

Light Valley Solar

Environmental Statement Volume 3

Appendix 10.1: Landscape and Visual Assessment Methodology

Document Reference EN0110012/APP/LVS/06.03.10.01

February 2026

Planning Inspectorate Reference: EN0110012
APFP Regulation 5(2)(a)



Light Valley
Solar

Infrastructure Planning

Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

Light Valley Solar

DCO Submission

Appendix 10.1: Landscape and Visual Assessment Methodology

Regulation Reference	APFP Regulation 5(2)(a)
Planning Inspectorate Case Reference	EN0110012
Application Document Reference	EN0110012/APP/06.03.10.01
Author	Light Valley Solar Limited

Version	Date	Status of Version
1.0	February 2026	DCO Submission

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1 Assessment Methodology

1.1 Assessment of landscape effects

Landscape designations

- 1.1.1 The LVIA describes the impacts of the construction, operation and maintenance and decommissioning of the Proposed Development which may affect the purposes of designation and the resulting effects in narrative terms. Landscape designations have also informed the value attached to the landscape of landscape receptors, which form the basis of the assessment of landscape effects. These considerations have been assessed separately to avoid double-counting effects.
- 1.1.2 The Overarching National Policy Statement for Energy (EN-1) (Ref 1) makes clear distinctions between development proposed within nationally designated areas and developments outside nationally designated areas (their setting) which might affect them. This has been a key consideration in applying the mitigation hierarchy to avoid, mitigate or offset adverse effects and in the design of mitigation and enhancement measures. The site of the Proposed Development avoids impacts on nationally designated landscapes.
- 1.1.3 The Proposed Development has the potential to cause harm to locally designated landscapes within the Study Area (the Study Area is shown in Figure 10.1: LVIA Study Area (ES Volume 2) [EN0110012/APP/LVS/06.02.10.01]. Potential impacts on the integrity these designations has been assessed with reference to published studies and the assessment of effects on the landscape receptors and landscape features to which they relate.

Landscape baseline

- 1.1.4 Landscape is defined by the European Landscape Convention as “an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors”.
- 1.1.5 Natural England’s ‘An Approach to Landscape Character Assessment’ (Ref 2) provides some useful context to the European Landscape Convention. It sets out the following five principles which apply to landscape character assessment:
- 1) Landscape is everywhere and all landscape has character.
 - 2) Landscape occurs at all scales and the process of Landscape Character Assessment can be undertaken at any scale.
 - 3) The process of Landscape Character Assessment should involve an understanding of how the landscape is perceived and experienced by people.
 - 4) A Landscape Character Assessment can provide a landscape evidence base to inform a range of decisions and applications.

- 5) A Landscape Character Assessment can provide an integrating spatial framework - a multitude of variables come together to give us our distinctive landscapes.
- 1.1.6 GLVIA3 defines landscape receptors as “*aspects of the landscape resource that have the potential to be affected by a proposal*” (Ref 3). Landscape receptors have been identified via a review of published landscape character assessments, maps and aerial photography, relevant planning policy and fieldwork surveys. A baseline description is then provided for each of the identified landscape receptors.
- 1.1.7 Existing landscape features that could be subject to change have been described with reference to the Arboricultural Impact Assessment (Appendix 16.2 (ES Volume 3) **[EN0110012/APP/LVS/06.03.16.02]**) and hedgerow surveys, in accordance with point 5(2) of LI TGN 01/24 (Ref 4).
- 1.1.8 Landscape character is defined by GLVIA3 as “*a distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse*”. Landscape character assessment is defined within the glossary of GLVIA3 as 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 landscapes distinctive.*”
- 1.1.9 Point 5(1) of LI TGN 01/24 states that “*it is not necessary to assess effects on every landscape character type or area identified by assessments at different levels for any development – the best scale of assessment for the project should be selected*” and that “*where existing assessments are too large or small scale for the nature of the development, supplementary assessment at the appropriate scale may be required and should draw from the assessment(s) available.*”
- 1.1.10 Published landscape character assessments at the national, regional and local level have been reviewed to identify Landscape Character Types (LCT) and LCAs. These are mapped in Figure 10.3.1: North Yorkshire Published Landscape Character Areas (ES Volume 2) **[EN0110012/APP/LVS/06.02.10.03.01]** and Figure 10.3.2: Selby District Published Landscape Character Areas (ES Volume 2) **[EN0110012/APP/LVS/06.02.10.03.02]**.
- 1.1.11 The geographical extent of LCAs in published assessments at the national level are generally large and extend beyond the Study Area. As explained in paragraph 5.14 of GLVIA3, “*broad-scale assessments at national or regional level can be helpful in setting the landscape context, but are unlikely to be helpful on their own as the basis for LVIA*”. These have therefore been included to provide context but effects on these have not been assessed.
- 1.1.12 The key characteristics of published landscape receptors are set out in Chapter 10: Landscape and Visual (ES Volume 1) **[EN0110012/APP/LVS/06.01.10]** and Appendix 10.2: Landscape Baseline and Effects (ES Volume 3) **[EN0110012/APP/LVS/06.03.10.02]**. Natural England’s ‘An approach to

Landscape Character Assessment' (Ref 2) notes the use and purpose of key characteristics, stating:

“Key characteristics are those combinations of elements which help give an area its distinctive sense of place. If these characteristics change, or are lost, there has been significant consequences for the current character of the landscape. Key characteristics are particularly important in the development of planning and management policies. They are important for monitoring change and can provide a useful reference point against which landscape change can be assessed. They can be used as indicators to inform thinking about whether and how the landscape is changing and whether, or not, particular policies – for example – are effective and having the desired effect on landscape character.”

Tranquillity

- 1.1.13 Tranquillity is a perceptual aspect of landscape which can also contribute to its value. GLVIA3 defines tranquillity as *“a state of calm and quietude associated with peace, considered to be a significant asset of landscape.”*
- 1.1.14 Tranquillity has been assessed with reference to published studies by the Campaign to Protect Rural England (CPRE) which has mapped tranquillity areas and fieldwork (Ref 5). The national tranquillity data is provided by CPRE, with each 500m × 500m square of England assigned a score based on 44 different factors. The primary methodology is documented in "Mapping Tranquillity: Developing a robust methodology for planning support (CPRE, 2008)". CPRE tranquillity is measured on a continuous numerical scale (raw scores) ranging from approximately -140.51 (maximum negative tranquillity) to +148.54 (maximum positive tranquillity). This scale represents a spectrum of relative tranquillity nationally rather than absolute categories. The score of zero marks the neutral point between areas with net negative and net positive tranquillity characteristics.
- 1.1.15 The following factors have been considered in describing the baseline tranquillity for each LCA. The tranquillity baseline for the Study Area, based on the CPRE tranquillity map, is included in Figure 10.7: Tranquillity (ES Volume 2) **[EN0110012/APP/LVS/06.02.10.07]**.
- 1.1.16 CPRE identify positive factors which contribute to tranquillity as:
- 1) Openness of the landscape (freedom from development);
 - 2) Perceived naturalness of the landscape;
 - 3) Rivers in the landscape;
 - 4) Areas of low noise; and
 - 5) Visibility of the sea.
- 1.1.17 CPRE lists negative factors as:
- 1) Presence of other people;
 - 2) Visibility of roads;

- 3) General signs of overt human impact;
- 4) Visibility of urban development;
- 5) Road, train and urban area noise;
- 6) Night time light pollution;
- 7) Aircraft noise; and
- 8) Military training noise.

