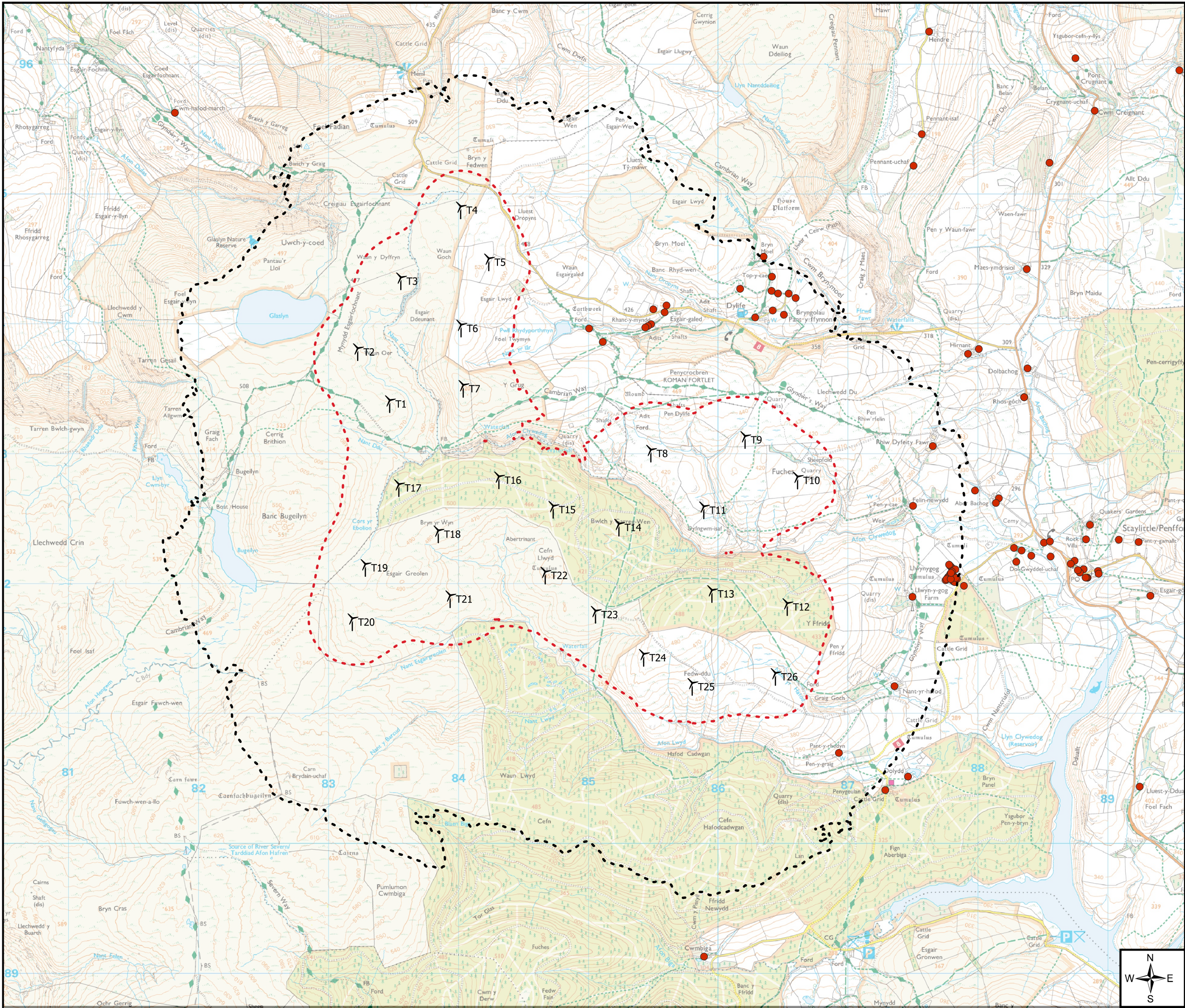


APPENDIX I – NOISE AND VIBRATION FIGURES



LEGEND:

- L90 45dB
- L90 35dB
- ⌵ Wind turbine
- Noise Sensitive Receptor [104]

01	27/11/23	Issue for scoping comment	NM	DC
REV	DATE	DESCRIPTION	BY	APR.



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Client

Bute Energy Ltd

Project Name

Esgair Galred Wind Farm

Drawing Title

Figure 6.8.1: Indicative Noise Contour and Potential Noise Monitoring Locations

Scale	1:27607	Orig. Size	A3	Project No.	20619364	
Drawing No.	2061964-RSKA-DR-001-(01)				Status	S3

APPENDIX J - PROPOSED STRUCTURE OF ENVIRONMENTAL STATEMENT

Proposed Structure of the Environmental Statement

At this stage, it is anticipated that the ES will be structured as follows:

Volume I: Non-Technical Summary

Volume II: Main Text;

- Chapter 1: Introduction
- Chapter 2: Description of the Site and Surrounding Area
- Chapter 3: Description of the Proposed Development
- Chapter 4: Consideration of Alternatives
- Chapter 5: Approach to EIA
- Chapter 6: Landscape and Visual
- Chapter 7: Terrestrial Ecology
- Chapter 8: Ornithology
- Chapter 9: Cultural Heritage
- Chapter 10: Land, Soil, and Water
- Chapter 11: Climate
- Chapter 12: Noise and Vibration
- Chapter 13: Traffic and Transport
- Chapter 14: Cumulative Effects
- Chapter 15: Summary of the ES

Volume III: Supporting Technical Appendices

Volume IV: Supporting Figures and Plans

APPENDIX K – SIGNIFICANCE CRITERIA

Landscape and Visual

Scope

The Landscape and Visual Impact Assessment (LVIA) Chapter of the Environmental Statement (ES) will assess effects on the physical landscape within the site boundary, together with the wider landscape character and visual amenity extending to a distance of 30 km from the outermost turbine. The LVIA will assess the construction, operational and decommissioning phase of the Proposed Development, which would last up to 40 years.

