tourism literature for example, local walks and specially promoted views;
- Cross reference to the Historic environment Draft ES chapter (**Chapter 6: Historic environment**) and supporting figures and appendices to identify landscape receptors that have particular archaeological interest and cultural heritage elements including, but not limited to, Conservation Areas, Listed Buildings, Scheduled Monuments, Registered Parks and Gardens and Historic Landscape Character Assessment; and
- Cross reference to the Biodiversity Draft ES Chapter (**Chapter 5: Biodiversity**) and supporting figures and appendices to identify landscape receptors that have particular nature conservation interest, Important hedgerows and other landcover elements of value and reference to the Arboricultural Impact Assessment (AIA) in **Appendix 8C** to identify any TPOs.

1.2.9 A consistent approach has been applied to determining the baseline landscape value of the individual landscape receptors considered in the landscape assessment.

1.2.10 This utilises a range of factors to help understand the value of each landscape receptor, with reference to the presence of any statutory or non-statutory landscape designations (see paragraph 5.19 to 5.27 of GLVIA3¹) and by consideration of a range of factors generally agreed to influence landscape value (see Box 5.1 GLVIA3¹):

- Landscape designations: whether an area of landscape is recognised by statute (i.e. National Parks and National Landscapes), is a heritage coast, a locally designated landscape or is undesignated;
- Landscape condition: a measure of the physical state of the landscape (i.e. the intactness of the landscape and the condition of individual elements);
- Scenic quality: where landscape appeal primarily but not wholly to the visual senses;
- Rarity: the presence of rare elements or features in the landscape or the presence of a rare landscape character type;
- Representativeness: the presence of a particular element/s and/or key characteristics recognised as being particularly important examples;

- Conservation interests: the presence of features of wildlife or historical and cultural interest which add value to the landscape;
- Recreational value: evidence that the landscape is valued for recreational activity where experience of the landscape is important;
- Perceptual aspects: a landscape may be valued for its perceptual qualities, notably tranquillity; and
- Associations: some landscapes are associated with particular people, such as artists or writers, or events in history.

1.2.11 **Table 8A.1** draws from the advice provided in GLVIA3¹ and provides further guidance and examples of landscape value.

Table 8A.1 Assessing Landscape Value

Value criteria	Landscape value category		
	High	Medium	Low
Designations	Internationally or nationally designated landscape. Management plans aim for conservation.	Locally designated or 'ordinary' landscapes and features. Management plans aim for conservation and enhancement.	Non-designated landscape with detracting, derelict or industrial features. Management plans aim for enhancement and restoration.
Landscape condition and intactness	A landscape/ features recognised to be in very good condition with a 'strong' intact/unified and distinctive character. Constant/mature landscape with strong time depth.	A landscape/ features that are typically in a reasonable condition with an intact or largely intact and recognisable character. Constant or improving state.	A landscape/ features that are in a poor condition with a fragmented or indistinct landscape character. The landscape may be in a declining state.
Scenic quality	A landscape of high aesthetic appeal supported by recognised tourist/visitor literature. There are few or no detracting features.	A landscape of moderate or 'ordinary' aesthetic appeal. There may be some minor detracting features.	A landscape of limited or no aesthetic appeal with many or large-scale detracting features, may be abandoned or partially derelict.
Rarity and representativeness	A landscape or features that are rare and valued in a national or regional	A landscape or features that may be uncommon in parts but is not particularly	A landscape or features that are common and not rare.

Value criteria	Landscape value category		
	High	Medium	Low
	context that is supported by designation.	valued or supported through designation.	
Conservation interest and associations	A landscape with rich and diverse cultural, historic, nature conservation value and recognised literary or artistic associations.	A landscape with some cultural or nature conservation features and interest.	A landscape with few or no cultural or nature conservation features and interest.
Recreational value	High recreational/ tourist value indicated through land use (parks/ sports facilities etc.) and the density/ hierarchy of recreational routes.	A landscape of moderate recreational value, as indicated by land use and density/ hierarchy of recreational routes.	A landscape of limited recreational value, where an appreciation of the landscape has a limited contribution to the public's recreational experience.
Perceptual aspects	Highest levels of tranquillity and strong perceptions of naturalness.	Moderate levels of tranquillity and potentially some perceptions of naturalness.	Developed landscapes which are the antithesis of tranquillity and naturalness.

Landscape susceptibility to change

1.2.12 GLVIA3¹ defines landscape susceptibility to change at paragraph 5.40 as follows:

“This means the ability of the landscape receptor...to accommodate the proposed development without undue consequences for the maintenance of the baseline situation...”¹.

1.2.13 GLVIA3¹ also emphasises that susceptibility to change is dependent on the types of development proposed. Paragraph 5.42 states:

“Some of these existing assessments may deal with what has been called ‘intrinsic’ or ‘inherent’ sensitivity, without reference to a specific type of development. These cannot reliably inform assessment of the susceptibility to change since they are carried out without reference to any particular type of development and therefore do not relate to the specific development proposed. Since landscape effects in LVIA are particular to both the specific landscape in question and the specific nature of the development, the assessment of susceptibility must be tailored to the project.”¹

- 1.2.14 **Table 8A.2** provides further guidance and examples of landscape susceptibility, which considers the ability of the landscape receptor, by virtue of its particular physical, visual or perceptual characteristics to accommodate the Project without undue consequences for the maintenance of the baseline situation and/or the achievement of landscape planning policies and strategies. Common indicators of landscape susceptibility include landscape scale, landform and topography type, openness and enclosure, the nature of the skyline, landmarks, landcover and patterns, presence of perceptual qualities. Other indicators include land use and a rational for the Project location that may be associated with other development and associated change and movement and how the Project would relate to the wider landscape context and relationship with adjacent landscapes.
- 1.2.15 Generally, landscapes with the highest susceptibility to the proposed change will have the least capacity to accommodate the Project. Conversely, landscapes with the lowest susceptibility to the proposed change are likely to have the greatest capacity to accommodate the Project.