Assessment of night time effects

1.1.18 The night time baseline is described with reference to England’s Light Pollution and Dark Skies map published by CPRE: The Countryside Charity (Ref 6). These maps are based on data gathered by a weather satellite. The data is split into nine categories, as shown in Table 1-1 below, to distinguish between different light levels and the maps are divided into pixels, 400 metres (m) x 400 m to show the amount of light shining up into the night sky from that area measured in nanowatts.

Table 1-1 Light pollution categories

Categories	Brightness values in nanowatts/cm2/steradian (nw/cm2/sr)
Colour band 1 (darkest)	Less than 0.25
Colour band 2	0.25 – 0.5
Colour band 3	0.5 - 1
Colour band 4	1 - 2
Colour band 5	2 - 4
Colour band 6	4 - 8
Colour band 7	8 - 16
Colour band 8	16 - 32
Colour band 9	More than 32

1.1.19 A measured lighting survey is not considered proportionate to the likely effects for the Proposed Development and therefore the measurements from light pollution mapping from CPRE was referenced for each landscape receptor to help describe the relative darkness of different areas in the baseline and how these might change as a consequence of the Proposed Development.

1.1.20 Reference is also made to the Institute of Lighting Professionals Guidance Note 1 for the reduction of obtrusive light (Ref 7). This guidance defines three types of light pollution:

- 1) Skyglow;
- 2) Glare; and
- 3) Light intrusion.

1.1.21 A qualitative assessment of night-time lighting effects for landscape and views has been informed by fieldwork carried out in winter 2024 and summer 2025. While the assessment did not involve visiting the Study Area during hours of

darkness, observations made during daylight site visits included noting the extent and type of lighting infrastructure present across different areas. These observations, combined with professional judgement and reference to relevant guidance, have been used to inform the understanding of potential night-time lighting effects.

1.1.22 The following visual receptors have been considered:

- 1) Local communities; and
- 2) People travelling on local roads.

1.1.23 Other receptors have not been considered on the basis that either they would generally not be present at night (e.g. people travelling along public rights of way) or their immediate context would be brightly lit if they were present at night (e.g. employment / formal sports).

Sensitivity of landscape receptors

1.1.24 Paragraph 5.39 of GLVIA3 (Ref 3) states that *“landscape receptors need to be assessed firstly in terms of their sensitivity, combining judgements of their susceptibility to the type of change or development proposed and the value attached to the landscape”*.

1.1.25 Judging landscape sensitivity is thus a two-part process of:

- 1) Value attached to the landscape – relates to the existing landscape and this has been determined at the baseline stage in line with paragraph 5.19 of GLVIA3, which states that *“as part of the baseline description the value of the potentially affected landscape should be established”*; and
- 2) Susceptibility to change – which is considered in relation to the Proposed Development.

Value attached to the landscape

1.1.26 Landscape Institute Technical Guidance Note (TGN) 02/21: Assessing landscape value outside national designations (Ref 8) defines landscape value as *“the relative value or importance attached to different landscapes by society on account of their landscape qualities”*.

1.1.27 For assessing landscape value outside national designations, Landscape Institute TGN 02/21 is the primary source of guidance. This guidance recommends that indicators of value should be reviewed on a case-by-case basis, taking into account what they contribute (positively or negatively) to a specific landscape and that once evidence for each factor has been collated and assessed, an overall judgement should be made by considering the overall ‘weight of evidence’. The approach to assessing the value attached to the landscape has followed a four-stage process:

- 1) **Stage 1** identify if the landscape is covered by any landscape designations;

- 2) **Stage 2** consider each of the factors listed in Table 1-2 below which have been developed with reference to Table 1 of TGN 02/21 and are pertinent and most important to understanding its value;
- 3) **Stage 3** make an assessment the value attached to the landscape and assign value based on a five-point scale, clearly articulating the reasons for these judgements; and
- 4) **Stage 4** assess whether there is sufficient evidence through designation or the value attached to the landscape for the receptor to be considered valued landscape in the context of National Planning Policy Framework (NPPF) paragraph 187(a) (Ref 9).

1.1.28 An overall conclusion has been drawn on the value attached to the landscape for each landscape receptor considering the overall weight of evidence.

Table 1-2 Establishing the value attached to the landscape

Stage 1 – Landscape designations	Stage 2 - Define landscape value factors with reference to TGN 02/21	Criteria	Typical Description
Landscape with statutory status or national policy protection: National Park, National Landscape, or World Heritage Site. Local landscape designation, such as Special Landscape Area or Area of Great Landscape Value, supported by policy and a detailed evidence base.	Natural heritage - Landscape with clear evidence of ecological, geological, geomorphological or physiographic interest which contribute positively to the landscape.	Very high	A designated landscape with statutory status (National Park or National Landscape). Valued landscape in the context of NPPF paragraph 187 (a).
	Cultural heritage - Landscape with clear evidence of archaeological, historical or cultural interest which contribute positively to the landscape.	High	A locally designated landscape supported by a detailed evidence base or with other strong indicators of value, which may include other relevant designations such as ancient woodland or conservation areas, with identified quality in the development plan or evidence base. May be considered valued landscape in the context of NPPF paragraph 187(a) with strong supporting evidence.
	Landscape condition - Landscape which is in a good physical state both with regard to individual elements and overall landscape structure.	Medium	Unlikely to be a designated for landscape quality but may exhibit some indicators of value which are identified in the development plan or evidence base and are important at the community level.
	Associations - Landscape which is connected with notable people, events and the arts.	Low	Not designated for landscape quality and likely to exhibit few indicators of value which are identified in the development plan or evidence base.