Guidance

The assessment will adopt a methodology developed in accordance with the following current guidance:

- Guidelines for Landscape and Visual Impact Assessment, Third Edition. Landscape Institute with the Institute of Environmental Management and Assessment (2013);
- Assessing the Cumulative Impact of Onshore Wind Energy Developments, NatureScot, (March 2021);
- Siting and Designing Wind Farms in the Landscape, Version 3, NatureScot (2017);
- NRW Guidance Note 046, 'Using LANDMAP in Landscape and Visual Impact Assessments, (LVIA),' January 2021;
- Visual Representation of Wind Farms, Version 2.2, NatureScot (February 2017);
- Visual Representation of Development Proposals – Technical Advice Note 06/19, Landscape Institute (September 2019), including supporting Technical Information Notes 07/19, 08/19 and 09/19;
- An Approach to Landscape Sensitivity Assessment – To Inform Spatial Planning and Land Management, Natural England (June 2019); and
- Assessing Landscape Value Outside National Designations -Technical Guidance Note 02/21, Landscape Institute (2021).
- Guidelines for Landscape and Visual Impact Assessment, Third Edition. Landscape Institute with the Institute of Environmental Management and Assessment (2013);
- Assessing the Cumulative Impact of Onshore Wind Energy Developments, NatureScot, (March 2021);
- Siting and Designing Wind Farms in the Landscape, Version 3, NatureScot (2017);

- NRW Guidance Note 046, 'Using LANDMAP in Landscape and Visual Impact Assessments, (LVIA),' January 2021;
- Visual Representation of Wind Farms, Version 2.2, NatureScot (February 2017);
- Visual Representation of Development Proposals – Technical Advice Note 06/19, Landscape Institute (September 2019), including supporting Technical Information Notes 07/19, 08/19 and 09/19;
- An Approach to Landscape Sensitivity Assessment – To Inform Spatial Planning and Land Management, Natural England (June 2019); and
- Assessing Landscape Value Outside National Designations – Technical Guidance Note 02/21, Landscape Institute (2021).

The assessment will be in accordance with best practice guidance. To provide a less prescriptive approach, there will be an emphasis on creating a narrative approach to describing the landscape and visual effects and any judgements made on their significance. The assessment will follow the methodology set out below.

Effects on Landscape Character

The first stage of the assessment establishes the existing character, value and the susceptibility of landscape receptors to accommodate the Proposed Development without undue consequences for the maintenance of the baseline situation or achievement of landscape planning policies and strategies.

Combining judgements made on susceptibility to change (**Table K1.1**) and value (**Table K1.2**) enables a considered judgement to be made on the level of sensitivity (**Table K1.3**) to be apportioned to each defined Landscape Character Area (LCA) within the study area.

Landscape Susceptibility

The following parameters will be applied in determining the susceptibility of the landscapes within the study area, in accordance with **Table K1.1**:

- Landscape condition;
- Existing land-use;
- The pattern and scale of the landscape;
- The scope for mitigation, which would be in character with the existing landscape; and
- The degree to which a particular element or characteristic that contributes to the landscape character can be replaced or substituted; and
- Distance of the LCA from the Proposed Development; and
- Degree to which views contribute to the setting of the landscape.

Table K1.1: Susceptibility of Landscape Receptors to Change (Source: Soltys Brewster)

Susceptibility	Description
High	A landscape where the majority of attributes are unlikely to withstand change from the type of development proposed without causing a change to overall character to the extent that it would be difficult or impossible to restore. The prevalence and condition of landscape characteristics is also likely to be high.
Medium	A landscape with a combination of attributes that is capable of absorbing some degree of change from the type of development proposed without affecting overall character. Restoration of landscape character may be possible. The prevalence and condition of landscape characteristics is likely to be medium.
Low	A landscape where the majority of attributes are robust and/or tolerant of change from the type of development proposed to the extent that change or development would have little or no effect on overall character. It is likely to be easily restored and the prevalence and condition of landscape characteristics is likely to be low.

Landscape Value

Table K1.2: Landscape Value (Source: Soltys Brewster)

Value	Description
Outstanding	Landscapes which are outstanding of value by nature of their scenic quality, aesthetic and perceptual characteristics. They will have a strong sense of place that will be reinforced through their visual and sensory, historic, cultural, geological or landscape habitat importance. These areas will be important tourist destinations and may be of national or international importance as defined by statutory designations.
High	Landscapes which are of high value by nature of their scenic quality, aesthetic and perceptual characteristics. They may have a distinctive sense of place that may be reinforced through some visual and sensory, historic, cultural, geological or landscape habitat importance. These areas may be tourist destinations and may be of regional or county importance as defined by statutory and local authority designations.
Medium	Landscapes which are of medium value by nature of their scenic, aesthetic and perceptual characteristics. Sense of place is unlikely to be perceived as distinctive, although some visual and sensory, historic, cultural, geological or natural habitat features may be of note. The area may have some tourist associations, though tourism is not the primary attraction. These areas may be of local importance as defined by local authority designations.
Low	Landscape which are of low value by nature of their scenic quality, aesthetic and perceptual characteristics. Very little coherent character and a weak sense of place and are unlikely to be rare in terms of character type. They are unlikely to contain tourist attractions, or to be of local importance as defined by local authority designations.

Landscape Sensitivity

Sensitivity is a reflection of judgements made on the susceptibility and value of the landscape as outlined below.

Susceptibility

- Landscapes with higher susceptibility may be those where the character of the landscape offers very limited opportunities for the accommodation of change without key characteristics being fundamentally altered by wind energy development, leading to a different landscape character. Landscapes with lower susceptibility may be those where the character is resilient to being changed by wind energy development, perhaps due to the large scale of the landscape, simplicity or the presence of contemporary man-made features.

Value

- Higher value landscape may be those, for example, with high scenic quality, high conservation interest, recreational value, important cultural associations, or a high degree of rarity, such as National Parks. Conversely, lower value landscapes may be those that are of poor condition and/or intactness, limited aesthetic qualities, or of character that is widespread and are unlikely to be formally designated.

Table K1.3: Landscape Sensitivity (Source: Soltys Brewster)

Sensitivity	Description
High	A landscape typically of outstanding or high value that may have key characteristics that may have a high sensitivity to wind farm development of the size proposed. The landscape may be highly susceptible to change and is likely to be designated at an international, national or regional level.
Medium	A landscape typically of medium value that will have a range of characteristics, with varying degrees of tolerances and sensitivities to wind farm development of the size proposed. The landscape may be of medium susceptibility to change and may be designated at a national or regional level.
Low	A landscape typically of low value that will have key characteristics that will be tolerant of wind farm development of the size proposed. The landscape may be of low susceptible to change and is unlikely to be designated.
Negligible	A landscape of no recognised value and where landscape characteristics will be entirely tolerant of the wind farm development of the size proposed.

Magnitude of Landscape Impacts

The second stage of the assessment establishes the magnitude of impact on landscape character. The criteria for informing the magnitude of impacts are illustrated in **Table K1.4**.

Table K1.4: Magnitude of Landscape Impacts (Source: Soltys Brewster)

Magnitude	Description
High	The proposed development would result in a large-scale loss or alteration to key elements of landscape character. The extent of the impact will result in a considerable change. Impacts may occur over a wide area and would likely be permanent or long-term.
Medium	The proposed development would result in a moderate loss or alteration to key elements of landscape character. The extent of the impact will result in a partial change to landscape character. Impacts may extend over a notable area and may be long-term.
Low	The proposed development would result in a minor scale loss or alteration to key elements of landscape character. The extent of the impact will result in a slight change to landscape character. Impacts may extend over a limited area and may be medium to long-term.
Negligible	The proposed development would result in such a minor scale loss or alteration to key elements of landscape character that there would be no perceptible impact.