Table 8A.2 Assessing Landscape Susceptibility to the Project

Susceptibility Criteria	Landscape susceptibility category		
	High	Medium	Low
Examples of physical elements / key characteristics	Highly valued elements or key characteristics. Typically includes small-scale landscapes with strong topographical variation or distinctive landform and complex patterns, which are essentially intact and susceptible to the Project.	Elements or combinations of characteristics such as medium to large scale landscapes with more open, simple landform and patterns with a greater capacity for the Project.	Common/indistinct elements or combinations of characteristics such as simple and uniform landscapes where similar development is already part of the baseline character and there is capacity for the Project.
Examples of visual characteristics	Susceptibility to alteration of regionally/locally valued or distinctive skylines. Views, vistas and skylines with historic landmarks. Areas with a strong visual relationship with surrounding landscapes and	A partially enclosed landscape offering some visual containment and filtering of views and moderate levels of intervisibility surrounding landscapes. A landscape where light intrusion and some movement and	A heavily enclosed landscape which contains or strongly filters views with a corresponding limited visual relationship with surrounding landscapes. A landscape with an absence of visual landmarks. Combinations of broad and simple

Susceptibility Criteria	Landscape susceptibility category		
	High	Medium	Low
	limited visual intrusion. Dark skies and low levels of light intrusion.	change are already present.	skylines lacking in landmarks, where development change movement, light intrusion and/or visual intrusion is present.
Examples of other perceptual characteristics	Perceptions of tranquillity, remoteness or naturalness, with a strong sense of time depth and/or related special qualities that would be susceptible to development.	Perceptions of moderate tranquillity, remoteness or naturalness. Presence of some visual or audible signs of existing built development /infrastructure giving rise to a landscape with some development capacity.	Landscapes lacking in tranquillity and/or remoteness, which are subject to land use change and high degrees of visual or audible signs of existing built development/infrastructure with development capacity.

Overall Landscape Sensitivity

- 1.2.16 Judgements on value and susceptibility are combined to determine overall landscape sensitivity which is informed by professional judgement and guided by the following matrix shown in **Table 8A.3**. In terms of landscape value, statutory landscape designations are generally accorded the highest assessment value.

Table 8A.3 Evaluation of Landscape Sensitivity

Value:	Susceptibility:		
	High	Medium	High
High	High	High	High
Medium	High to Medium	Medium	High to Medium
Low	Medium	Low	Medium

Evaluating the magnitude of landscape effects

- 1.2.17 The magnitude of landscape effects upon landscape receptors is described by reference to the size or scale, geographical extent and duration/reversibility of the change that would be experienced. GLVIA3¹ at paragraph 5.48-52 sets out the criteria in detail that can be summarised as follows.

- Size or Scale:
 - ▶ The size or scale of landscape change is described and quantified where possible in order to clearly set out the extent or proportion of loss or addition of landscape elements, the degree to which the perceptual characteristics of the landscape may be altered and whether the effect changes any critical key characteristics of the landscape.
- Geographical Extent:
 - ▶ The geographical extent of the effect is distinct from the size and scale of effect. There may for example be a medium loss of landscape elements affecting a large geographical area, or a high-level addition of new elements affecting a very localised area. The geographical extent is described at a site level within the development site boundary, within the immediate setting of the site, at the scale of the landscape character type or area assessed or on a larger scale, affecting several landscape character types or areas.
- Duration and reversibility:
 - ▶ In accordance with GLVIA3¹ this is a separate, but linked consideration and the duration of an effect may be described as temporary (short term 0-5 years, medium term 5-10 years or long term 10-20 years) or permanent. The Project may also be considered in terms of whether the effects are reversible.

1.2.18 The magnitude of landscape effects resulting from the Project is described as high, medium, low or very low, in accordance with the 'word' scales advised at paragraph 3.27 of GLVIA3¹. In those instances where, due to mitigation, there would be no magnitude of landscape effect, then this justification is also recorded in the landscape assessment. Examples and further guidance on the evaluation of the magnitude of landscape effect are described in **Table 8A.4**.

Table 8A.4 Establishing the magnitude of landscape change

Magnitude	Criteria
High	A large-scale change that may include the loss of key landscape elements/characteristics or the addition of uncharacteristic new features or elements that would alter the perceptual characteristics of the landscape. The size or scale of landscape change could create new landscape characteristics and may change the overall distinctive landscape quality and character, typically, but not always affecting a larger geographical extent.
Medium	A medium-scale change that may include the loss of some key landscape characteristics or elements, or the addition of some uncharacteristic new features or elements that could alter the perceptual characteristics of the landscape.

Magnitude	Criteria
	The size or scale of landscape change could create new landscape characteristics and may lead to a partial change in landscape character, typically, but not always affecting a more localised geographical extent.
Low	A small-scale change that may include the loss of some landscape characteristics or elements of limited characterising influence, or the addition of some new features or elements of limited characterising influence. They may be a small partial change in landscape character, typically, but not always affecting a localised geographical extent.
Very Low	A very small-scale change that may include the loss or addition of some landscape elements of limited characterising influence. The landscape characteristics and character would be unaffected.
Zero	No landscape change is predicted, and the resulting level of effect identified as No Effect. This commonly occurs where no intervisibility (presence of a line of sight between two locations) or other perceptual pathway for example, noise and/or light impacts, exists between the landscape receptor and the proposed development.

