

Appendix 6A

LVIA Methodology and Glossary

1.1 Introduction

- 1.1.1 The Landscape and Visual Impact Assessment (LVIA) and cumulative landscape and visual impact assessment (CLVIA) identifies, predicts, and evaluates the likely significant landscape and visual effects that may result from the Proposed Development. This assessment assesses the effects of the Proposed Development described in **Chapter 4: Description of the Proposed Development**.
- 1.1.2 Essentially, the landscape and visual effect (and whether it is significant) is assessed by considering the landscape or visual sensitivity to the Proposed Development, with reference to the susceptibility and value of the receptor, against the magnitude of change in order to identify a level of effect that would be brought about by the Proposed Development, were it to be implemented. The level of effect is also described in terms of its scale, geographical extent, and duration, and subsequently whether the effect would be significant.
- 1.1.3 The type of effect is also considered and may be direct or indirect; temporary or permanent (reversible); cumulative; and beneficial, neutral, or adverse. The assessment has also considered the cumulative effects resulting from the Proposed Development in combination with other existing and consented wind farms, and wind farms at the planning application or scoping stage.
- 1.1.4 The time period for the assessment covers phases of development related to the construction of the Proposed Development and associated infrastructure and its operation for a period of 30 years.
- 1.1.5 Landscape and visual assessment unavoidably involve a combination of both quantitative and subjective assessment and wherever possible a consensus of professional opinion has been sought through consultation, internal peer review, and the adoption of a systematic, impartial, and professional approach.
- 1.1.6 **Appendix 6A** has been structured as follows:
- General Methodology;
 - Landscape Assessment;
 - Visual Assessment;
 - Cumulative Landscape and Visual Assessment (CLVIA);
 - Evaluation of Cumulative Landscape and Visual Effects;
 - Visual Assessment of Views from Residential Properties;
 - Night-time assessment;

- Production of ZTVs and Visualisations; and
- Abbreviations and Glossary.

1.2 General Methodology

1.2.1 The methodology for the LVIA and CLVIA has been undertaken in accordance with best practice guidance including, but not limited to, the following:

- *Guidelines for Landscape and Visual Impact Assessment, 3rd Edition*¹ (hereafter referred to as GLVIA3);
- *Using LANDMAP in Landscape and Visual Impact Assessments GN46*²;
- *Visual Representation of Windfarms, Version 2.2*³;
- *Guidance: Assessing the Cumulative Impact of Onshore Wind Energy Developments*⁴;
- *Technical Guidance Note 06/19: Visual Representation of Development Proposals*⁵;
- *Technical Guidance Note 02/19: Residential Visual Amenity Assessment*⁶;
- *Wind Farm Design Guidance in Wales – Designing Wind Farms in Wales*⁷;
- *Siting and Designing Windfarms in the Landscape, Version 3a*⁸;
- *PLG04 Guidance on Undertaking Environmental Lighting Impact Assessments*⁹; and
- *Guidance Note for the Reduction of Obtrusive Light, Guidance Note 01/21*¹⁰.

¹ Landscape Institute and the Institute of Environmental Management and Assessment, (2013). Guidelines for Landscape and Visual Impact Assessment. 3rd edition. London. Routledge

² Natural Resources Wales. (2021). Using LANDMAP in Landscape and Visual Impact Assessments GN46. (Online). Available at: <https://naturalresourceswales.gov.uk/guidance-and-advice/business-sectors/planning-and-development/evidence-to-inform-development-planning/using-landmap-in-landscape-and-visual-impact-assessments-gn46/?lang=en> (Accessed April 2022).

³ Scottish Natural Heritage (now NatureScot). (2017). Visual representation of wind farms: Guidance. Version 2.2. (Online). Available at: <https://www.nature.scot/visual-representation-wind-farms-guidance> (Accessed April 2022).

⁴ Scottish Natural Heritage (now NatureScot). (2012). Guidance: Assessing the Cumulative Impact of Onshore Wind Energy Developments. (Online). Available at: <https://www.nature.scot/doc/guidance-assessing-cumulative-impact-onshore-wind-energy-developments#Introduction+and+scope+of+this+guidance> (Accessed April 2022).

⁵ Landscape Institute. (2019). Technical Guidance Note 06/19 Visual Representation of Development Proposals. London. (online). Available at: <https://www.landscapeinstitute.org/visualisation/> (Accessed April 2022).