Stage 1 – Landscape designations	Stage 2 - Define landscape value factors with reference to TGN 02/21	Criteria	Typical Description
No relevant designations.	<p>Distinctiveness - Landscape that has a strong sense of identity.</p> <p>Recreational - Landscape offering recreational opportunities where experience of landscape is important.</p> <p>Perceptual (Scenic) - Landscape that appeals to the senses, primarily the visual sense.</p> <p>Perceptual (wildness and tranquillity) - Landscape with a strong perceptual value notably wildness, tranquillity and/or dark skies.</p> <p>Functional - Landscape which performs a clearly identifiable and valuable function, particularly in the healthy functioning of the landscape.</p>	Very low	A landscape dominated by industry or infrastructure or which is damaged or degraded landscape, not designated for landscape quality and not likely to exhibit indicators of value which are identified in the development plan or evidence base.

Valued landscape

- 1.1.29 The principle of ‘valued landscape’ in England is supported by the NPPF 2024 (Section 15) (Ref 9). Paragraph 187(a) requires that planning policies and decisions should contribute to and enhance the natural and local environment by, inter alia, (a) *“protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan).”*
- 1.1.30 According to paragraph A4.2.11 of TGN 02/21, a ‘valued landscape’ is an area identified as having sufficient landscape qualities to elevate it above other more everyday landscapes. There is therefore a high bar for an area to be considered valued landscape in the context of the NPPF.
- 1.1.31 Paragraph A4.2.5 of TGN 02/21 states that, *“where a landscape has a statutory status, such as a National Park or National Landscape, it is self-evident that it is a valued landscape”*. Therefore, if such landscapes were present within the Study Area, these would have been attributed very high value and recognised as valued landscapes in the context of the NPPF.

- 1.1.32 A different approach has been taken to determine whether landscapes outside of nationally designated landscapes can be considered valued landscape in the context of the NPPF. Paragraph A4.2.6 of TGN 02/21 states that the interpretation of 'identified quality in the development plan' is not clear and that there are two fundamentally different interpretations that have been adopted by inspectors, which are considered below in more detail:
- 1) It means non-statutory, locally designated landscapes; and
 - 2) It means any landscape where there is evidence to justify the identification of a 'valued landscape'. Local designation alone may not be sufficient evidence.
- 1.1.33 For a landscape without statutory status to be considered valued landscape in the context of the NPPF it must be supported by strong evidence. The assessment has therefore considered each of the criteria set out in Table 1-2, references in Local Plan policy and evidence base, including whether there are existing local landscape designations in forming an overall judgement on value. Landscapes with high value may also be considered valued landscapes in the context of the NPPF.

Susceptibility of landscape receptors to change

- 1.1.34 GLVIA3 (Ref 3) paragraph 5.40 defines the susceptibility to change of landscape receptors as:
- “the ability of the landscape receptor (whether it be overall character or condition of a particular landscape type or area, or an individual element and/or features, or a particular aesthetic and perceptual aspect) to accommodate the Proposed Development without undue consequences for the maintenance of the baseline situation and/or the achievement of landscape planning policies and strategies”.*
- 1.1.35 The LI clarified in point 5(4) of TGN 01/24 that the susceptibility of landscape receptors will vary with the type or nature of change, relating the type of development and the relative size of the development. It goes on to state that *“relevant criteria will be dependent upon the development type being considered and should be tailored to the project”.*
- 1.1.36 The features and characteristics which are more or less susceptible to the type of changes proposed has been set out for each landscape receptor. The narrative provides a clear explanation based upon analysis of the landscape receptor and the extent to which it is able to accommodate the type of change arising from the specific proposal.
- 1.1.37 Table 1-3 sets out examples of characteristics and features of landscapes which may indicate higher and lower susceptibility in respect of solar farm development.

Table 1-3 Considerations for landscape susceptibility

Landscape features or characteristics	Indicators of higher landscape susceptibility	Indicators of lower landscape susceptibility
Field pattern, scale and enclosure	<p>Small scale fields.</p> <p>Complex or irregular field pattern.</p> <p>Ancient field patterns.</p> <p>Field boundaries formed by low fences or walls or hedges with few hedgerow trees.</p>	<p>Large scale fields.</p> <p>Simple, regular or rectilinear field pattern.</p> <p>Uniform field pattern.</p> <p>High field boundaries.</p>
Landform	<p>Steep topography.</p> <p>Exposed hillsides.</p> <p>Irregular or complex landform.</p> <p>Narrow valleys and ridges.</p> <p>Distinctive landform features.</p>	<p>Flat landscapes.</p> <p>Expansive lowland landscapes.</p> <p>Uniform landform.</p> <p>Landscapes with no or minimal distinctive landform features.</p>
Land cover	<p>Pastures, particularly where grazing forms key characteristic of the landscape.</p> <p>Significant woodland cover.</p> <p>Parkland or designed landscapes.</p> <p>Natural or semi-natural land cover, particularly where conservation or restoration is a priority.</p>	<p>Large-scale arable land, particularly monoculture or with evidence of intensive farming practices.</p>
Tranquillity/ human influences	<p>Absence of human influences / natural landscapes.</p> <p>Infrequent built form.</p> <p>Overarching rural character.</p> <p>Remote, tranquil, spiritual or peaceful landscape.</p> <p>Sense of wilderness.</p>	<p>Major infrastructure (transport, utilities, industry).</p> <p>Large concentrations of residential, commercial, industrial development.</p> <p>Character affected by urban development.</p> <p>Noisy, settled landscapes.</p> <p>Modern and developed landscapes with signs of human activity.</p>
Condition / intactness	<p>Intact landscapes with natural or historic features in good condition.</p>	<p>Degraded landscapes (likely to have evidence of human influences / modern intensive farming practices).</p> <p>Degraded / intermittent boundary treatments.</p>
Historic features and cultural heritage	<p>Ancient / historic field patterns.</p> <p>Important, distinctive or remnant features of the landscape.</p> <p>Cultural associations with a particular landscape.</p>	<p>Modern / developed landscape with limited historic features.</p>
Scenic quality and character	<p>High scenic quality.</p> <p>Strong sense of place.</p>	<p>Low scenic quality.</p> <p>Weak sense of place.</p>
Intervisibility	<p>Open landscapes with exposed or far-reaching views.</p>	<p>Confined or enclosed landscape with few inward or outward views.</p>

Landscape features or characteristics	Indicators of higher landscape susceptibility	Indicators of lower landscape susceptibility
	<p>Sparse woodland and vegetative cover.</p> <p>Field systems defined by fences or managed low boundaries.</p> <p>Strong intervisibility with sensitive landscapes.</p>	<p>Limited invisibility with sensitive landscapes, key views, or landmarks.</p> <p>Intact, overgrown or tall vegetated boundaries with high proportion of hedgerow trees.</p> <p>High proportion of woodland blocks, copses, connected woodlands and belts.</p>

1.1.38 The susceptibility to change for each landscape receptor has then been categorised with reference to the criteria in Table 1-4 below.