Significance of Landscape Effects

The third stage of the assessment establishes the significance of effects on landscape character. This is determined by combining the sensitivity (**Table K1.3**) of the LCA with the magnitude of impact (**Table K1.4**) that would occur as a result of the Proposed Development.

Figure K1.1 has been used as guidance in combining judgements on sensitivity and magnitude of impact to determine the significance of effects on landscape character. This is adapted from the version provided in IEMA's Special Report entitled 'The State of Environmental Impact Assessment Practice in The UK' (2011). The significance of the effect is defined in **Table K1.5**.

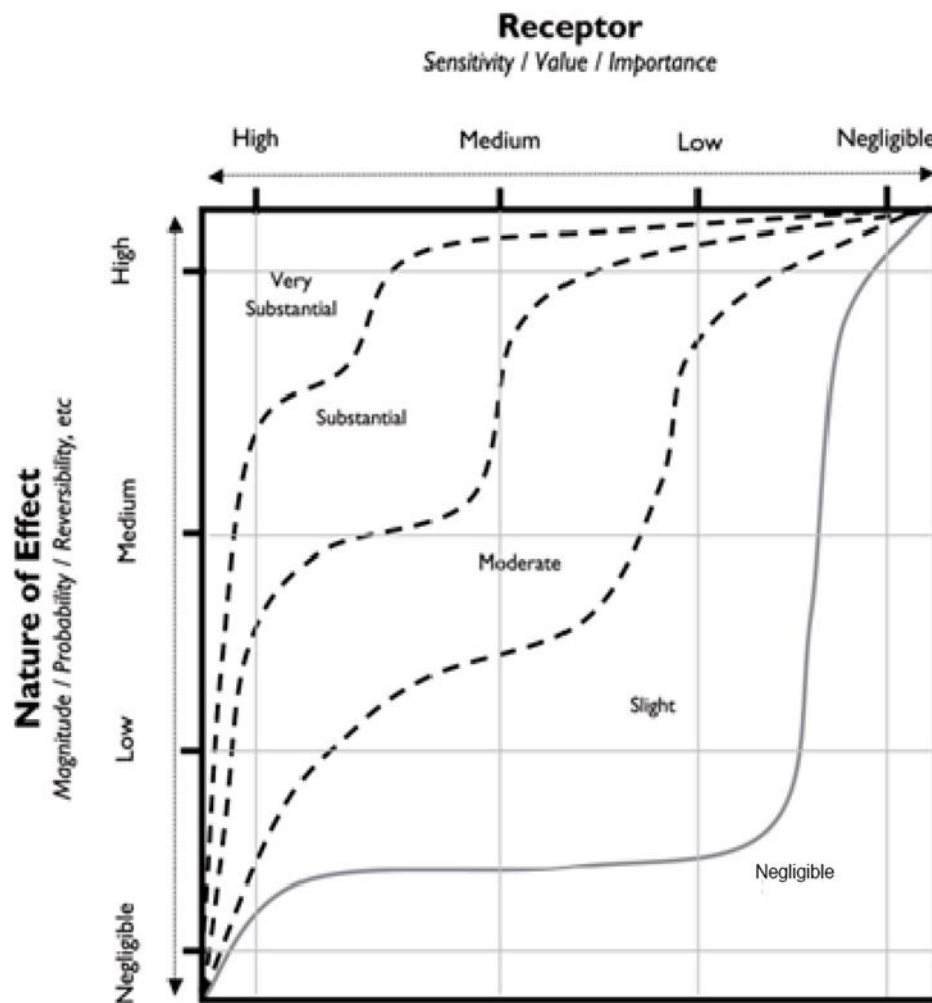


Figure K1.1: Significance of Effects on Landscape Character

Table K1.5: Significance of Landscape Effects (Source: Soltys Brewster)

Significance	Description
Very Substantial	The proposed development will become a defining landscape characteristic across a significant proportion of the LCA. The landscape may be categorised as being of high sensitivity and magnitude, but not exclusively so.
Substantial	The proposed development is likely to become a prominent, but not necessarily defining landscape characteristic across a wide proportion of the LCA. The landscape may be categorised as being of medium to high sensitivity and magnitude, but not exclusively so.
Moderate	The proposed development is likely to be a component of landscape. However, it may not become a defining landscape characteristic. The landscape may be categorised as being of medium sensitivity and magnitude, but not exclusively so.
Slight	The proposed development is likely to be integrated into the existing landscape without having a material effect upon any key landscape attributes. The landscape may be categorised as being of low sensitivity and magnitude, but not exclusively so.

Significance	Description
Negligible	The proposed development will have a barely discernible impact on the existing landscape and there will be no material effect upon any key landscape attributes. The landscape may be categorised as being of negligible sensitivity and magnitude, but not exclusively so.

Effects determined to have substantial landscape significance or above will be considered to be significant. Conversely, effects determined to be slight will be considered not significant.

Where effects are determined to have moderate significance, whether these effects are significant or not significant will depend on the individual and specific mitigating circumstances and the professional opinion of the landscape specialist will determine this. If any given receptors are subject to a series of moderate effects, such as a long a path or road corridor, the combined effects may be considered to be significant.

A precautionary approach has been adopted and, unless otherwise stated, all effects are considered to be adverse.

Effects on Visual Amenity

The first stage of the assessment establishes the susceptibility and value of visual receptors to change from each of the agreed viewpoint locations. Combining judgements made on susceptibility and value enables a considered judgement to be made on the level of sensitivity to be apportioned to the viewpoint receptor. It should be acknowledged that there may be a range of receptor types at each viewpoint location. However, the assessment focusses on the most likely sensitive groups of receptor types. The criteria for informing the susceptibility of visual receptors, their value and sensitivity are illustrated in **Tables K1.6, K1.7 and K1.8**.

Susceptibility of Visual Receptors to Change

Table K1.6: Susceptibility of Visual Receptors to Change (Source: Soltys Brewster)

Susceptibility	Description
High	May typically include residents of properties, including private houses, caravans, B&Bs, guest houses and hotels where the main view is orientated towards the proposed wind farm development, or people undertaking recreation where the landscape within which the wind farm development is seen as the primary reason for attraction or reason for visit (e.g. walkers and hikers on recognised footpaths, open access land, rights of way and scenic route users and inshore recreational boat users). Receptors are more likely to be within a recognised tourist attraction where views of the surroundings are an important contributor to the experience. It is unlikely that receptors will be able to accommodate any degree of new visual elements of the type proposed, by virtue of their location, distance from the proposed development and nature or existing visual qualities and elements.
Medium	May typically include people undertaking recreation, which is site or activity focussed, e.g., hunting, shooting, angling, nature

Susceptibility	Description
	conservation, golf, water-based activities, cultural heritage based activities (e.g., visitors to an historic park or building); outdoor workers or travellers on road, rail, ferries or other transport routes. Receptors are able to accommodate a degree of new visual elements of the type proposed, by virtue of their location, distance from the proposed development and nature/or existing visual qualities and elements. Receptors may be susceptible to change, although less likely to be at a recognised tourist attraction where views of the surroundings are an important contributor to the experience.
Low	May typically include people engaged in outdoor sport, either on land and on the water or undertaking a recreation that does not involve or depend on appreciation of views of the landscape; people at work, whose attention would not be focused on the surrounding landscape and whose setting is not typically important to the quality of their working life. Receptors where new visual elements of the type proposed may be readily accommodated, by virtue of location, distance from the proposed development, nature or existing visual qualities and elements. Receptors will not be at a location recognised as a tourist attraction where views of the surroundings are an important contributor to the experience.