⁶ Landscape Institute (2019). Technical Guidance Note 02/19: Residential Visual Amenity Assessment. (Online). Available at: <https://www.landscapeinstitute.org/technical-resource/rvaa/> (Accessed April 2022).

⁷ Design Commission for Wales. (2012). Designing Wind Farms in Wales. (online). Available at: <http://dcfw.org/designing-wind-farms-in-wales-2/> (Accessed April 2022).

⁸ Scottish Natural Heritage (now NatureScot). (2017). Siting and designing wind farms in the landscape - version 3a. (Online). Available at: <https://www.nature.scot/siting-and-designing-wind-farms-landscape-version-3a> (Accessed April 2022).

⁹ Institution of Lighting Professionals, (2013). PLG04 Guidance on Undertaking Environmental Lighting Impact Assessments.

¹⁰ Institution of Lighting Professionals, (2021). Guidance Notes for the Reduction of Obtrusive Light, Guidance Note 01/21. (Online). Available at: <https://theilp.org.uk/publication/guidance-note-1-for-the-reduction-of-obtrusive-light-2021/> (Accessed April 2022). ILP; Rugby.

- 1.2.2 The landscape and visual effects of wind turbines can be directly experienced through the observation of existing wind farms within this area whose location is shown in **Figure 6.4**. Noticeably, wind farm development can co-exist with other features of the landscape, rather than replacing or removing them, as in the case of more conventional built development, although they can alter the landscape character of an area. Wind farm development is also visually permeable and although views may be interrupted, they are not blocked or prevented. Generally, wind farms have a 'small' development footprint that preserves much of the physical elements of the landscape, but entails the addition of tall structures, which are unavoidably visible over longer distances, leading to greater visual effects. A further, important difference is the reversibility of almost all of the landscape and visual effects as a result of the decommissioning stage.
- 1.2.3 Wind farms give rise to a wide range of opinions, from strongly negative to strongly positive. However, LVIA is not an assessment of public opinion, although a precautionary approach has been taken, which assumes that the nature of the effects would be adverse unless otherwise stated.

Defining the LVIA Study Area

- 1.2.4 Current NRW guidance² advises that the LVIA Study Area for wind turbines of this height should be based on a specified search area that is 26 km distant from each of the proposed turbine locations as illustrated in **Figure 6.1**. This is termed the defined LVIA study area. It is important to note that the boundary of the defined LVIA study area is not the limit of potential visibility.

1.3 Landscape Assessment

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

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

- 1.3.2 The potential landscape effects, occurring during the construction, operation and decommissioning period may therefore include, but are not restricted to the following:
- Changes to landscape elements: the addition of new elements (wind turbines, met mast(s) and ground level infrastructure elements) or the potential removal of existing elements such as trees, vegetation and buildings and other characteristic elements of the host LANDMAP aspect areas;
 - Changes to landscape qualities: degradation or erosion of landscape elements and patterns and perceptual characteristics, particularly those that form key characteristic elements of host LANDMAP aspect areas or contribute to the landscape value of adjacent local landscape designations;

- Changes to landscape character: landscape character may be affected through the incremental effect on characteristic elements, landscape patterns and qualities (including perceptual characteristics) and the addition of new features, the magnitude of which is sufficient to alter the overall landscape character within LANDMAP aspect areas and/or landscape designations; and
- Cumulative landscape effects: where more than one wind farm may lead to a potential landscape effect.

1.3.3 Development may have a direct (physical) effect on the landscape as well as an indirect effect which would be perceived from the wider landscape, or other areas of landscape, outside the host LANDMAP aspect areas. This is usually, but not always exclusively, via a visual effect pathway.

Evaluating Landscape Sensitivity to Change

1.3.4 The sensitivity of the landscape to a particular development considers the susceptibility of the landscape and its value. The overall sensitivity is described as High, Medium, Low, or Very Low. Landscape sensitivity often varies in response to both the type of development proposed and the particular site location, such that landscape sensitivity needs to be considered on a case-by-case basis. This should not be confused with 'inherent sensitivity' where areas of the landscape may be referred to as inherently of 'high' or 'low' sensitivity. For example, a National Park may be described as inherently of high sensitivity on account of its designation, although it may prove to be less sensitive to particular development and/or of variable sensitivity across the geographical area of the National Park. Alternatively, an undesignated landscape may be of high sensitivity to a particular development regardless of the lack of local or national designation.