Table 1-4 Landscape susceptibility criteria

Landscape susceptibility	Typical description
Very high	The type of change arising from the specific proposal are very likely to lead to undue consequences for the maintenance of the baseline situation and/or the achievement of landscape planning policies and strategies.
High	The type of change arising from the specific proposal are likely to lead to undue consequences for the maintenance of the baseline situation and/or the achievement of landscape planning policies and strategies.
Medium	The type of change arising from the specific proposal may lead to undue consequences for the maintenance of the baseline situation and/or the achievement of landscape planning policies and strategies.
Low	The type of change arising from the specific proposal are unlikely to lead to undue consequences for the maintenance of the baseline situation and/or the achievement of landscape planning policies and strategies.
Very low	The type of change arising from the specific proposal are very unlikely to lead to undue consequences for the maintenance of the baseline situation and/or the achievement of landscape planning policies and strategies.

Combining judgements to define landscape sensitivity

1.1.39 The sensitivity of each LCA has been defined by combining professional judgements on the value attached to the landscape and its susceptibility to change and is supported by a clear narrative. Reference has been made to the criteria set out in Table 1-5 below.

Table 1-5 Sensitivity of landscape receptors criteria

Sensitivity	Typical description
Very high	Landscapes with statutory status or national policy protection with very limited ability to accommodate the type of change without undue consequences for the maintenance of the baseline situation and/or the achievement of landscape planning policies and strategies.
High	Landscapes which may be locally designated or otherwise supported by a detailed evidence base or landscape with other strong indicators of value with limited ability to accommodate the type of change without undue consequences for the maintenance of the baseline situation and/or the achievement of landscape planning policies and strategies.
Medium	Landscapes which are unlikely to be a designated for landscape quality but may exhibit some indicators of value and which may have some ability to accommodate the type of change without undue consequences for the maintenance of the baseline situation and/or the achievement of landscape planning policies and strategies.
Low	Not designated for landscape quality and likely to exhibit few indicators of value and likely to accommodate the type of change no or limited undue consequences for the maintenance of the baseline situation and/or the achievement of landscape planning policies and strategies.
Very low	Landscapes of very low value able to accommodate the type of change without undue consequences for the maintenance of the baseline situation and/or the achievement of landscape planning policies and strategies.

Magnitude of landscape impacts

- 1.1.40 Paragraph 3.28 of GLVIA3 (Ref 3) notes that the magnitude is informed by combining considerations relating to the “*scale, extent and duration*” of impacts. This includes the geographical extent of influence, the spatial extent of the impact, the level of integration of new features with existing elements, its duration and degree to which the impact is reversible.
- 1.1.41 In summarising the magnitude of landscape impacts, reference has been made to the following:
- 1) **Size or scale** - the degree to which key characteristics or features identified in the baseline would change, the proportion of the total extent that this represents and the contribution of that element to the character of the landscape. It is also influenced by the degree to which aesthetic or perceptual aspects of the landscape would be altered and whether this would change the key characteristics of the landscape;
 - 2) **Geographical extent** – the area over which the change would occur. For example, whether the effects of the Proposed Development are perceived over a large or very localised area;
 - 3) **Duration** – the time over which the change would occur, set out on the following scale: short term (0-5 years), medium term (5-15 years), or long term (over 15 years); and

- 4) **Reversibility** - related to whether the change can be reversed and is reported as reversible, partially reversible or permanent, e.g. effects arising from presence of construction traffic would cease at the end of construction and therefore are considered to be reversible, whereas effects arising from presence of new built development could be partially reversible or permanent.

- 1.1.42 LI TGN 01/24 (Ref 4) suggests that the size/scale of impacts is likely be the most important factor (point 3(3)). In point 5(11) it goes on to suggest that geographical extent should reflect the relevance of the location and that the spread of effects should be used as a 'modifier' to the scale of effect so that it does not understate the magnitude of effects for extensive receptors such as large character areas or designations. This is the approach taken in this assessment.
- 1.1.43 The criteria set out in Table 1-6 has been referred to in determining the magnitude of landscape impacts.

Table 1-6 Magnitude of landscape impacts criteria

Magnitude of impact	Typical description
Very high	Substantial changes to key characteristics across most of the area or to unique and distinctive features at a local level. May be longer term impacts and are more likely to be permanent than reversible.
High	Changes to the character of the landscape across large parts of the area or to distinctive features at a local level. May be longer term impacts, permanent or reversible.
Medium	Changes to the character of the landscape across parts of the area or to some existing features at a local level. May be medium term impacts, permanent or reversible.
Low	Slight change to landscape character or landscape features across a small area. May be short to medium term impacts and are more likely to be reversible than permanent.
Very low	Barely perceptible change to the landscape receptor or may impact a limited area or no key characteristics. May be short term impacts, permanent or reversible.

- 1.1.44 There may be cases where there would be no impacts on a receptor, for example where the design has been changed to avoid such impacts. In such cases this has been recorded as no change.

1.2 Assessment of visual effects

Visual baseline

- 1.2.1 Visual receptors are defined in GLVIA3 (Ref 3) as “*individuals and/or defined groups of people who have the potential to be affected by a proposal*” (Ref 3). This includes, for example, local communities, users of public rights of way and motorists.
- 1.2.2 Computer-generated zones of theoretical visibility (ZTV) have been prepared and these are presented in Figure 10.4.1: ZTV – Bare Earth (ES Volume 2) **[EN0110012/APP/LVS/06.02.10.04.01]** and Figure 10.4.2: ZTV - Screened (ES Volume 2) **[EN0110012/APP/LVS/06.02.10.04.02]**. GLVIA3 defines as ZTV as “*a map, usually digitally produced, showing areas of land within which a development is theoretically visible.*”
- 1.2.3 ZTVs do not indicate how much of the Proposed Development would be visible. The purpose of the ZTV is to:
- 1) Identify the theoretical extents of visibility of the Proposed Development i.e., areas from which it would not be visible and areas from which it could potentially appear in existing views;
 - 2) Assist in the identification of the Study Area;
 - 3) Identify areas of landscape and visual receptors likely to be affected by the Proposed Development;
 - 4) Identify locations that are representative of the views experienced by visual receptors at different locations within the Study Area (representative viewpoints); and
 - 5) Inform the design, including the extent and type of proposed mitigation.
- 1.2.4 ZTVs have been modelled using the ‘Viewshed’ tool in ESRI ArcPro GIS Software.
- 1.2.5 A bare earth ZTV (Figure 10.4.1 (ES Volume 2) **[EN0110012/APP/LVS/06.02.10.04.01]**) was prepared using digital terrain model (DTM) data with a resolution of 1m. This ZTV represent a worst-case scenario as it does not include features such as existing buildings or vegetation which can screen or filter views.
- 1.2.6 A further ZTV (Figure 10.4.2 (ES Volume 2) **[EN0110012/APP/LVS/06.02.10.04.02]**) has been prepared that includes models of existing buildings and woodland. This ZTV provides some understanding of potential screening or filtering of views of the Proposed Development, which has been further verified through fieldwork.
- 1.2.7 For all ZTVs an assumed viewing height of 1.7m above ground level has been used to simulate the eye level of a person at the top of the range set out in paragraph 6.11 of GLVIA3 to represent the worst-case scenario.