1.3 Visual Effects

Introduction

- 1.3.1 Visual effects are concerned wholly with the effect of the Project on views, and visual amenity and are defined by the Landscape Institute in GLVIA3¹, paragraph 6.1 as follows:
- “An assessment of visual effects deals with the effects of change and development on views available to people and their visual amenity. The concern ... is with assessing how the surroundings of individuals or groups of people may be specifically affected by changes in the context and character of views...”¹*
- 1.3.2 The visual baseline is informed by Zone of Theoretical Visibility (ZTV) studies that are computer generated maps to identify land that is visually connected with the Project. However, in many parts of the ZTV there will typically be very few people that would experience the effects for example, private farmland.
- 1.3.3 Visual effects are identified for different receptors (people) who will experience the view at their place of residence, within their community, during recreational activities, at work, or when travelling through an area. The receptors are identified by further desktop analysis and fieldwork.
- 1.3.4 Scoping has identified the LVIA Study Area with the competent authority, noting GLVIA3¹ states at paragraph 6.2 that *“the emphasis must be on a reasonable approach which is proportional to the scale and nature of the proposed development...”¹*.

- 1.3.5 The level of visual effect (and whether this is significant) is determined through consideration of the ‘sensitivity’ of each visual receptor (or range of sensitivities for receptor groups) and the ‘magnitude of effect’ that would be brought about by the construction and operation proposed development. Visual assessment unavoidably involves a combination of both quantitative and subjective assessment and wherever possible a consensus of professional opinion is sought through consultation and internal peer review.
- 1.3.6 The types of visual effect covering the following considerations, are described in detail at **Section 4** of the methodology:
- Duration;
 - Beneficial, adverse or neutral; and
 - Cumulative effects (see **Section 5**).

Visual Receptor Assessment

- 1.3.7 A range of viewpoints from publicly accessible locations have been identified in accordance with GLVIA3¹ (paragraphs 6.16 - 6.23) and are set out in **Table 8.8 of Chapter 8: Landscape and visual**. Photography was undertaken from a total of 36 No. locations in accordance with Technical Guidance Note 06/19³ prepared by the Landscape Institute (TGN 06/19) and presented as annotated photoviews (Type 1). The initial site visit was undertaken in March 2021 in order to illustrate the maximum visibility before deciduous vegetation came into leaf. A further site visit was undertaken in March 2023 and July 2024 to obtain viewpoint photography from additional/replacement viewpoints and for new HAGI options identified at Partington (PH2) and Higher Walton (HWH8).

Evaluating Visual Sensitivity to Change

- 1.3.8 In accordance with Paragraphs 6.31- 6.37 of GLVIA3¹, the sensitivity of visual receptors (people) takes account of the susceptibility of the receptor to visual change and the value of the baseline view available to those receptors. The sensitivity of visual receptors is described as high, medium or low.
- 1.3.9 The main factors influencing the susceptibility of a visual receptor to change are the occupation or activity of the receptor (people) at particular locations and the extent to which their attention or interest may therefore be focused on the available view.

Value of Views

- 1.3.10 The factors influencing judgements regarding the value attached to views by receptors is set out at paragraph 6.37 of GLVIA3¹ and in summary covers:

³ Landscape Institute (2019), Technical Guidance Note 06/19: Visual Representation of Development Proposals. (Online). Available at: https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2019/09/LI_TGN-06-19_Visual_Representation.pdf (Accessed September 2024).

- Any recognition of the value attached to a particular view in relation to heritage assets or through planning designations; and
- Any indications of value provided by guidebooks and tourist literature, the inclusion of specific viewpoints on OS maps, provision of parking places at scenic locations and/or provision of interpretation materials.

Table 8A.5 Assessing the value of views

Value	Criteria
High	Notable specific value attached for example in relation to heritage assets, references in literature/art and or promoted by planning designation. Likely inclusion of facilities at or near viewpoint for example, parking places, sign boards and interpretative material. Likely to be of high scenic quality and located within or overlooking a designated landscape.
Medium	Some indicators of value are present for example, views well known at a local level and/or may be part of wider visual amenity experienced along a locally promoted footpath route. Likely to be of moderate scenic quality.
Low	No indication of any value attached to view/s or visual amenity. Likely to be of low scenic quality.

Visual Susceptibility to change

1.3.11 With reference to paragraphs 6.33 - 6.35 of GLVIA3¹, the visual receptors most susceptible to change are likely to include:

- people at their place of residence (especially using rooms normally occupied in daylight hours – paragraph 6.36 GLVIA3¹);
- people engaged in outdoor recreation whose attention or interest is likely to be focussed on the landscape and on particular views;
- visitors to heritage assets or other attractions where views of the surroundings are likely to make an important contribution to their experience; and
- people in their community where views contribute to the landscape setting enjoyed by residents.

1.3.12 People using the transport network are usually considered to be moderately susceptible to change unless travelling on recognised scenic routes.

1.3.13 Visual receptors likely to be less susceptible to change include:

- people engaged in outdoor recreation that does not depend upon appreciation of views of the landscape; and
- people at their place of work where views of the landscape are not an important contributor to the quality of working life.