1.3.5 The main factors considered are discussed as follows:

Landscape Susceptibility

1.3.6 Landscape susceptibility according to GLVIA3¹¹ means "*the ability of the landscape to accommodate the development without undue consequences for maintenance of the baseline situation and/or the achievement of landscape planning policies and strategies*". In the case of wind farm development there may be local or regional spatial strategies and/or landscape studies that can assist in broad scale judgements about the overall landscape capacity or sensitivity to wind farm development¹¹. Attention, however, must be paid to the purpose, scope and methodology of these documents, as whilst providing assistance for strategic planning, they are not usually suitable for the assessment of specific wind farm proposals and should not be directly applied to individual applications. Rather, they provide broad information that should be considered as part of the more detailed landscape assessment.

1.3.7 Judgements on landscape susceptibility include references to both the physical and aesthetic landscape characteristics, and the potential scope for mitigation. Landscape

¹¹ A good example is *Heads of the Valleys Smaller Scale Wind Turbine Development Landscape and Sensitivity Study Final Report* (April 2015) prepared by Gillespies, although as noted in the main text the proposed Mynydd Carn-y-Cefn Wind Farm's capacity exceeds the largest capacity category utilised in the Study.

susceptibility varies according to different areas of landscape character and whilst accepting that wind farm development is likely to lead to high levels of landscape change in most circumstances, factors that commonly indicate lower landscape susceptibility to wind farm development include landscape characteristics of larger scale, uniformity of land cover, simple landform and skylines with limited landscape features. Generally speaking, lower landscape susceptibility together with lower landscape value tends to indicate lower landscape sensitivity to development. Conversely, higher landscape susceptibility and value tend to indicate higher landscape sensitivity to development.

1.3.8 Common indicators of landscape susceptibility¹² to wind farm development are as follows:

- Landscape Scale:

A large-scale landscape is generally considered to be less susceptible to wind farm development in comparison to a small-scale landscape.

- Landform and Topography:

A simple landform with smooth, regular, rolling, undulating, or flowing landforms that might include plains, undulating or rolling lowlands, and plateaus that are generally considered to be less susceptible to wind farm development in comparison to more complex landforms which might include narrow glens, valleys, dramatic rugged and/or distinct landform features or pronounced undulations.

- Openness and Enclosure:

Open landscapes are generally considered to be less susceptible to wind farm development, but could entail wider visibility, conversely enclosed landscapes could offer more screening potential, limiting visibility to a smaller area, but are also likely to be of smaller scale.

- Land Cover Pattern:

Simple, regular landscapes with extensive areas of uniform ground cover (moorland / grassland, unenclosed land, forestry, large regular field patterns, parliamentary enclosures) are generally considered to be less susceptible to wind farm development in comparison to landscapes with more complex or irregular land cover (smaller fields, medieval enclosures, smaller scale 'patchwork' landscapes of mixed fields with small woodland copses).

- Presence of Development:

Areas where there are existing large-scale developments including industry, mineral extraction, masts, pylons, other wind turbines (noting these turbines may be decommissioned in the lifetime of the Proposed Development), urban fringe / large settlement and major transport routes are generally considered to be less susceptible to wind farm development in comparison to areas characterised by smaller scale

¹² Scottish Natural Heritage (2015). A Guide to Commissioning a Landscape Capacity Study (Online) Available at: <https://www.nature.scot/sites/default/files/2019-10/A%20Guide%20to%20Commissioning%20a%20Landscape%20Capacity%20Study%20Toolkit.pdf> (Accessed April 2022).

development (smaller, generally historic villages with dense settlement patterns and smaller scale associated buildings such as churches).

- Landmarks:

Landscapes that contain large scale landmarks which may include other wind farms (noting wind turbines may be decommissioned in the lifetime of the Proposed Development), and infrastructure and large-scale developments are generally less susceptible to wind farm development although development needs to be carefully sited to manage landscape foci and avoid 'visual clutter' or cumulative impacts. Historic landmarks such as important views to distinctive church spires and towers, particular 'landmark' landforms (prominent hills or peaks) or 'land art' generally increase susceptibility.

- Settlement:

Landscapes which are un-settled or with lower levels of population are generally considered to be less susceptible to wind farm development in comparison to more densely populated areas.