Visual receptors and representative viewpoints

- 1.2.8 Visual receptors are defined in GLVIA3 (Ref 3) as “*individuals and/or defined groups of people who have the potential to be affected by a proposal*”. This includes, for example, local communities, users of public rights of way and motorists.
- 1.2.9 Visual receptors likely to experience views of the Proposed Development have been identified through interrogation of the ZTV, desktop analysis of maps and aerial photography, and fieldwork surveys. They have subsequently been categorised into the following types:
- 1) Local communities;
 - 2) People travelling through the area; and
 - 3) People using parks and open spaces.
- 1.2.10 Where a collection of visual receptors in the same category are likely to experience similar views, they have been grouped. Representative viewpoints have been identified within the ZTV to assist in describing the baseline view and the effects likely to be experienced by visual receptor groups. These representative viewpoints were agreed with North Yorkshire Council in September 2025 and have been selected on the basis that they cover a range of viewing distances, elevations and orientations from locations with different viewing experiences of the Proposed Development. The selection of representative viewpoints has been informed by the following criteria:
- 1) Accessibility to the public;
 - 2) Number and sensitivity of people whose can be affected;
 - 3) Viewing direction, distance, openness and elevation; and
 - 4) Nature of the viewing experience.
- 1.2.11 The assessment has assumed an observer eye height consistent with the range of 1.5 m to 1.7 m recommended in paragraph 6.1 of GLVIA3. The ZTVs have applied the upper limit of 1.7 m to test a worst-case scenario, and all fieldwork and evaluation of views have been conducted at standing eye level, ensuring consistency with these parameters and providing a realistic validation of the visual effects.
- 1.2.12 It is acknowledged that some people use PRoW and lanes for horse riding. The eye height of horse riders is up to approximately 2.7 m above ground level. Whilst there could be some locations where the views of horse riders are more open than views of people at ground level, the differences are likely to be small and would not alter the magnitude of impacts or significance of effects reported in Chapter 10: Landscape and Visual (ES Volume 1) [EN0110012/APP/LVS/06.01.10] of the ES. Therefore, horse riders have not been identified as a separate visual receptor group.
- 1.2.13 Photographs taken in March, September, October, December 2025 and January 2026 are included in Appendix 10.4: Photography and Photomontages (ES

Volume 3) [EN0110012/APP/LVS/06.03.10.04] to help demonstrate the nature of baseline views including the extent of existing screening. These photographs are presented as Type 1 annotated photographs.

- 1.2.14 All photographs are prepared in accordance with Landscape Institute TGN 06/19. Baseline photographs are presented as Type 1 annotated photographs. Type 4 photomontages have also been prepared for selected viewpoints to illustrate the likely extent and nature of changes in baseline views.

Residential visual amenity

- 1.2.15 The Landscape Institute published Notes and Clarifications on aspects of the 3rd Edition Guidelines on Landscape and Visual Impact Assessment (GLVIA3) (LITGN-2024-01) (Ref 3) in August 2024. This confirmed that “*an LVIA should consider views from local communities focusing on the way that a community currently experiences views from public locations such as streets and open spaces and how those will change.*” It goes on to state that “*views from houses and individual properties are a matter of private amenity, noting that it is an established planning principle that there is no right to a view*”. Views of communities and groups of properties, or in some cases individual properties, have been considered within the LVIA with reference to publicly accessible, representative viewpoints.
- 1.2.16 Paragraph 5.10.22 of NPS EN-1 (Ref 1) states that “*the assessment should also address the landscape and visual effects of noise and light pollution, and other emissions (see Section 5.2 and 5.7), from construction and operational activities on residential amenity and on sensitive locations, receptors and views, how these will be minimised.*”
- 1.2.17 With respect to private views, LITGN-2024-01 (Ref 3) states that “*a residential visual amenity assessment (RVAA) should consider effects on private amenity for people in their homes and gardens in more detail (as set out in TGN 02/2019 Residential Visual Amenity Assessment (RVAA))*”. Paragraph 2.1 of TGN 02/2019 (Ref 10) explains that the purpose of RVAA is to “*provide an informed, well-reasoned answer to the question: ‘is the effect of the development on Residential Visual Amenity of such nature and/or magnitude that it potentially affects ‘living conditions’ or ‘Residential Amenity’?’*”, which is referred to as the ‘Residential Visual Amenity Threshold’. The threshold is not defined but relates to conditions where the living conditions of a property may be affected. Factors which might contribute to the threshold being reached may be different for different types of development, for example terms such as ‘overwhelming/overbearing’ for tall structures or ‘overly intrusive’ for a development overlooking a garden or principal room may be relevant. It explains in paragraph 2.5 that RVAA may be appropriate for “*properties in (relatively) close proximity to a development proposal, and which experience a high magnitude of visual change*”.
- 1.2.18 RVAA is a four-step process, with the first three steps being consistent with the methodology set out for the LVIA. The fourth step of RVAA would be carried out

“only for those properties where the largest magnitude of effect has been identified”.

- 1.2.19 The design of the Proposed Development has sought to avoid or minimise significant adverse residual effects on residents through the application of the Design Principles. This includes providing a minimum 30 m offset where practicable from the façades of residential properties to avoid situations where the living conditions of properties could be affected.
- 1.2.20 The LVIA has not identified residual effects on visual receptors which would be major adverse (the highest level of significance) during operation and therefore the threshold for residential visual amenity has not been breached and a Residential Visual Amenity Assessment (RVAA) is not required.

Sensitivity of visual receptors

- 1.2.21 Paragraph 6.31 of GLVIA3 (Ref 3) states that *“each visual receptor, meaning the particular person or group of people likely to be affected at a specific viewpoint, should be assessed in terms of both their susceptibility to change in views and visual amenity and also the value attached to particular views.”* The sensitivity of visual receptors results from a combination of parameters, such as:
- 1) The activity/occupation/ pastime of the receptors at particular locations;
 - 2) The extent to which their attention or interest may be focused on the views; and
 - 3) The visual amenity they experience.
- 1.2.22 Consideration has also been given to the:
- 1) Location, focus and orientation;
 - 2) Features or characteristics of value within the view;
 - 3) Principal or secondary interests;
 - 4) Static or kinetic nature of views; and
 - 5) Duration of the view.