Value Attached to the View

Table K1.7: Value Attached to the View (Source: Soltys Brewster)

Value	Description
High	Location where the views are widely acknowledged through reference to them in officially promoted guide-books and leaflets or referenced in literature or art and are of primary importance to the receptors experience and perception of the view. Provision of facilities that specifically promote the enjoyment of the view, including views towards the proposed development will be present such as seating and interpretation boards. Views may contribute to the setting of internationally/nationally designated landscapes or features. Views towards the wind farm development may be more typically unrestricted and or panoramic and would be devoid of detractor elements.
Medium	Location where the view positively contributes to the setting of the area at a local level. Views may contribute to the setting of regional/locally designated landscapes or features. Provision of facilities, such as seating and interpretation boards, but these are unlikely to be related or connected to the enjoyment of the view, including views towards the proposed development. Views towards the wind farm development may be more typically primary, direct or open, and may have some detracting elements.
Low	Location where the view is not documented or associated with a designated landscape. The views will not be acknowledged or provided for in terms of facilities. Views towards the wind farm development may be more typically secondary, oblique or filtered, and may have multiple detracting elements.

Sensitivity of Visual Receptors

The significance of effects on visual amenity will be determined by combining the sensitivity of the visual receptors with the magnitude of visual change that would occur.

Sensitivity is a reflection of judgements made on the value and susceptibility of visual receptors as outlined below.

Value

- Higher value may relate to views that may be recorded in management plans, guide books, or may be associated with designated landscapes; or designed views recorded in citations for historic parks and gardens or other cultural features. Lower values may relate to views which may not be documented or protected. They may also perhaps be views which are more incidental, and less likely to be associated with somewhere people travel to or stop.

Susceptibility

- Higher susceptibility visual receptors may be those whose attention or interest is focused on their surroundings, including communities/ individual residential receptors/ people engaged in outdoor recreation/ visitors to heritage assets or other attractions where views of surrounding landscape are an important contributor. Lower susceptibility visual receptors may be those whose attention is not on their surroundings (and where setting is not important to the quality of working life) such as commuters/ people engaged in outdoor sports/ people at their place of work where views of the surrounding landscape is not an important contributor.

Table K1.8: Sensitivity of Visual Receptors (Source: Soltys Brewster)

Sensitivity	Description
High	The majority of receptors would be particularly responsive to wind farm development of the size proposed, by virtue of their location, nature and/or existing visual qualities and elements. Receptors are likely to have a high susceptibility to change and considered to be at a location that may be valued for its views or may contribute to the setting of internationally/ nationally designated landscapes or features Receptors would typically include occupiers of residential properties and people engaged in recreational activities in the countryside such as designated long-distance footpaths or other promoted walking or recreational routes.
Medium	The majority of receptors are able to accommodate some new visual elements of the type proposed, by virtue of their location, nature and/or existing visual qualities and elements. Receptors are likely to have a medium susceptibility to change and considered to be at a location that may be valued for its views at a local level. Receptors would typically include residents or people engaged in recreational activities in the countryside or on water such as using local public rights of way, National Cycle Routes (NCR).
Low	The majority of receptors are unlikely to be responsive to wind farm development of the size proposed, by virtue of their location, nature and/or existing visual qualities and elements, but not exclusively so. Receptors are likely to have a low susceptibility to change and not

Sensitivity	Description
	considered to be at a location that is recognised or valued for its views. Receptors would typically include people undertaking outside work, such as farmers or a sporting activity that is unconnected with the landscape.
Negligible	Receptors are able to accommodate a high degree of new visual elements of the type proposed by virtue of their location, nature and/or existing visual qualities and elements. Receptors will have a low susceptibility to change and not be at a location valued for its views. Receptors would typically include people at a place of work, such as an in an office/factory worker or people travelling through the landscape on roads (excluding scenic routes)/railways.

Magnitude of Visual Impacts

The second stage of the assessment establishes the magnitude of impacts on visual amenity. The criteria for informing the magnitude of impacts are illustrated in **Table K1.9**.

Table K1.9: Magnitude of Visual Impacts (Source: Soltys Brewster)

Magnitude	Description
High	The proposed development would be immediately apparent as a very large-scale feature that would occupy a wide proportion of the view, contrasting with existing features such as the extent and nature of other built development visible within the view, including vertical elements. The proposed development is likely to be visually dominant and would affect and change the overall appearance of the view to the extent that other features would become subordinate. Views of the development are likely to be from close distance. Views will be very long in duration.
Medium	The proposed development would form a recognisable new element of moderate scale within the view and would be readily observed without fundamentally changing the overall nature of the view, including the extent and nature of other built development including vertical elements. Overall quality of the view may remain intact. Development is likely to be visible across a moderate proportion of the view, to the extent that the proposed wind farm is not prominent. Views of the development are likely to be medium distance and moderate in duration.
Low	The proposed development would form a component of small scale within the wider view that might be missed by the casual observer. Awareness of the development would not have a marked impact on the overall quality of the view. Development may be visible to a limited proportion of the view, to the extent that the proposed wind farm is not a defining element. Views of the development are likely to be medium to long distance and glimpsed or brief in duration.
Negligible	The proposed development would be viewed at a scale that would be barely perceptible, or imperceptible, and would have no discernible impact on the overall quality of the view. The proposed development is unlikely to be visible or restricted to long distance views that would be glimpsed or very brief in duration.

Significance of Visual Effects

The third stage of the assessment establishes the significance of effects on visual amenity. This will be determined by combining the sensitivity of the visual receptor (**Table K1.8**) with the magnitude of impact (**Table K1.9**) that would occur as a result of the Proposed Development.

Figure K1.2 has been used as guidance in combining judgements on sensitivity and magnitude of impact to determine the significance of effects on visual amenity. This is adapted from the version provided in IEMA's Special Report entitled 'The State of Environmental Impact Assessment Practice in The UK' (2011). The significance of the effect is defined in **Table K1.10**.