- Skyline:

Prominent and distinctive skylines, horizons (including indented ridges / peaks, key views and or vistas) or skylines with important landmark features that are identified in LANDMAP commentaries and responses, are generally considered to be more susceptible to wind farm development in comparison to broad, simple skylines which lack landmark features or contain other turbines / tall infrastructure features.

- Windiness and Rational:

Areas that appear to be windy / windswept which may also be elevated or exposed are generally considered to be less susceptible to wind farm development in comparison to more sheltered areas.

- Change and Movement:

Landscapes which contain movement (traffic, wind turbines, other moving infrastructure and waves / tides) or are subject to high levels of change (large scale forestry operations, mineral extraction, man-made change and development) are generally considered to be less susceptible to wind farm development in comparison to landscapes that are still or appear to be unchanging and/or notably historic with notable 'time depth'.

- Remoteness, Naturalness, Wildness / Tranquillity:

Notably wild or tranquil landscapes are generally considered to be more susceptible to wind farm development in comparison to cultivated or farmed / developed landscapes where perceptions of 'wildness' and tranquillity are less tangible. Landscapes which are either remote or natural may vary in their susceptibility to wind farm development.

- Landscape Context and Adjacent Landscapes:

The location and visual connection to adjacent landscapes may also have a bearing on the overall susceptibility of the landscape to wind farm development. This

consideration is pertinent to the ridgeline and valley topography that characterises the parts of south Wales including the defined study area.

Landscape Value

- 1.3.9 This includes the consideration of a range of features which may include the presence or absence of landscape designation, special landscape qualities, rarity / representativeness, conservation interests, recreational value, perceptual qualities such as tranquillity and historical or cultural associations, as set out in GLVIA3¹, page 84, Box 5.1. The importance attached to a landscape, often as a basis for designation or recognition, which expresses national or local consensus, because of its quality including cultural associations, scenic or aesthetic qualities. Landscape value may be indicated by the presence or absence of a landscape planning designation such as an Area of Outstanding Natural Beauty (AONB) or Special Landscape Area (SLA) (higher value) indicating a landscape of national or local value accordingly or an undesignated landscape (lower value).
- 1.3.10 The absence of a landscape planning designation should not assume an area of 'low' landscape value and undesignated areas of landscape are often of some local value. Indications of this are likely to be present in the form of documented, locally valued, cultural / natural heritage and scenic or aesthetic qualities such as 'wildness' or the presence of viewing platforms or benches. The state of repair or condition of the elements of a particular landscape, its integrity and intactness and the extent to which its distinctive character is apparent are also relevant. The value of a landscape element may be influenced by the degree to which it may contribute to the overall landscape character type/area (i.e., its role), its rarity, and its condition. Landscapes of lower value tend to include those under intensive agriculture, forestry or urban fringe situations where the landscape elements and patterns have been eroded, landscapes with man-made development such as infrastructure or other wind farms (noting wind turbines may be decommissioned in the lifetime of the Proposed Development), and areas of derelict or vacant land, areas of mineral extraction and / or land fill.
- 1.3.11 Judgements on value and susceptibility are combined to determine overall landscape sensitivity which is informed by professional judgement and guided by the following matrix shown in **Table 6A.1**. In terms of landscape value, statutory landscape designations are generally accorded the highest assessment value.

Table 6A.1 Evaluation of Landscape Sensitivity

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



Evaluating the Magnitude of Landscape Change

1.3.12 The 'magnitude' or 'degree of change' resulting from a particular development is described as High, Medium, Low, Very Low or None. This is assessed by considering the scale, geographical extent and duration of the proposed change, which may include the loss or addition of particular features (primarily wind turbines), changes to landscape quality and changes to landscape character. As such this needs to be considered on a case-by-case basis. It may be possible for some mitigation measures to reduce the magnitude of change and consequently the residual landscape effects, and for these reasons the landscape design of the wind farm should form an iterative part of the assessment process. The main factors to be considered are discussed as follows.

- Loss, Alteration, or Addition to Landscape Elements:

Development may result in the loss, alteration, or addition of landscape elements such as trees, hedgerows, or development components such as wind turbines anemometry masts and new access tracks. These can be quantified objectively;

- Loss, Alteration, or Addition to Landscape Characteristics / Quality:

Development may result in the loss, alteration, or addition of physical landscape characteristics, such as wooded areas, landscape patterns, or development components such as wind turbines, which can be quantified objectively. Perceptual characteristics and effects on scenic quality or wildness also need to be considered, albeit subjectively, with reference made to objective and documented opinion; and

- Change to Landscape Character (As represented by LANDMAP Aspect Areas):

All landscapes change over time and much of that change is managed or planned. Often landscapes will have management objectives for 'protection' or 'accommodation', meaning that they may accommodate wind farm development and 'change' whereby the landscape character could be altered to create new landscapes for the accommodation of wind farm development and / or forestry or to provide areas or development resulting in townscape or peri-urban development. The scale of change may be localised, or occurring over parts of an area, or more widespread affecting whole landscape character areas and their overall integrity.