Value attached to views

- 1.2.23 A three-stage process has been used to determine the value attached to views. This relates to the features and characteristics of the baseline landscape within the view and other indicators of value, for example reference in policy, guidebooks, literature or art.
- 1) **Stage 1:** identify if the view or the landscape within the view is covered by any relevant policy or designations and note features and characteristics of value with reference to the landscape baseline;
 - 2) **Stage 2:** identify if the view is identified on maps, is likely to be from a popular visitor location or has historical or cultural importance or associations; and

- 3) **Stage 3:** Determine the value attached to the view with reference to the criteria provided in Table 1-7 using the evidence from stages 1 and 2.

Table 1-7 Value attached to views criteria

Value	Typical description
Very high	Views within or across a nationally or internationally designated landscapes and/or specific views designated in national or regional policy. Views are likely to have few or no detracting features and which may also have strong cultural associations supported by evidence, which could include links to historical events or people, representation in art or literature, for example.
High	Views within or across regionally or locally designated landscapes, other or landscapes with strong indicators of value, or views identified in the development plan or evidence base. Views are likely to have few or no detracting features and may also have some cultural associations supported by strong evidence.
Medium	Views across landscapes which are unlikely to be designated but may exhibit some indicators of value which are identified in the development plan or evidence base and are important at the community level. Views may have some detracting features and cultural associations supported by evidence.
Low	Views across landscapes which are not designated for landscape quality and likely to exhibit few indicators of value which are identified in the development plan or evidence base. Views are likely to have some detracting features and lack cultural associations supported by evidence.
Very low	View across landscapes which are neither designated, nor identified in the development plan or evidence base, and without cultural associations. The landscape in the view is in poor condition or notably detracts from the experience of the view.

Susceptibility of visual receptors to change

- 1.2.24 The sensitivity of visual receptors is also dependent upon their susceptibility to changes in views and the visual amenity they experience.
- 1.2.25 Paragraph 6.32 of GLVIA3 explains that *“the susceptibility of different visual receptors to changes in views and visual amenity is mainly a function of:*
- 1) *The occupation or activity of people experiencing the view at particular locations; and*
 - 2) *The extent to which their attention or interest may therefore be focussed on the views and the visual amenity they experience at particular locations.”*
- 1.2.26 GLVIA3 notes that visual receptors *“most susceptible to change”*, include residents and visitors engaged in outdoor recreation *“whose attention or interest is likely to be focused on the landscape and on particular views”* (para 6.33).
- 1.2.27 Table 1-8 sets out the criteria referred to in determining the susceptibility of visual receptors to the Proposed Development.

Table 1-8 Susceptibility of visual receptors criteria

Susceptibility	Typical description
Very high	Visitors to nationally or internationally designated landscapes, particularly at specific viewpoints or viewing places, where views of the landscape are fundamental to the experience. People engaged in specific activities for enjoyment of dark skies.
High	Residents of local communities. Visitors to tourist hotspots, heritage assets or other attractions outside of nationally or internationally designated landscapes, particularly at specific viewpoints or viewing places, where views of the landscape are important to the experience. People engaged in outdoor recreation whose attention or interest is likely to be focussed on the landscape and on particular views, for example those using promoted walking and cycling routes. People travelling along promoted scenic routes.
Medium	People engaged in outdoor recreation or travelling along public rights of way or local roads, which are not promoted routes but where an appreciation of the surrounding landscape are relevant to the experience. People working outdoors.
Low	People engaged in outdoor sport or recreation which does not involve or depend upon appreciation of views of the landscape People travelling on major road, rail or other transport routes which are not recognised as scenic routes.
Very low	People working indoors.

Summarising the sensitivity of visual receptors

1.2.28 The sensitivity of visual receptors is based on professional judgement and has been informed by the criteria in Table 1-9, considering the value attached to views and susceptibility of visual receptors to the changes proposed.

Table 1-9 Sensitivity of visual receptors criteria

Criteria	Typical description
Very high	Activity where views are fundamental to the experience and are related to landscapes with national or international designation and with few or no detracting features and which may also have strong cultural associations supported by evidence.
High	Activity resulting in a particular interest or appreciation of the view and/or views within or across regionally or locally designated landscapes, other or landscapes with strong indicators of value, or views identified in the development plan or evidence base with few or no detracting features and may also have some cultural associations supported by strong evidence.
Medium	Activity resulting in a general interest or appreciation of the and/or a view, likely to exhibit some indicators of value which are identified in the development plan or evidence base and are important at the community level.

Criteria	Typical description
Low	Activity where interest or appreciation of the view is secondary to the activity or the period of exposure to the view is limited, and/or views across landscapes which are not designated for landscape quality and likely to exhibit few indicators of value and likely to have some detracting features and lack cultural associations supported by evidence.
Very low	Activity where interest or appreciation of the view is inconsequential to their activity, and/or across landscapes which are neither designated, nor recognised in policy, and without cultural associations or is in poor condition or notably detracts from the experience of the view.

Magnitude of visual impacts

- 1.2.29 The magnitude of visual impacts relates to the extent to which the baseline view would change as a result of the Proposed Development. This assessment has been made with reference to fieldwork observations, photographs and photomontages where relevant from the representative viewpoints identified.
- 1.2.30 Paragraph 3.28 of GLVIA3 (Ref 3) notes that magnitude is informed by combining considerations relating to the “*scale, extent and duration*” of impacts. This includes the geographical extent of influence, the spatial extent of the impact, the level of integration of new features with existing elements, its duration and degree to which the impact is reversible.
- 1.2.31 Reference has been made to the following in summarising the magnitude of visual impacts:
- 1) **Size and scale** – loss of existing features or addition and integration of new features and the time over which it has been experienced and whether views has been full, partial or glimpsed.
 - 2) **Geographical extent** – the angle of view in relation to the main activity of the receptor, the distance of the viewpoint from the Proposed Development and the extent of the area over which the changes would be visible, including whether views are fixed or sequential.
 - 3) **Duration and reversibility** – the time over which the change would occur, set out on the following scale: short term (0-5 years), medium term (5-15 years), or long term (over 15 years).
- 1.2.32 LI TGN 01/24 (Ref 3) suggests that the size/scale of impacts is likely be the most important factor (3(3)). In point 5(11) it goes on to suggest that geographical extent should reflect the relevance of the location and that the spread of effects should be used as a ‘modifier’ to the scale of effect so that it does not understate the magnitude of effects for extensive receptors such as large character areas or designations. This is the approach taken in this assessment.
- 1.2.33 Consideration has also been given to the conclusions of the Glint and Glare Assessment, which is included Appendix 16.4 (ES Volume 3) [EN0110012/APP/LVS/06.03.16.04] of this ES, in determining the magnitude of visual impacts for relevant visual receptor groups.