1.3.14 Examples and further guidance on the evaluation of visual receptor susceptibility are described in **Table 8A.6**.

Table 8A.6 Assessing the susceptibility of visual receptors

Susceptibility	Criteria
High	Visual receptors in this category would generally include residents with ground floor views from main living space and gardens, tourists/visitors, walkers, cyclists and horse riders, either stationary or travelling through the landscape, and/or undertaking outdoor recreational activities where the focus of the activity involves an appreciation of the landscape: • Residential properties or settlements and related community outdoor spaces; • Outdoor tourist and visitor attractions; • Recreational routes (national trails, long distance footpaths and PRowWs; Sustrans National Cycle Routes (NCRs) and Regional Cycle Routes (RCRs); open access land/ beaches and recognised scenic driving routes); and • People generally, undertaking recreational activity where the focus of the activity involves an appreciation of the landscape (especially within internationally or nationally designated landscapes).
Medium	Visual receptors in this category would generally include people travelling through the landscape on road, rail or other transport routes as rail passengers and road users and people undertaking recreational and sporting activities where it is likely that their surroundings have some influence upon their enjoyment.
Low	Visual receptors in this category would generally include people for whom their surroundings are unlikely to be a primary concern or affect how they undertake their current activity. Receptors are likely to include people at their place of work, people travelling on main roads through built up areas, dual-carriageways or motorways or taking part in activities not involving an appreciation of the landscape (for example, playing team sports).

Overall Visual Sensitivity

1.3.15 Judgements on value and susceptibility are combined to determine overall visual sensitivity which is informed by professional judgement and guided by the following matrix shown in **Table 8A.7**.

Table 8A.7 Evaluation of Visual Sensitivity

Value:	Susceptibility:		
	High	Medium	Low
High	High	High to Medium	Medium
Medium	High to Medium	Medium	Medium to Low
Low	Medium	Medium to Low	Low

Evaluating the Magnitude of Visual Effects

1.3.16 The magnitude of visual effect is assessed, accounting for the composition of the visual baseline and is described by reference to the size and scale, geographical extent, and duration/reversibility of the Project with reference to GLVIA3¹ (paragraphs 6.38 to 6.41) as follows:

- Size or Scale:
 - ▶ Scale of change: This is determined by the loss or addition of features in the view and changes in the composition and extent of view affected. It can in part be described objectively by reference to the numbers and scale of new objects visible and the horizontal/vertical field of view that these new objects will occupy. Other descriptors such as 'dominant', 'prominent', 'noticeable' and 'negligible' can also be used to describe the scale of change.
 - ▶ Screening: The Project may be wholly or partly screened by landform, vegetation (including seasonal effects due to hedgerow management and seasonal variations in deciduous leaf cover) and/or buildings. Conversely visual receptors with open views, particularly from landscapes where such views are a key characteristic, are likely to be able to see a greater proportion of the proposed development.
 - ▶ Contrast: The degree of contrast or integration that will be generated by the introduction of any new features or changes in the view arising in terms of form, scale, mass, line, height, colour, and texture. Developments which contrast or appear incongruous in terms of colour, scale and form are likely to be more apparent and result in the generation of a higher magnitude of change.
 - ▶ Skyline/background: Whether the project would be viewed against the skyline or a background landscape may affect the level of contrast and magnitude, for example, skyline developments may be more noticeable, particularly where they affect open and uninterrupted horizons.
 - ▶ Speed: The speed at which the Project may be viewed will affect how long the view is experienced (continuously, intermittently, glimpsed or repeatedly and sequentially along a route) and the likelihood of the Project being

noticed by people travelling in cars or trains compared to those who may be walking/riding/cycling and able to stop and ‘take in’ a view.

- Geographical Extent:
 - ▶ Distance: The separation distance from the Project can be measured objectively. Distance often provides a strong indicator of the magnitude of visual change, subject to any intervening screening of the Project by landform, vegetation, or buildings.
 - ▶ Angle of view: The angle of view may be considered in terms of whether the Project will be seen directly in front of a visual receptor or if it will be seen more obliquely. Road users are generally more aware of the views in their direction of travel, whilst train passengers are more aware of views perpendicular to their direction of travel. Elevated views are likely to reveal more of the proposed development, whereas low level views are more likely to be screened by intervening built form and vegetation.
 - ▶ Geographical extent of area over which the changes would be visible. This can be defined by the distance or area. For example, effects on people within a particular area such as a golf course can be illustrated via a ‘representative viewpoint’ that represents a similar visual effect, likely to be experienced by larger numbers of people within that area. The geographical extent of that visual effect can be expressed as approximately ‘5 hectares’ or ‘10%’ of the golf course. The geographical extent can be described as a linear measurement (m or km) according to the length of route affected. For example, effects on people travelling on a route through the landscape such as a road or footpath can be illustrated via a ‘representative viewpoint’ that represents a similar visual effect, likely to be experienced by larger numbers of people along that route. The geographical extent of that visual effect can be expressed as approximately ‘1km’ or ‘20%’ of the total length of the route.
- Duration and reversibility:
 - ▶ In accordance with GLVIA3¹ this is a separate, but linked consideration and is described in more detail at Section 4 of this methodology.