1.3.13 In addition to the scale or magnitude of the effect, GLVIA3¹ advises that consideration should also be given to the following aspects of a landscape effect:

Geographical Extent

1.3.14 Landscape effects should be described in terms of the geographical extent or physical area that would be affected (described as a linear or area measurement e.g. spatial extent of the hub height and/or blade tip ZTVs). This should not be confused with the scale of the proposed development or its physical footprint. Landscape effects occurring over a larger geographical extent and over a higher proportion of a landscape designation or LANDMAP aspect area are more likely to be regarded as significant.

Duration and Reversibility

- 1.3.15 Landscape effects should also be described in terms of the duration of the effect and whether this would be permanent, temporary or reversible. Duration can be considered as ranging between temporary (short to long term and time limited) or permanent. Although 'long term' some development such as housing should be regarded as permanent, whilst mineral extraction works usually entail several phases of development, followed by restoration to a 'new' landscape character. Wind farm development usually operates for a long term, time limited operational period, in the case of the proposed Mynydd Carn-y-Cefn Wind Farm 30 years followed by a decommissioning period that would allow the landscape effects to be reversed. Reversibility is only assessed as part of the decommissioning stage and cannot factor into the assessment of the time limited operational effects.
- 1.3.16 Further guidance on the evaluation of landscape sensitivity and magnitude are provided in **Table 6A.2**.
- 1.3.17 The level of landscape effect is evaluated through the combination of landscape sensitivity and magnitude of change, a process assisted by the matrix in **Table 6A.5**, which is used to guide the assessment. In those instances where there would be no change to the landscape, the magnitude has been recorded as 'Zero' and the level of effect as 'None'.
- 1.3.18 Once the level of effect has been assessed, a judgement is then made as to whether the level of effect is 'significant' as required by the relevant EIA Regulations. Further information is also provided about the nature of the effects (whether these would be direct / indirect, temporary / permanent / reversible, cumulative, or beneficial, neutral, or adverse).
- 1.3.19 In describing the level of landscape effect the assessment text clearly and transparently sets out the professional judgements that have been made in determining sensitivity and how the value and susceptibility of the landscape receptor has been assessed; and in determining magnitude and how the size and scale, geographical extent and duration of the effect has been considered.

Table 6A.2 Landscape Sensitivity and Magnitude

Examples of Landscape Sensitivity	
High	Landscape character, characteristics, and elements with no or limited landscape capacity or scope for landscape change and higher landscape value and susceptibility to the proposed development. Often includes landscapes which are nationally, internationally or regionally designated and have a high landscape value. In relation to landscape designations, the documented Special Landscape Qualities qualities ¹³ are such that there would be no or limited landscape capacity or scope for landscape change of the type posed by the proposed development.
Medium	Landscape character, characteristics, and elements with some landscape capacity or some scope for landscape change. Often includes landscapes of medium landscape value and

¹³ As set out in a National Park Management Plan or the several Special Landscape Area reviews that have been commissioned by individual or consortia of local authorities in south Wales.



Examples of Landscape Sensitivity

	<p>quality as assessed in the relevant VSAA LANDMAP responses which may be locally designated or undesignated and have a medium landscape value. In relation to landscape designations, the documented Special Landscape Qualities and wild land qualities are such that there would be some landscape capacity or scope for change or accommodation.</p>
Low	<p>Landscape character, characteristics and elements which display greater landscape capacity or scope for landscape change to accommodate the proposed development as part of spatial strategy for example. Usually applies to landscapes which are undesignated with indicators of lower landscape susceptibility to development. May also apply to landscapes that may have been subject to intensive agriculture, blanket forestry or other man-made development and have a low landscape value.</p>
Very Low	<p>Landscape character, characteristics and elements where there is a high landscape capacity or a planned desire for landscape change of the type proposed as part of spatial strategy for example. Usually applies to landscapes with a lower landscape susceptibility to development. May also apply to derelict landscapes, or vacant land, areas of mineral extraction and / or land fill for example.</p>