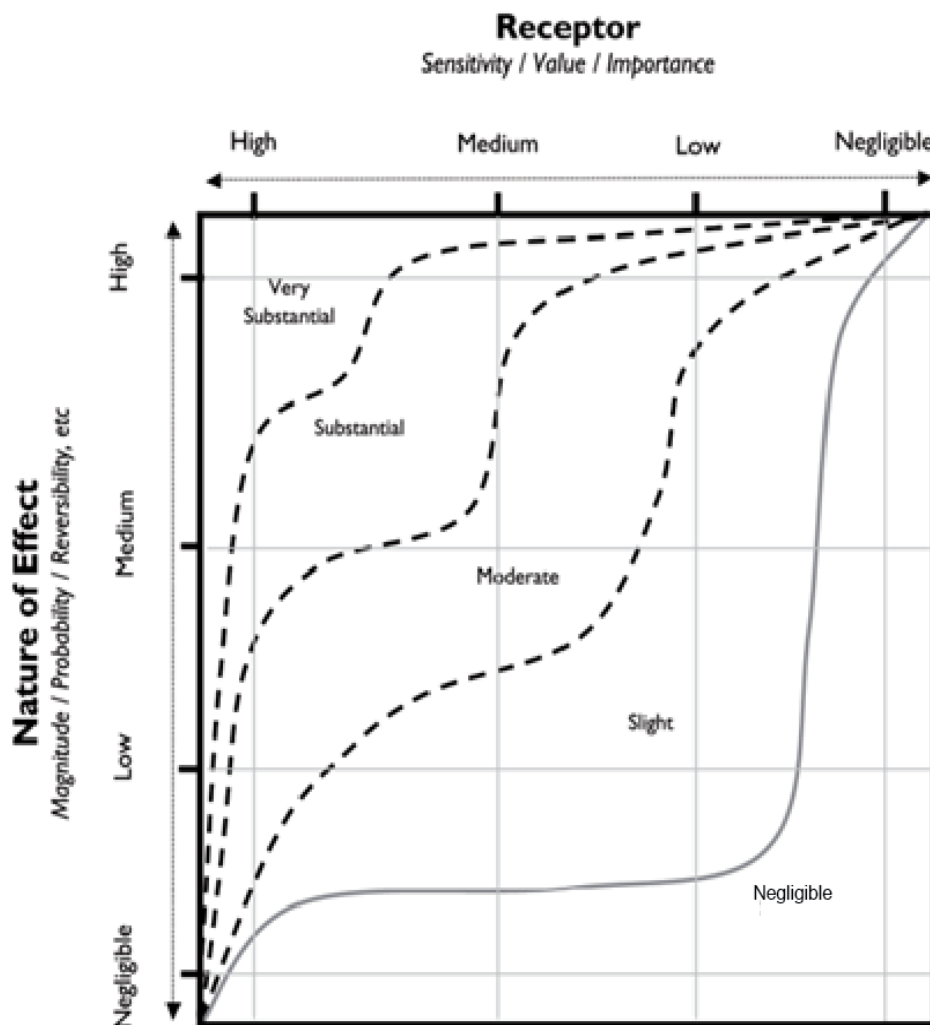


Figure K1.2: Significance of Effects on Visual Amenity

Table K1.10: Significance of Visual Effects (Source: Soltys Brewster)

Significance	Description
Very substantial	Effects will typically result from a high magnitude of impact on views and the receptor will typically have a high sensitivity to wind farm

Significance	Description
	development of the nature and size proposed and there will be a high magnitude of impact, but not exclusively so.
Substantial	The proposed development will typically have substantial effects upon visual amenity. These effects would typically result from a high to medium magnitude of impact on views. The receptor will typically have a high to medium sensitivity to wind farm development of the nature and size proposed, but not exclusively so.
Moderate	The proposed development will typically have moderate effects upon visual amenity. These effects may typically result from a medium magnitude of impact on views. The receptor may typically have a medium sensitivity to wind farm development of the nature and size proposed, but not exclusively so.
Slight	The proposed development will typically have a slight effect upon visual amenity. These effects may typically result from a low magnitude of impact on views. The receptor may typically have a low sensitivity to wind farm development of the nature and size proposed, but not exclusively so.
Negligible	The proposed development will typically have negligible effects upon visual amenity. These effects may typically result from a negligible magnitude of impact on views. The receptor may typically have a negligible sensitivity to wind farm development of the nature and size proposed.

Effects determined to have substantial visual significance or above will be considered to be significant. Conversely, effects determined to be slight or below will be considered not significant.

Where effects are determined to have moderate significance, whether these effects are significant or not significant will depend on the individual and specific mitigating circumstances, and the professional opinion of the landscape specialist will determine this. If any given receptors are subject to a series of moderate effects, such as a long a path or road corridor, the combined effects may be considered to be significant.

A precautionary approach has been adopted and, unless otherwise stated, all effects are considered to be adverse.

Terrestrial Ecology

The evaluation and assessment within this Chapter has been undertaken with reference to relevant parts of the 'Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (2018)' developed by the Chartered Institute of Ecology and Environmental Management (CIEEM, September 2018).

The CIEEM guidelines list the following principles that underpin an Ecological Impact Assessment:

- Avoidance - Seek options that avoid harm to ecological features (for example, by locating on an alternative site).
- Mitigation - Negative effects should be avoided or minimised through mitigation measures, either through the design of the project or subsequent measures that can be guaranteed - for example, through a condition or planning obligation.
- Compensation - Where there are significant residual negative ecological effects despite the mitigation proposed, these should be offset by appropriate compensatory measures.
- Enhancement - Seek to provide net benefits for biodiversity over and above requirements for avoidance, mitigation or compensation.

Determining Importance

The importance of the features on site are assessed and defined in a geographical context (see **Table K2.1** below). The frame of reference for the habitat features in terms of their geographical importance is in line with guidance set out in CIEEM, 2018.

Table K2.1: Definitions of nature conservation value for ecological features

Level of Value	Examples
International	• An internationally designated site or candidate site SPA, SAC, Ramsar Site, Biogenetic reserve or an area which NRW has determined meets the published selection criteria for such designation, irrespective of whether or not it has yet been notified. • Regularly occurring globally threatened species (i.e. International Union for Conservation of Nature - Red-listed) or species listed on Annex 1 of the Bern Convention. • Regularly occurring populations of internationally important species that are rare or threatened in the UK or of uncertain conservation status. • A regularly occurring nationally significant population/number of any internationally important species.
National (i.e. Wales)	• A nationally designated site, e.g. SSSI, or a discrete area which meets the published selection criteria for national designation (e.g. SSSI selection guidelines) irrespective of whether it has yet to be notified.