1.3.17 The magnitude of visual effects resulting from the Project is described as high, medium, low or very low, in accordance with the ‘word’ scales advised at paragraph 3.27 of GLVIA3¹. Further guidance on the evaluation of the magnitude of visual change is provided in **Table 8A.8**

Table 8A.8 Establishing the magnitude of visual change

Magnitude	Criteria
High	A large and prominent change to the view, appearing in the fore to middle ground and involving the loss/ addition of several features, which is likely to have a strong degree of contrast and benefits from little or no screening. The view is likely to be experienced at static or low speed and is more likely to be continuously/ sequentially visible from a route.
Medium	A moderate and prominent/ noticeable change to the view, appearing in the middle ground and involving the loss/ addition of features and a degree of contrast with the existing view. There may be some partial screening. The view is likely to be experienced at static or low to medium speed and is more likely to be intermittently or partially visible from a route.
Low	A noticeable or small change, affecting a limited part of the view that may be obliquely viewed or partly screened and/ or appearing in the background of the view. This category may include rapidly changing views experienced from fast-moving road vehicles or trains.
Very Low	A small or negligible change to the view that may be obliquely viewed and mostly screened and/or appearing in the distant background or viewed at high speed over short periods and capable of being missed by the casual observer.
Zero	Instances where the Project would not be visible, due to screening, and the resulting level of visual effect identified as 'No Effect'.

1.4 Types of Landscape and Visual Effect

- 1.4.1 The EIA Regulations² require that the level of effect is described in terms of its 'type' or 'nature' of effect (whether the effect is permanent and temporary, direct and indirect, beneficial, neutral and/or adverse and or cumulative). These terms are defined below.

Temporary (short-term), Long-term and Permanent

- 1.4.2 The time period over which an effect may occur is referred to as temporary and short term (0 to 5 years), medium term (5-10 years) long term (10-25 years), or permanent.

Direct or Indirect Effects

- 1.4.3 Direct effects relate to the host landscape and concern both physical and perceptual effects on the receptor. Indirect effects relate to those landscapes and receptors which separated by distance or remote from the Project and therefore are only affected in terms of visual or perceptual effects. The Landscape Institute also defines indirect effects (page 156 of GLVIA3¹) as those which are not a direct

result of the development but are often produced away from the site as a result of a sequence of interrelationships or a complex pathway.

Beneficial, Adverse or Neutral

- 1.4.4 The landscape and visual effects may be beneficial, neutral, or adverse. The assessment assumes that the nature of the effects would be 'adverse' unless otherwise stated however, not all change, including high levels of change, is necessarily adverse. The LVIA considers aesthetic factors such as the visual composition of the landscape in the receptor's view together with the Project. The Project may or may not be reasonably accommodated within the scale and character of the landscape as seen from the receptor location as follows:
- In Landscape Terms:
 - ▶ Beneficial landscape effects would require development to add to the landscape quality and character of an area and would entail landscape mitigation and enhancement, combined with good landscape and architectural design quality.
 - ▶ Neutral landscape effects would include changes that neither add nor detract from the quality and character of an area' including development that may be reasonably accommodated within the scale and capacity of the landscape in the context of landscape management and change, and negligible magnitudes of change.
 - ▶ Adverse landscape effects may include the loss of landscape elements such as mature trees and hedgerows as part of construction or development and changes to key characteristics that are at variance with the baseline landscape character.
 - In Visual Terms:
 - ▶ Beneficial or positive effects may include removal of detracting features, addition of landscape mitigation and/or enhancement. Well-designed built structures resulting in a proposed development that could be accommodated within the scale and landscape setting or context and/or which can be reasonably assessed as enhancing a visual receptor's view;
 - ▶ Neutral visual effects include changes that neither add nor detract from the quality and character of an area or view including development that appears reasonably well accommodated within the scale and setting or context and typically results from very low magnitudes of change; and
 - ▶ Adverse effects are those that detract from the landscape character or quality of visual attributes experienced, through the introduction of elements that contrast, in a detrimental way, with the existing characteristics of the landscape and visual resource, or through the removal of elements that are key in its characterisation.

1.5 Cumulative Landscape and Visual Effects

Types of Cumulative Effect

- 1.5.1 Landscape and visual effects may also be cumulative with other relevant consented projects, or applications for developments in the planning system.
- 1.5.2 The assessment of cumulative landscape or visual effects is essentially the same as for the assessment of the primary or 'stand-alone' landscape or visual effects, in that the level of effect is determined by assessing the sensitivity of the receptor and the magnitude of change, although the cumulative assessment considers the magnitude of change posed by multiple developments. Chapter 7 of GLVIA3¹ notes that this is an evolving area of practice, but provides the following definitions sourced from the most recent established guidance (*Guidance: Assessing the Cumulative Impact of Onshore Wind Energy Developments*⁴) in response to wind farm development at paragraph 7 as follows:
- 1.5.3 Cumulative effects are defined as “...the additional changes caused by a proposed development in conjunction with other similar developments or as the combined effect of a set of developments taken together”.
- 1.5.4 Types of cumulative effect are defined as follows:
- Cumulative Landscape Effects:

Where more than one development may have an effect on a landscape element, landscape character or landscape designation through either an 'additional' or 'in combination' effect.
 - Cumulative Visual Effects:

The cumulative or incremental visibility of similar types of development that may combine to have a cumulative visual effect on the view or visual amenity. These can be further defined as follows:
 - ▶ Simultaneous or combined: where two or more developments may be viewed from a single fixed viewpoint simultaneously, within the viewer's field of view and without requiring them to turn their head⁵;
 - ▶ Successive or repetitive: where two or more developments may be viewed from a single viewpoint successively as the viewer turns their head or swivels through 360°; and
 - ▶ Sequential: where a number of developments may be viewed sequentially or repeatedly at increased frequency, from a range of locations when travelling along a route within the Study Area.