Examples of Landscape Magnitude

High	<p>A total or large-scale change and / or extent that may include the loss of key landscape characteristics / special qualities or the addition of new uncharacteristic features or elements, that would become the dominant characteristics of the landscape, and change the overall landscape quality, and character over a large area.</p>
Medium	<p>A medium-scale change of limited scale and extent including the loss of some key landscape characteristics / special qualities or elements, or the addition of some new uncharacteristic features or elements that would potentially change the landscape quality and character of a localised area or part of a landscape character type/area.</p>
Low	<p>A low-scale change affecting small areas of landscape character / special qualities, including the loss of lower value landscape elements, or the addition of new features or elements of limited characterising influence.</p>
Very Low	<p>A very low change affecting smaller areas of landscape character and quality, including the loss of some landscape elements or the addition of features or elements, which are either of low value or hardly noticeable in terms of their contribution to the landscape character.</p>
Zero	<p>There would be no change to the receptor.</p>

1.4 Visual Assessment

1.4.1 Visual Effects are concerned wholly with the effect of the development on views, and the general visual amenity and are defined by the Landscape Institute in GLVIA3¹, paragraphs 6.1 as follows:

"An assessment of visual effects deals with the effects of change and development on views available to people and their visual amenity. The concern ... is with assessing how the surroundings of individuals or groups of people may be specifically affected by changes in the context and character of views."



- 1.4.2 Visual effects are identified for different receptors (people) who will experience the view(s) at their places of residence, during recreational activities, at work, or when travelling through the area. The visual effects may include the following:
- Visual effect: a change to an existing static view, sequential views, or wider visual amenity as a result of development or the loss of particular landscape elements or features already present in the view(s); and
 - Cumulative visual effects: the cumulative or incremental visibility of similar types of development may combine to have a cumulative visual effect.
- 1.4.3 The level of visual effect (and whether this is significant) is determined through consideration of the 'sensitivity' of each visual receptor (or range of sensitivities for receptor groups) and the 'magnitude of change' that would be brought about by the construction and operation proposed development. Visual assessment unavoidably involves a combination of both quantitative and subjective assessment and wherever possible a consensus of professional opinion is sought through consultation and internal peer review.

Zone of Theoretical Visibility (ZTV)

- 1.4.4 Plans mapping the Zone of Theoretical Visibility (ZTV) are used to analyse the extent of theoretical visibility of development or part of a development, across the defined and detailed LVIA Study Areas and to assist with viewpoint selection. For proposed wind farm developments ZTVs are calculated for the turbines' hub heights and their blade tips. The ZTVs does not take account of the screening effects of buildings, localised landform and vegetation. As a result, there may be views experienced by residents in settlements and users of roads, footpaths, and other receptors within the LVIA study area which, although the receptors are indicated as falling within the ZTV, views in reality would be fully or partially screened or filtered by built form and vegetation.
- 1.4.5 The ZTVs provide a starting point in the assessment process and accordingly tend towards giving a 'worst case' or greatest calculation of the theoretical visibility.

Viewpoint Analysis

- 1.4.6 Viewpoint analysis is used to assist the assessment and is conducted from selected viewpoints identified and agreed upon with consultees within the LVIA Study Area. The purpose of this is to assess both the level of visual impact for particular receptors and to help guide the design process and focus the LVIA. A range of viewpoints are examined in detail and analysed to determine whether a significant visual effect would occur. By arranging the viewpoints in order of distance it is possible to define a threshold or outer geographical limit, beyond which there would be no further significant visual effects.
- 1.4.7 The turbines are always viewed as though facing towards the viewer to provide maximum potential visibility, although during operation, the turbines would face into the wind. The prevailing wind direction, likely to occur during the operational period is therefore also informative to the assessment, particularly if this tends to be variable or directional. In South Wales the prevailing wind direction is from the south-west.

Evaluating Visual Sensitivity to Change

- 1.4.8 In accordance with paragraphs 6.31-6.37 of GLVIA3¹ the sensitivity of visual receptors takes account of the susceptibility of the receptor to visual change and the value of the baseline view available to them. Sensitivity is assessed as High, Medium, Low, or Very Low, although in practice 'Very Low' sensitivity is not used.