Level of Value	Examples
	A habitat feature or regularly occurring population of a protected species that might be considered nationally important due to: representing a high quality example of its type; its ecological fragility; its size, diversity or naturalness (in the case of habitats and species assemblages); and/or its rarity.
County (i.e. Powys)	- Areas of habitat with an extent or condition that are considered rare within the County, or that provide functional linkage between similar habitats. Any regularly occurring population of a species listed as being nationally scarce, or in the Local Biodiversity Action Plan (LBAP) or relevant Natural Area on account of its regional rarity or localisation. - Sites such as Sites of Importance for Nature Conservation (SINC) selected on Regional/County criteria. - Any regularly occurring significant population that is listed in a Local Red Data Book (RDB) or BAP on account of its rarity or localisation.
Local (i.e. the survey area plus a 2 km radius)	- Areas identified in a LBAP or in the relevant natural area profile. - Sites/features that are scarce within the locality or which appreciably enrich the local area's habitat resource. - A diverse and/or ecologically important valuable hedgerow network. - Diverse and/or ecologically valuable grassland. - Species populations of local importance.
Site	- Areas of habitat considered to appreciably enrich the habitat resource within the context of the Site. - An occasional occurrence or small population of a locally scarce species.

In certain circumstances particular receptors may be valued below the Site level. In these instances, they are described as being of negligible importance.

Characterising and Quantifying Impacts and Assessing the Significance of Effects

The terms impact and effect are defined by CIEEM (2018) as:

- Impact – Actions resulting in changes to an ecological feature. For example, the construction activities of a development removing a hedgerow (CIEEM, 2018).
- Effect – Outcome to an ecological feature from an impact. For example, the effects on a dormouse population from loss of a hedgerow (CIEEM, 2018).

CIEEM (2018) guidelines state that when describing ecological impacts and effects, reference should be made to the following characteristics as required: positive or negative; extent; magnitude; duration; frequency and timing and reversibility. **Table K2.2** outlines the criteria to be used to determine the magnitude of an impact. **Table K2.3** outlines the criteria to be used to determine the temporal magnitude of impacts.

Table K2.2: General criteria to describe the magnitude / character of potential impacts

Magnitude of Impact		Typical criteria
Major	Adverse	Complete or near-complete loss of resource, population/productivity and/or quality and integrity of the receptor, through mortality, displacement or disturbance. Severe damage to key characteristic features or elements. Quantified as approximately >80% of resource lost.
	Beneficial	Large scale or major improvement of resource quality; extensive restoration or enhancement; major improvement of attribute quality. Quantified as approximately a >80% net benefit for the resource, in comparison with the baseline.
Intermediate	Adverse	Impact on the resource or status of the population/productivity due to mortality, displacement or disturbance, but not adversely affecting the integrity. Partial loss of/damage to key characteristics, features or elements. Quantified as 21-80% of resource lost.
	Beneficial	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality. Quantified as approximately a 21-80% net benefit for the resource, in comparison with the baseline.
Minor	Adverse	Some measurable change/partial reduction in the status of the population/productivity of its attributes, via mortality, displacement or disturbance. Minor loss of or alteration to, one (or maybe more) key characteristics, features or elements of the resource. Quantified as 1-20% of resource lost.
	Beneficial	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial effect on attribute or a reduced risk of negative effect occurring. Quantified as an approximate 1-20% net benefit for the resource in comparison with the baseline.
Negligible	Adverse	Very minor loss or detrimental alteration to one or more characteristics, features or elements. Quantified as <1% of the resource lost.
	Beneficial	Very minor improvement of the status of the population/productivity or quality of the resource. Quantified as a <1% net benefit for the resource. No loss or alteration of characteristics, features or elements; no observable effect in either direction.
No change	Neutral	No loss or alteration of characteristics, features or elements; no observable impact either adversely or beneficially. Can also be considered a continuation of the baseline.

Table K2.3: Temporal magnitude/timeframe of potential impacts

Temporal Magnitude	Definition
Permanent	Impact continues beyond the span of lifetime of the development (>30 years)
Long-term	Between 15 and 30 years
Medium term	Between 5 and 15 years
Short term	6 months and up to 5 years
Negligible	Less than 6 months

Following the characterisation of impacts, an assessment of the ecological significance of their effects is made. The guidelines promote a transparent approach in which a positive or negative effect is determined to be significant or not, in ecological terms, in relation to the integrity of the defined site or ecosystem(s) and/or the conservation status of habitats or species within a given geographical area, which relates to the level at which it has been valued.

Where ecological value is assessed as Low level or below, effects are not considered to be significant in terms of the EIA Regulations and CIEEM guidance. Professional judgement is an important factor in determining the level of ecological value, the magnitude of the impact and the overall significance. An effect may be either negatively or positively significant.

Ornithology

The evaluation and assessment within this Chapter has been undertaken with reference to relevant parts of the '*Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (2018)*' developed by the Chartered Institute of Ecology and Environmental Management (CIEEM, September 2018).

The CIEEM guidelines list the following principles that underpin EcIA Ornithological Impact Assessment

- Avoidance - Seek options that avoid harm to ecological features (for example, by locating on an alternative site).
- Mitigation - Negative effects should be avoided or minimised through mitigation measures, either through the design of the project or subsequent measures that can be guaranteed - for example, through a condition or planning obligation.
- Compensation - Where there are significant residual negative ecological effects despite the mitigation proposed, these should be offset by appropriate compensatory measures.
- Enhancement - Seek to provide net benefits for biodiversity over and above requirements for avoidance, mitigation or compensation.

Determining Importance

The frame of reference for the ornithological features in terms of their geographical importance is in line with guidance set out in CIEEM, 2018.

Bird species are assessed, where appropriate, against best practice guidelines and with reference to **Table K3.1**.

Table K3.1: Definition of nature conservation value for bird interest

Level of value	Definitions
International	Qualifying species of an internationally designated site (i.e. SPA or Ramsar) Species present in internationally important numbers (>1% of UK population).
National (i.e. Wales)	Species for which a nationally designated site (a Site of Special Scientific Interest (SSSI)) is notified. Ecologically sensitive species such as rare birds (<300 breeding pairs in the UK). Species present in nationally important numbers (>1% Welsh population). Species listed on Annex I of the EC Birds Directive or breeding species listed on Schedule 1 of the Wildlife and Countryside Act. Regularly occurring migratory species, which are either rare or vulnerable, or warrant special consideration (i.e. Schedule 1 of the Wildlife and Countryside Act and Section 7 of the Environment (Wales) Act 2016) on account of the proximity of migration routes,

Level of value	Definitions
	breeding, wintering and staging areas in relation to the Proposed Development.
County (i.e. Powys)	Species present in regionally (i.e. mid-Wales) important numbers (>1% regional population). Species of Principal Importance as defined in Section 7 of the Environment (Wales) Act 2016. Regularly occurring migratory species, which are either rare or vulnerable, or warrant special consideration (i.e. BoCC Wales Red List) on account of the proximity of migration routes, breeding, wintering and staging areas in relation to the Proposed Development.
Local (i.e. the survey area plus a 2 km radius)	Regularly occurring migratory species, which are either rare or vulnerable, or warrant special consideration (i.e. BoCC Wales Amber List) on account of the proximity of migration routes, breeding, wintering and staging areas in relation to the Proposed Development. Any other species of local conservation interest such as those listed in the LBAP.
Site	Common and widespread species typical of the habitats found on site and not notable in the local area.