⁴ Scottish Natural Heritage (2012). Assessing The Cumulative Impact of Onshore Wind Energy Developments. (Online) Available from: <https://tethys.pnnl.gov/sites/default/files/publications/SNH-2012-CumulativeOnshoreWind.pdf> (Accessed 05 September 2024).

⁵ Note: A person's field of view is variable but is approximately 90° when facing in one direction.

- 1.5.5 A cumulative landscape or visual effect simply means that more than one type of development is present or visible within the landscape. Other forms of existing development and land-use such as woodland and forestry, patterns of agriculture, built form, and settlements already have a cumulative effect on the existing landscape that is already accepted or taken for granted. These features often contribute strongly to the existing character, forming a positive or adverse component of the local landscape.
- 1.5.6 For the cumulative landscape and visual impact assessment, a Zone of Influence (Zoi) has been applied for the cumulative effects assessment (CEA). The landscape and visual impact Zoi is the same as the LVIA Study Area and therefore extends to a 1km buffer from the Draft Order Limits. A short list of 'other developments' that may interact with the Hynet Zois during their construction, operation or decommissioning so as to lead to a cumulative landscape or visual effect is presented in **Appendix 3A: Cumulative Effects Assessment: Long List and Short List** of the Draft ES.
- 1.5.7 Only those 'other developments' in the short list that fall within the landscape and visual impact Zoi have the potential to result in cumulative effects with the Project on landscape and visual impact. All 'other developments' falling outside the landscape and visual impact Zoi are excluded from this assessment. In addition, the following other developments have been scoped out:
- development contained within or beyond existing built-up areas such that it would be screened and/or would not substantially alter landscape character or visual amenity; and
 - development that is already substantially part of the existing landscape character and where new development would continue that baseline. For example, further mineral works at an existing quarry or further urban development within an existing housing or mixed-use site.

Evaluation of Cumulative Landscape and Visual Effects

- 1.5.8 The level and significance of a cumulative landscape effect is determined in the same manner as for the LVIA, i.e. through a combination of sensitivity and magnitude of change. The resulting level of cumulative effect may remain at the same level of effect or increase to a higher level of effect as follows:
- A significant effect from the Project is predicted in addition or combination with another significant effect attributed to other development(s). The effect is still termed significant and cumulative, but is a greater level of effect than for either development individually.
 - A significant effect from the Project is predicted in addition or combination with another non-significant effect attributed to other development(s). The effect is still termed significant and cumulative, but is attributed to the Project and is a greater level of effect than for either development individually.
 - A non-significant effect from the Project is predicted in addition or combination with another significant effect attributed to other development(s). The effect is still termed significant and cumulative, but is attributed to the other

development(s) and is a greater level of effect than for either development individually.

- A non-significant effect from the Project is predicted in addition or combination with another non-significant effect attributed to other development(s). The effect is still termed cumulative and is a greater level of effect than for either development individually; the combined effect however, may or may not be significant.

1.6 Significance Evaluation

- 1.6.1 The level of landscape and visual effects will be determined with reference to landscape or visual sensitivity and the magnitude of landscape or visual change experienced. For each receptor the evaluation process will be informed by use of a matrix as shown in **Table 8A.9**, below.

Table 8A.9 Evaluation of Landscape and Visual Effects

Sensitivity	Magnitude			
	High	Medium	Low	Very Low
High	Major (Significant)	Major/Moderate (Significant)	Moderate* (potentially Significant)	Minor (Not Significant)
Medium	Major/Moderate (Significant)	Moderate* (potentially Significant)	Minor (Not Significant)	Minor/Negligible (Not Significant)
Low	Moderate* (potentially Significant)	Minor (Not Significant)	Minor/Negligible (Not Significant)	Negligible (Not Significant)

*Note: Moderate levels of effect may or may not be significant subject to the assessor's judgement which shall be clearly explained.

- 1.6.2 In line with the emphasis placed in GLVIA3¹ upon application of professional judgement, the adoption of an overly mechanistic approach through reliance upon a matrix as presented in **Table 8A.9** will be avoided. This will be achieved by the provision of clear and accessible narrative explanations of the rationale underlying the assessment made for each landscape and visual receptor, over and above the outline assessment provided by use of the matrix. Matrices for landscape and visual effects are provided as a summary in support of the narrative explanations. Wherever possible, cross references will be made to baseline figures and/or to photowire and photomontage visualisations in order to support the rationale.
- 1.6.3 In accordance with the EIA Regulations, it is important to determine whether the predicted effects are likely to be 'significant'. Significant landscape and visual effects, in the assessor's opinion, resulting from the Project would be all those effects that result in a 'Major', 'Major/ Moderate' or potentially a 'Moderate' level of

effect and any exceptions would be clearly explained. In particular a more detailed rationale will be provided for ascribing whether an effect would be 'significant' or 'not significant', or where the assessment concludes that the level of effect would be 'Moderate' and therefore 'potentially significant'.

- 1.6.4 GLVIA3¹ at paragraph 3.34, requires that descriptions are provided for each of the level of effect categories to make it clear what they mean. Due to the multiple judgements made for components of sensitivity and magnitude for every receptor, these descriptions can only ever be generic and for clarity typical examples are provided in **Table 8A.10** below. All receptor effects contained in summary tables should be read in conjunction with the detailed narrative assessment set out in the Draft ES Chapter and accompanying appendices.