1.2.34 The magnitude of visual impact has been defined by combining judgements on size or scale, geographical extent, duration and reversibility, with reference to Table 1-10, based on guidance from GLVIA3.

Table 1-10 Magnitude of visual impacts criteria

Magnitude of impact	Typical description
Very high	The Proposed Development would result in extensive changes to the character and composition and has become the dominant feature of the landscape within the view. There may be longer term impacts, permanent or reversible.
High	The Proposed Development would change the character and composition of large parts of the landscape within the view. There may be longer term impacts, permanent or reversible.
Medium	The Proposed Development would change the character and composition of discrete parts of the landscape within the view. There may be medium term impacts, permanent or reversible.
Low	The Proposed Development would cause small changes to the character and composition of the landscape within the view. There may be short to medium term impacts, permanent or reversible.
Very low	The development would cause barely perceptible changes in the character and composition of the landscape within view. May be short term impacts, permanent or reversible.

1.2.35 There may be cases where there has been no impacts on a receptor, for example where the design has been changed to avoid such impacts. In such cases this has been recorded as no change.

Significance of landscape and visual effects

1.2.36 The approach to determining the level of landscape effects and visual effects and whether these effects are considered significant in EIA terms would be the same.

1.2.37 Judgements on the sensitivity of each receptor and the magnitude of impact have been combined to establish the level of effect and this has informed whether effects are considered significant in EIA terms. There are important distinctions between these two terms:

- 1) Level of effect relates to the level recorded for any effect, with reference to the matrix set out in Table 1-11 below.
- 2) As a general rule, an effect in this LVIA is considered significant in EIA terms if the level of effect is major or moderate. All other effects have been categorised as not significant.

1.2.38 As noted in 3(6) of LI TGN 01/24 (Ref 3), LVIA is a means of documenting professional judgement, rather than a formulaic process. Table 1-11 has been used to guide judgements on the relationship between the sensitivity of a visual receptor, the magnitude of impact and the resulting level of effect. In cases where this table provides two potential categories of significance, a reasoned

justification is provided to explain which category has been applied and why effects are considered significant or not significant. Where conclusions differ from this guide, a reasoned explanation is provided in the assessment text.

Table 1-11 Significance of landscape and visual effects

		Magnitude of impact				
		Very high	High	Medium	Low	Very low
Sensitivity	Very high	Major	Major	Major or Moderate	Moderate	Moderate or Minor
	High	Major	Major or Moderate	Moderate	Moderate or Minor	Minor
	Medium	Major or Moderate	Moderate	Moderate or Minor	Minor	Minor or Negligible
	Low	Moderate	Moderate or Minor	Minor	Minor or Negligible	Negligible
	Very low	Moderate or Minor	Minor	Minor or Negligible	Negligible	Negligible

1.2.39 The identification of the likely significant effects on landscape and visual receptors has relied on detailed analysis and the professional judgement of competent experts, and consultation with stakeholders.

1.2.40 Point 3(7) of LI TGN 01/24 (Ref 3) states that “*the level of effect and whether it will have a positive or negative (or neutral) consequence are independent of each other*”. Whether effects are adverse, beneficial or neutral is determined by considering the way in which the changes are likely to affect the baseline:

- 1) Adverse effects are likely to occur where the Proposed Development introduces new elements or changes which are discordant or intrusive resulting in a deterioration to existing character or valued features of the landscape or of views and visual amenity.
- 2) Beneficial effects are likely to occur where the Proposed Development enhances the character of the landscape or existing views.
- 3) Neutral has been used to describe a categorisation of effect. Paragraphs 5.37 and 6.29 of GLVIA3 state that is possible for effects to be neutral in their consequences for landscape and for visual receptors. Where a judgement of neutral effects has been reached, reference has been made to the contribution of the Proposed Development to the baseline and acknowledging the positive and negative aspects which have been considered.

1.2.41 Where the assessment has concluded that there would be no impacts on a receptor, this is reported as no effect. This may, for example, be a consequence

of changes to the design which has avoided impacts on receptors identified at the EIA scoping stage.

- 1.2.42 Residual effects are those which remain even with embedded or primary mitigation at construction and year 15 of existence and operation and which cannot be further mitigated by design or other measures in this time period.

Photography, surveying and visualisation methodology

Baseline photography

- 1.2.43 Baseline photographs from each viewpoint are provided to show the existing 'baseline' conditions, with photography taken both in winter (when deciduous vegetation is not in leaf, therefore views across the landscape are most open), and summer (when deciduous vegetation is in leaf, and views across the landscape may be more limited). Baseline photography is presented as 90-degree panoramas on an A1 sheet in technical compliance with the Landscape Institute's (LI) Technical Guidance Note 06/19, Type 1 (Ref 3).

Verifiable photomontages

- 1.2.44 Verified visualisations accurately add the maximum parameters of the Proposed Development to the baseline photography. Photomontages help to understand the likely extent of changes resulting from the Proposed Development, for example through introduction of new built elements or structures, changes in ground level, and loss of vegetation or other landscape features.
- 1.2.45 Visual Representation of Development Proposals, Technical Guidance Note 06/19 (Landscape Institute, 2019) sets out two classification systems relevant to visualisations, both of which are referred to in this methodology. The guidance primarily classifies visualisations as 'Type 1, Type 2, Type 3 and Type 4', the definitions of which are mostly to do with the degree of accuracy and sophistication in the location and scaling of a representation of the proposal.
- 1) 'Type 1 – Annotated Viewpoint Photograph': these simply show the extent of the site within the view, and annotate any key features within the view, overlaid onto photographic context
 - 2) 'Type 2 – 3D Wireline / Model': includes a range of computer-generated visualisations and models, but presented without any photographic context
 - 3) 'Type 3 – Photomontage / Photowire': visualisations overlaid onto a photographic base with a 'reasonable level of locational and photographic accuracy'; no requirement for verification data to be provided
 - 4) 'Type 4 – Photomontage / Photowire (survey / scale verifiable)': visualisations overlaid onto a photographic base with 'the highest level of

accuracy and verifiability'; quantifiable verification data and procedural transparency must be provided.