In certain circumstances particular receptors may be valued below the Site level. In these instances, they are described as being of negligible importance.

Characterising and Quantifying Impacts and Assessing the Significance of Effects

The terms impact and effect are defined by CIEEM (2018) as:

- Impact – Actions resulting in changes to an ecological feature. For example, the construction activities of a development removing a hedgerow (CIEEM, 2018).
- Effect – Outcome to an ecological feature from an impact. For example, the effects on a dormouse population from loss of a hedgerow (CIEEM, 2018).

CIEEM (2018) guidelines state that when describing ecological impacts and effects, reference should be made to the following characteristics as required: positive or negative; extent; magnitude; duration; frequency and timing and reversibility. **Table K3.2** outlines the criteria to be used to determine the magnitude of an impact. **Table K3.3** outlines the criteria to be used to determine the temporal magnitude of impacts.

Table K3.2: General criteria to describe the magnitude / character of potential impacts

Magnitude of Impact		Typical criteria
Major	Adverse	Complete or near-complete loss of resource, population/productivity and/or quality and integrity of the receptor, through mortality, displacement or disturbance. Severe damage to key characteristic features or elements. Quantified as approximately >80% of resource lost.

Magnitude of Impact		Typical criteria
	Beneficial	Large scale or major improvement of resource quality; extensive restoration or enhancement; major improvement of attribute quality. Quantified as approximately a >80% net benefit for the resource, in comparison with the baseline.
Intermediate	Adverse	Impact on the resource or status of the population/productivity due to mortality, displacement or disturbance, but not adversely affecting the integrity. Partial loss of/damage to key characteristics, features or elements. Quantified as 21-80% of resource lost.
	Beneficial	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality. Quantified as approximately a 21-80% net benefit for the resource, in comparison with the baseline.
Minor	Adverse	Some measurable change/partial reduction in the status of the population/productivity of its attributes, via mortality, displacement or disturbance. Minor loss of or alteration to, one (or maybe more) key characteristics, features or elements of the resource. Quantified as 1-20% of resource lost.
	Beneficial	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial effect on attribute or a reduced risk of negative effect occurring. Quantified as an approximate 1-20% net benefit for the resource in comparison with the baseline.
Negligible	Adverse	Very minor loss or detrimental alteration to one or more characteristics, features or elements. Quantified as <1% of the resource lost.
	Beneficial	Very minor improvement of the status of the population/productivity or quality of the resource. Quantified as a <1% net benefit for the resource. No loss or alteration of characteristics, features or elements; no observable effect in either direction.
No change	Neutral	No loss or alteration of characteristics, features or elements; no observable effect either adversely or beneficially. Can also be considered a continuation of the baseline.

Table K3.3: Temporal magnitude/timeframe of potential impacts

Temporal Magnitude	Definition
Permanent	Impact continues beyond the span of lifetime of the development (>30 years)
Long term	Between 15 and 30 years
Medium term	Between 5 and 15 years
Short term	6 months and up to 5 years
Negligible	Less than 6 months

Following the characterisation of impacts, an assessment of the ecological significance of their effects is made. The guidelines promote a transparent approach in which a positive or negative effect is determined to be significant or not, in ecological terms, in relation to the integrity of the defined site or ecosystem(s) and/or the conservation status of habitats or species within a given geographical area, which relates to the level at which it has been valued.

Where ecological value is assessed as Low level or below, effects are not considered to be significant in terms of the EIA Regulations and CIEEM guidance. Professional judgement is an important factor in determining the level of ecological value, the magnitude of the impact and the overall significance. An effect may be either negatively or positively significant.

Land, Soil and Water

The significance of the potential hydrology, hydrogeology, geology and peat impacts will be determined by professional consideration of the sensitivity of the receptor and the magnitude of the potential effect. The criteria for these are included below.

Sensitivity ratings

Table K4.1: Sensitivity ratings

Sensitivity	Definition
Very high	The receptor has very limited ability to absorb change without fundamentally altering its present character, is of very high environmental value and/or is of international importance.
High	The receptor has limited ability to absorb change without significantly altering its present character, is of high environmental value and/or is of national importance.
Moderate	The receptor has moderate capacity to absorb change without significantly altering its present character, has moderate environmental value and/or is of regional importance.
Low	The receptor is tolerant of change without detriment to its present character, is of low environmental value and/or of local importance.

Magnitude ratings

Table K4.2: Magnitude ratings

Magnitude	Definition
Substantial	Substantial changes, over a significant area, to key characteristics or to the geological/hydrogeological/peatland classification or status for more than 2 years.
Moderate	Noticeable but not substantial changes for more than 2 years or substantial changes for more than 6 months but less than 2 years, over a substantial area, to key characteristics or to the geological/hydrogeological/peatland classification or status.
Slight	Noticeable changes for less than 2 years, substantial changes for less than 6 months, or barely discernible changes for any length of time.
Negligible or no change	Any change would be negligible, unnoticeable or there are no predicted changes.

Likelihood ratings

No formal definition, but unlikely, possible and likely are the categories used.

Effects significance matrix

Table K4.3: Effects significance matrix

Sensitivity	Magnitude	Likelihood	Significance
Very High	Substantial	Likely	Major
		Possible	Major
		Unlikely	Moderate
	Moderate	Likely	Major
		Possible	Moderate
		Unlikely	Moderate
	Slight	Likely	Moderate
		Possible	Minor
		Unlikely	Minor
	Negligible/no change	Likely	Minor
		Possible	Negligible
		Unlikely	Negligible
High	Substantial	Likely	Major
		Possible	Major
		Unlikely	Moderate
	Moderate	Likely	Moderate
		Possible	Moderate
		Unlikely	Minor
	Slight	Likely	Minor
		Possible	Minor
		Unlikely	Minor
	Negligible/no change	Likely	Minor
		Possible	Negligible
		Unlikely	Negligible
Moderate	Substantial	Likely	Major
		Possible	Moderate
		Unlikely	Minor
	Moderate	Likely	Moderate
		Possible	Minor
		Unlikely	Minor
	Slight	Likely	Minor
		Possible	Minor
		Unlikely	Negligible

Sensitivity	Magnitude	Likelihood	Significance
Low	Negligible/no change	Likely	Negligible
		Possible	Negligible
		Unlikely	Negligible
	Substantial	Likely	Moderate
		Possible	Minor
		Unlikely	Negligible
	Moderate	Likely	Minor
		Possible	Minor
		Unlikely	Minor
	Slight	Likely	Minor
		Possible	Negligible
		Unlikely	Negligible
	Negligible/no change	Likely	Negligible
		Possible	Negligible
		Unlikely	Negligible

Climate

Aligned with IEMA's Guidance to Assessing GHG Significance (2022), the level of significance can be determined by the extent to which the Proposed Development complies with the goals of the Paris Agreement (i.e., a science-based 1.5°C trajectory). Any project that causes GHG to be avoided, or removed from the atmosphere, has a beneficial effect that is always significant.