Table 8A.10 Description of Level of Effects

Level of Effect	Description of Landscape Effect	Description of Visual Effect
Major	Typically recorded where a high or medium magnitude is experienced by a high or medium sensitivity receptor resulting in a greater than Moderate level of effect. For example, extensive loss of highly valued key characteristics within a statutory designated landscape including new activity and infrastructure being at considerable variance with baseline landscape character. The effect would be significant.	Typically recorded where a high or medium magnitude is experienced by a high or medium sensitivity receptor resulting in a greater than Moderate level of effect. For example, extensive views from a public footpath of new activity and infrastructure in the foreground and middle ground that represent prominent new features in a landscape of high scenic value. The effect would be significant.
Moderate	Typically recorded where a medium magnitude is experienced by a medium sensitivity receptor resulting in a Moderate level of effect. For example, a new HAGI and/or Block Valve may result in notable loss of key characteristics in an undesignated landscape and may lead to a partial change in landscape character. The effect may or may not be significant.	Typically recorded where a medium magnitude is experienced by a medium sensitivity receptor resulting in a Moderate level of effect. For example, a localised view from a golf course of a new HAGI and/or Block Valve in the foreground or middle ground of a landscape of moderate scenic value. The effect may or may not be significant.
Minor	Typically recorded where a Low magnitude is experienced by a Low sensitivity receptor resulting in a Minor level of effect. For example, the introduction of a new HAGI and/or Block Valve that has a limited	Typically recorded where a Low magnitude is experienced by a Low sensitivity receptor resulting in a Minor level of effect. For example, an oblique and partial view of a new HAGI and/or Block Valve,

Level of Effect	Description of Landscape Effect	Description of Visual Effect
	influence on an adjoining landscape character area due to intervening topography. The effect would be not significant.	experienced from people travelling at speed on main roads through built-up areas. The effect would be not significant.
Negligible	Typically recorded where a Very Low magnitude is experienced by a Low sensitivity receptor, resulting in a Negligible effect. For example, barely perceptible changes to an urban fringe landscape character area already significantly affected by infrastructure. The effect would be not significant.	Typically recorded where a Very Low magnitude is experienced by a Low sensitivity receptor, resulting in a Negligible effect. For example, a background change in view that would be barely perceptible and experienced by people playing team sport. The effect would be not significant.

1.7 Visual representations

- 1.7.1 ZTVs and visualisations are graphical images produced to assist and illustrate the LVIA and the cumulative effects assessment. The methodology use for viewpoint photography and photomontages has been produced in accordance with the GLVIA3¹ and the Landscape Institute's *Technical Guidance Note 06/19: Visual Representation of Development Proposals*³.

Methodology for production of ZTVs

- 1.7.2 A ZTV has been generated for each above ground operational component (e.g. HAGIs and BVIs) to inform the LVIA. ZTV is defined in GLVIA3¹ as “a map, usually digitally produced, showing areas of land within which a development is theoretically visible”¹ and represents the desk top component of the visibility analysis.
- 1.7.3 The ZTVs have been calculated using GIS software to demonstrate the theoretical extent of visibility from within a 1km buffer from each HAGI or BVI, together with a Digital Terrain Model (DTM) (OS Terrain 5). This illustrates the topographic constraints on the visual influence of the Project but does not take account of the built elements or vegetation within the LVIA Study Area, both of which can significantly reduce the area and extent of actual visibility. As a consequence, the DTM data was amended to include areas of woodland and built form as depicted in OS VectorMap District to allow their screening effect to be incorporated in the ZTV calculation. A height of 10m has been used for the woodland exclusion zones (based on the lower heights of trees surveyed around the HAGIs and BVIs) with a height of 8m used for buildings.
- 1.7.4 The height parameters included in the modelling of the above ground operation components are as follows:

- 3.6m for the HAGIs within a predominantly rural landscape (Warburton, Rocksavage and Central Hub HAGIs);
- 5m for the HAGIs within an urban or semi-urban context (Stanlow, Partington, Runcorn, Inovyn HSF, Clock Face and Higher Walton HAGIs); and
- 3.5m for the BVIs.

- 1.7.5 These heights represent the tallest components of the proposed infrastructure as described in **Chapter 2: The Project**. The ZTVs for the Partington Option PH2 and Higher Walton Option HWH8 have been based on the LoD extent as the level of design maturity meant that no further detail with regard to the footprint of these HAGI options was available at the time⁶. The ZTVs for all other HAGI and BVI locations have been based on a likely footprint of the compound. The topography, small scale differences between the footprints and LoD boundaries and limitations of the mid-resolution DTM data means that this approach is unlikely to notably underestimate the extent of ZTV coverage.
- 1.7.6 The resulting ZTV plots are overlaid on Ordnance Survey mapping at an appropriate scale and presented as figures using desktop publishing or graphic design software.
- 1.7.7 There are limitations in this theoretical production, and these should be considered in the interpretation and use of the ZTV:
- The ZTVs are based on theoretical visibility from 1.6m above ground level. This is based on paragraph 6.11 of GLVIA3¹ which states that “*Both ZTV mapping and site survey should assume that the observer eye height is some 1.5 to 1.7 metres above ground level, based on the midpoint of average heights for men and women.*”¹ 1.6m represents a mid-point in that range.
 - The ZTVs which accompany the LVIA do not include the potential screening effects of other landscape components that may affect visibility, such as walls, fences, hedgerows, individual trees or groups of trees that are too small in size to appear in the OS VectorMap District data.
 - The ZTV does not indicate the decrease in visibility that occurs with increased distance from the Project. The nature of what is visible from 1km away will differ markedly from what is visible from 100m away, although both could be indicated in the ZTV as having the same level of visibility.
- 1.7.8 These limitations mean that while the ZTV is used as a starting point in the assessment, providing an indication of where the HAGIs or BVIs associated with the Project would be theoretically visible, it tends present a 'worst case' or overestimate of the theoretical visibility. The information drawn from the ZTV is checked by field survey observation.