- 1.2.46 The LVIA presents LI Type 1 annotated viewpoint photographs for all viewpoints and LI Type 4 photomontages for a selection of viewpoints.
- 1.2.47 The guidance also refers to the London View Management Framework (2012) levels of 'Accurate Visual Representations' (AVR) classification, which are based on the degree of sophistication of the graphic imagery (as opposed to the degree of accuracy and transparency of location and scaling) used to represent the development.
- 1) 'AVR Level 0': location and size only, i.e. 'photowire', or 'wireline', showing the outline of the location and extents of a proposal overlaid onto a photograph base
 - 2) 'AVR Level 1': location, size, and degree of visibility, i.e. the basic massing of the proposal is shown within the 3D context of the photograph base; graphic editing is undertaken so that any elements the proposal which would sit behind elements of the landscape within the photograph are masked out of view
 - 3) 'AVR Level 2': as level 1, with additional representation of architectural form. Adds a level of detail to the representation of the proposals, such as doors, windows, floors, roofs (for buildings), and the form and shading of the development within its context.
 - 4) 'AVR Level 3': as level 2, with additional 'photo-realistic' rendering of surface textures, colours, reflections and shading.
- 1.2.48 The photomontages that support the LVIA illustrate the maximum parameters of the Proposed Development.

Viewpoint photography specification

- 1.2.49 All baseline photographs have been taken by specialist professional photographers. Each viewpoint location was accurately surveyed and identified using Ordnance Survey national grid coordinates.
- 1.2.50 The heights and distances of important points within each view that are easily distinguishable and the level datum and geospatial accuracy was recorded and checked relative to the fixed camera position.
- 1.2.51 The survey points for each viewpoint provided an effective check for ensuring that the 3D model and existing views were accurately merged.
- 1.2.52 A panoramic ('Pano') head, mounted on top of a tripod, controlled the angle between adjacent photographs. A 50 mm lens was used with an approximately 39.6° viewing angle and a setting of 15° interval between each photograph. This

minimised edge distortion and helped guide the view angle of any given panoramic shots.

1.2.53 For all photographs, the following data was recorded:

- 1) EXIF data is provided in the file properties;
- 2) Focal length;
- 3) Aperture, shutter speed, ISO;
- 4) Lens and camera body;
- 5) Date and time;
- 6) Other data (marked on each file in a separate layer):
 - a) Focal length (to three decimal places where applicable);
 - b) The lens axis;
 - c) The details of height over survey point (between 1.5 m and 1.70 m high);
 - d) Field of view (FoV);
 - e) Image dimensions;
 - f) Film gate size; and
 - g) Date and time.

Viewpoint survey specification

1.2.54 Each individual observation setup achieved an accuracy of + or – 45 mm to Ordnance Survey national grid / datum. All superimposed elements have been positioned accurately within each image by using the data supplied by the surveyors. Each image has a minimum of 10-12 clearly defined detail points recorded across the width of the image and at near, mid and far distances to achieve a balance of points in the photograph. Clearly defined points were used, for example the corners of road markings, features on road signs, the corners of building tops or roofs or window corners etc. Point numbers are unique and relate to the viewpoint number. All final panoramic images have a minimum vertical FoV of 27 degrees.

1.2.55 A DWG file was provided by the surveyors containing the detail points and camera positions as vertical lines. A spreadsheet of the coordinated points was provided (including the camera locations) with annotated descriptions.

1.2.56 Field survey equipment comprised the following:

- 1) Total Station Electronic Theodolite
- 2) TCR1205BT R1000 (1205+) equipped with Bluetooth Tripods
- 3) (x3) Wooden GST20-09 Traverse
- 4) Forced centring tribrach GDF122 – Pro
- 5) Spigots GRT144
- 6) Prism Carriers GPH1
- 7) Circular Prisms GPR1

- 8) GPS Antenna: ATX1230 Glonass equipped and enabled
- 9) GPS handheld controller: RX1250XC
- 10) Carbon Fibre Prism Pole and GPS controller mount for SmartRover Operation

1.2.57 The GPS equipment was connected to the Leica Smartnet software on the internet via an onboard mobile telephone. This provided a real-time solution to the following accuracy:

- 1) The horizontal accuracy is 10 mm+ 1 ppm.
- 2) The vertical accuracy is 20 mm + 1 ppm.

Model quality and accuracy

1.2.58 Three-dimensional models were used, reflecting the design as described in Chapter 2: The Proposed Development (ES Volume 1) [EN0110012/APP/LVS/06.01.02]. This included a digital terrain model (DTM) of the site, as well as additional elements such as the maximum parameters of proposed solar panel arrays and substation, access tracks, fencing, switchgear, transformers and, where appropriate, detailed trees and vegetation. The verification process confirmed the accuracy of the 3D model in relation to each existing view. The details of the Ordnance Survey national grid co-ordinates for each viewpoint and the angle of each view were checked.

1.2.59 The process involved accurately positioning the 3D model of the Proposed Development within each existing view. This was achieved through a process of matching the surveyed points in the digitised image with those recorded by the survey team on the existing photographs.

1.2.60 The survey points and specifications of the lens type relating to each existing view were entered into 3DS Max software. The survey points of the camera position and those relating to specified objects within each baseline image were then highlighted on the digitised image. This additional check ensured that the survey points matched precisely. Once the process of camera matching was complete, the 3D model of the Proposed Development was accurately positioned within each of the existing views. This was achieved by rendering the camera matched 3D of the Proposed Development within 3DS Max software at the same size as the digitised existing view.

Rendering

1.2.61 'Vray Rendering Engine' was chosen to render the visualisations as it is the most used in the architectural and engineering industry. It utilises the 'physical Sun and Sky and Compass System' and provides physically accurate full global illumination solutions. This was used to produce accurate renders of the 3D

elements which are used to produce the verified photowire visualisations.

Recommended viewing

- 1.2.62 Panoramic views have been provided with a horizontal FoV of 90-degrees, which LI TGN 06/19 suggests closely matches human vision when looking ahead, making it effective for assessing potential visual changes in the landscape. This reduces distortion while still capturing context, helping to judge the scale and potential visual prominence of the Proposed Development.
- 1.2.63 A vertical FoV of 27.6 degrees has also been used for these scaled panoramas which emulates the vertical FoV of a 50 mm lens.
- 1.2.64 In accordance LI TGN 06/19, viewing distances of approximately arm's length (typically between 500-550 mm) are the most practical and widely used for printed visualisations. When viewed digitally, it is recommended that the image is enlarged so that it fills the full height of the screen to approximately replicate the intended scale and perspective. These approaches ensure that visualisations provide a reasonable impression of the scale of the development and the distance to the Proposed Development.

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