Table K5.1: IEMA's Guidance to Assessing GHG Significance (2022)
Framework for assessment of significant effects

Significance	Level	Criteria
Significant	Major adverse	Project adopts a business-as-usual approach, not compatible with the national Net Zero trajectory, or aligned with the goals of the Paris Agreement (i.e., a science-based 1.5°C trajectory). GHG impacts are not mitigated or reduced in line with local or national policy for projects of this type.
	Moderate adverse	Project's GHG impacts are partially mitigated and may partially meet up-to-date policy; however emissions are still not compatible with the national Net Zero trajectory or aligned with the goals of the Paris Agreement.
Not significant	Minor adverse	Project may have residual emissions, but the project is compatible with the goals of the Paris Agreement, complying with up-to-date policy and good practice.
	Negligible	Project has minimal residual emissions and goes substantially beyond the goals of the Paris Agreement, complying with up-to-date policy and best practice.
Significant	Beneficial	Project causes GHG emissions to be avoided or removed from the atmosphere, substantially exceeding the goals of the Paris Agreement with a positive climate impact.

Noise and vibration

This section provides an overview of the noise impact assessment that will be undertaken for the project. To inform the assessment the separation distances between the sensitive receptors and Site works will be calculated for each phase of works. For the purposes of the assessment, the following impact magnitude rating criteria have been adopted based on national standards. All residential receptors are considered to have a high sensitivity to noise.

Table K6.1: Significance of noise and vibration effects.

Significance			Sensitivity rating			
			Very low	Low	Medium	High
			1	2	3	4
Magnitude rating	Very low	1	1 Negligible	2 Negligible	3 Negligible	4 Minor
	Low	2	2 Negligible	4 Negligible	6 Minor	8 Moderate
	Medium	3	3 Negligible	6 Minor	9 Moderate	12 Major
	High	4	4 Minor	8 Moderate	12 Major	16 Major

Table K6.2: Magnitude ratings

Source	Period	Magnitude rating			
		Very low	Low	Medium	High
Construction noise	Day	< 55 dB L _{Aeq,T}	55-65dB L _{Aeq,T}	65 – 75 dB L _{Aeq,T}	> 75 dB L _{Aeq,T}
	Night	< 45 dB L _{Aeq,T}	45– 50 dB L _{Aeq,T}	50 – 55 dB L _{Aeq,T}	> 55 dB L _{Aeq,T}
Wind Turbine operational noise	Day / Night*	The acceptable targets for wind turbine operational noise are clearly defined in the ETSU-R-97 document and these targets should not be breached. Consequently, the test applied to operational noise is whether or not the calculated wind turbine noise emission levels at nearby noise sensitive properties lie below the noise targets derived in accordance with ETSU-R-97. Depending on the levels of background noise the satisfaction of the ETSU-R-97 derived targets (or simplified ETSU absolute level of 35 dB(A)) can lead to a situation whereby, at some locations under some wind conditions and for a certain proportion of the time, wind turbine noise may be audible. However, noise levels at the properties in the vicinity of the Proposed Development will still be within levels considered acceptable under the ETSU-R-97 assessment method 3.5.2.			

*refer to details of ETSU-R-97 assessment periods

Traffic and transport

Sensitivity

The criteria that has been used to make judgements on the sensitivity of the receptor(s) and the magnitude of change are presented in **Table K7.1** below.

Table K7.1: Framework for determining sensitivity of receptors

Sensitivity	Description
High	- The receptor/resource has little ability to absorb change without fundamentally altering its present character; is of international or national importance. - Local residents whose daily activities depend upon unrestricted movement within their environment. - Receptors such as schools, colleges, hospitals and accident hotspots.
Medium	The receptor/resource has moderate capacity to absorb change without significantly altering its present character or is of high importance.
Low	- The receptor/resource is tolerant of change without detriment to its character; is of low/local importance. - Areas such as trunk road or A class roads constructed to accommodate significant HGV volumes.
Negligible	Users not sensitive to transport effects. Includes very small settlements and roads with no significant settlements including new strategic trunk roads or motorways.

Magnitude of Effect

The criteria that will be used to make judgement on the magnitude of the effect on the receptor(s) is presented in **Table K7.2** below.

Table K7.2: Framework for determining magnitude of effects

Magnitude	Description
Major	- Total loss of, or major/substantial alteration to, key elements/features of the baseline (pre-development) conditions such that the post development character/composition/attributes will be fundamentally changed. - Generally a rule of >90% (or >70% at sensitive receptors) change in traffic is considered to be a major magnitude.
Moderate	- Loss or alteration to one or more key elements/features of the baseline conditions such that post development character/composition/attributes of the baseline will be materially changed. - Generally, a rule of 60% - 90% (or 40% - 70% at sensitive receptors) change in traffic is considered to be a moderate magnitude.

Magnitude	Description
Minor	- A minor shift away from baseline conditions. Change arising from the loss/alteration will be discernible/detectable but not material. The underlying character/composition/attributes of the baseline condition will be similar to the pre-development circumstances/situation. - Generally, a rule of 30% – 60% (or 10% - 40% at sensitive receptors) change in traffic is considered to be a minor magnitude.
Negligible	- Very little change from baseline conditions. Change barely distinguishable, approximating to a 'no change' situation. - Generally, a rule of <30% (or <10% at sensitive receptors) change in traffic is considered to be a negligible magnitude.

Significance

As a guide to inform the assessment, but not as a substitute for professional judgement, criteria for determining the significance of traffic related effects are set out in **Table K7.3**. This is based on combining the magnitude of the effect with the receptor sensitivity.

Table K7.3: Significance criteria matrix

Sensitivity of Receptor	Magnitude of Change			
	Major	Moderate	Minor	Negligible
High	Major	Major / Moderate	Moderate	Minor
Medium	Major / Moderate	Moderate	Moderate / Minor	Minor
Low	Moderate	Moderate / Minor	Minor	Negligible
The effects recorded in grey highlighted cells are considered to be 'Significant'				

At all stages, professional judgement will also be applied in the consideration of the relevant receptor sensitivity, magnitude of effect and its significance in the evaluation of the Proposed Development's environmental impact in terms of traffic and movement. This will be explained within the accompanying reporting narrative.