⁶ The ZTVs for the Partington Option PH2 and Higher Walton Option HWH8 HAGIs will be updated as part of the Final ES using the defined footprint of the HAGIs, should these options be taken forward as part of the final design.

Methodology for baseline photography

Overview

- 1.7.9 A range of viewpoints from publicly accessible locations have been identified in accordance with GLVIA3¹ (paragraphs 6.16 - 6.23) and are set out in **Table 8.8 of Chapter 8: Landscape and visual**. Photography was undertaken from a total of 36 No. locations in accordance with *Technical Guidance Note 06/19: Visual Representation of Development Proposals*³. The initial site visit was undertaken in March 2021 in order to illustrate the maximum visibility before deciduous vegetation came into leaf. Further site visits were undertaken in March 2023 and July 2024 to obtain viewpoint photography from additional/replacement viewpoints and for new HAGI options identified at Partington (PH2) and Higher Walton (HWH8).
- 1.7.10 Once a view has been selected, the location is visited, confirmed, and a photographic record is taken to record the view. Details of the viewpoint location and associated data are recorded to assist in the production of visualisations and to validate their accuracy.
- 1.7.11 The following photographic information is recorded:
- Date, time, weather conditions and visual range;
 - GPS recorded 12 figure grid reference accurate to ~5-10m;
 - GPS recorded Above Ordnance Datum (AOD) height data; and
 - Use of a fixed 50mm focal length lens is confirmed.
- 1.7.12 All photography has been undertaken in accordance with the guidance outlined in *Technical Guidance Note 06/19: Visual Representation of Development Proposals*³ and taken using:
- A high-resolution digital Single-lens Reflex (SLR) camera with a 'full frame' sensor (i.e., 36 x 24mm) with the camera set at 1.5m above ground level;
 - A 50mm fixed focal length (prime) lens; and
 - A professional quality tripod fitted with a panoramic head.
- 1.7.13 The location of the camera was established using a hand-held Global Positioning System (GPS) unit.

Weather conditions

- 1.7.14 GLVIA3¹, paragraph 8.22 states:
- "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"*¹.

- 1.7.15 In preparing photomontages for the LVIA, photographs have been taken in favourable weather conditions. Weather conditions shown in the photographs for all viewpoints have, where possible, will be taken during periods of 'very good' or 'excellent' visibility conditions, seeking to represent a maximum visibility scenario when the developments may be highly visible.

Methodology for production of visualisations

- 1.7.16 Two different forms of visualisation have been prepared to inform the assessment of landscape and visual effects in the Draft ES as follows:
- Annotated photographs (Type 1 as defined in *Technical Guidance Note 06/19: Visual Representation of Development Proposals*³) for the majority of viewpoints which show the extent of the AGI of the Project, where appropriate; and
 - Photomontages, illustrating the AGI of the Project visible during the period of operation and maintenance for Years 1 and 15, for a select number of viewpoints deemed to be the most open and sensitive.

Baseline Photograph Production

- 1.7.17 To create the baseline panorama, the photographs from the viewpoint are digitally joined using Adobe Photoshop or PTGui software to form a planar or cylindrical projection image or panorama using computer software to remove 'barrel distortion' caused by the camera lens. There are practical limitations to shooting viewpoint photographs only in very good or excellent visibility and at particular times of day or from location that avoid foreground clutter or other vertical features such as telegraph poles, particularly where this is a true representation of the view from that viewpoint area.

Photomontage Production

- 1.7.18 The photomontages aim to provide an image of the HAGI of the Project. 3D model representations are combined with the baseline view photographs to create a rendered photomontage image of the Project. The photomontages are produced using a range of computer software including Resoft WindFarm© True View, 3D AutoCAD, and Studio Max.
- 1.7.19 The photomontage is produced by digitally combining or superimposing the wireline / wireframe or computer-generated 3D model and the Project onto the baseline photograph. The resulting image is then rendered to add colour, texture and lighting effects that account the date and time the photography was taken and the weather conditions occurring on the day.
- 1.7.20 The completed panoramas, wirelines, photomontages and accompanying data are then presented as figures using desktop publishing / graphic design software.

Limitations of visualisations

- 1.7.21 The visualisations used in the LVIA are for illustrative purposes only and, whilst useful tools in the assessment, are not considered to be completely representative of what will be apparent to the human eye.
- 1.7.22 The visualisations of the HAGIs of the Project have a number of limitations when using them to form a judgement on visual effect. These include:
- a visualisation can never show exactly what a development 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 the distance to the onshore elements of the Project but can never be 100% accurate to the as constructed effect;
 - a static image cannot convey movement 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 effects, these images are best viewed at the viewpoint location shown;
 - the images must be printed and viewed at the correct size (841mm x 297mm);
 - 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 personal computer (PC) screen with the image enlarged to the full screen height to give a realistic impression; and
 - there are practical limitations to shooting viewpoint photographs only in very good or excellent visibility and at particular times of day.

Printing of maps and visualisations

- 1.7.23 All electronic visualisations and maps should be printed out and viewed at the correct scale as noted on the document.