Visual Assessment: Susceptibility

- 1.4.9 The main factors to consider are the activity or occupation of the receptor at the viewpoint or receptor location and the extent to which their attention or interest may be focused on the view and visual amenity of the surrounding landscape. Whilst it is accepted that people will undertake a range of different activities, their visual experience of a development will change according to where they are, and what they are doing, and susceptibility is assessed as follows:
- People at nationally recognised viewpoints, people at views/vistas attached to heritage features (such as Registered Parks and Gardens) or other locations recognised nationally in art or literature, are assessed as of high susceptibility. People in their communities including those engaged in outdoor recreation (e.g. users of public open spaces), where the focus of the activity is on enjoyment of the landscape and there is a high frequency of use, are also considered to be of high susceptibility;
 - People on local footpaths routed through undesignated landscapes that may be of lower scenic quality, and people engaged in sport, or travelling / commuting, especially on motorways, trunk roads and other 'A' roads are considered as to be of less susceptibility (medium); and
 - People at their place of work where views are not an important contributor to the quality of working life possess the least (low) susceptibility.

Visual Assessment: Value

- 1.4.10 In relation to value, consideration is given to the value of the view(s) through reference to local or national scenic landscape designation. Other factors to consider include the importance or popularity of the view(s) and/or the likely numbers of viewers and the location and context of the viewpoint. The visual experience from a tourist destination, for example, could involve either the key views to, or from the main attraction, or those from the car-park / service area, and this context will affect the sensitivity and value of the views. Whilst views from car-parks / service areas may still be experienced by receptors of inherently higher sensitivity; these types of views should not be considered of higher value or sensitivity.
- 1.4.11 Landmarks / tourist attractions and national trails visited and used by large numbers of people are likely to be of higher value and more sensitive than those which are less visited. Occasionally there may be exceptions such as motorways where, although there are higher numbers of receptors these are generally considered to be of lower value. Conversely some less well visited footpaths within remote areas, may be of higher value precisely because of the lower visitor numbers.

1.4.12 Judgements on value and susceptibility are combined to determine overall visual sensitivity which is informed by professional judgement and guided by the following matrix shown in **Table 6A.3**.

Table 6A.3 Evaluation of Visual Sensitivity

<u>Value:</u>	<u>Susceptibility:</u>		
	High	Medium	Low
High	High	High to Medium	Medium
Medium	High to Medium	Medium	Medium to Low
Low	Medium	Medium to Low	Low

Evaluating the Magnitude of Change to the View

1.4.13 The magnitude of change is described as High, Medium, Low, Very Low or Zero, and is assessed by consideration of possible changes caused by the Proposed Development, which may affect the view. For visual receptors for whom the Proposed Development would not be visible and there would be no change to their view, the magnitude has been recorded as 'zero' and the level of effect as 'no view'.

1.4.14 The magnitude of visual change is described by reference to the following:

- Scale of Change:

The scale of change in the view (including horizontal and vertical FoV¹⁴ affected), is determined by the loss or addition of features in the view and changes in the composition and extent of view affected. This can in part be described objectively by reference to numbers of new objects visible and the horizontal / vertical extents of the FoV affected.

- Contrast:

The degree of contrast or integration of any new features or changes in the landscape with the existing or remaining landscape elements and characteristics in terms of mass, scale, colour, movement, form and texture. Proposed Developments which contrast or appear incongruous in terms of colour, scale and form are likely to be more visible and to generate a higher magnitude of change.

- Distance:

The proximity or distance from the Proposed Development can be described objectively and often provides a strong indicator of magnitude, subject to any intervening screening by landform, vegetation, or buildings.

- Speed of Travel:

¹⁴ Field of View.



The speed at which the Proposed Development may be viewed will affect how long the view is experienced and the likelihood of the Proposed Development being particularly noticed by people travelling in cars compared to those who may be walking and able to stop and 'take in' a view.

- Angle of View (AoV):

The AoV from the main viewing direction may be considered in terms of whether the Proposed Development is experienced directly or at an oblique angle from the visual receptors' main viewing direction. Road users are generally more aware of the views in the direction of travel, whilst train passengers are more aware of views perpendicular to their direction of travel. Elevated views are likely to reveal more of the Proposed Development, whereas low level views are more likely to be screened by intervening built form and vegetation.

- Screening:

The Proposed Development may be wholly or partly screened by landform, vegetation (seasonal) and or built form. Conversely open views, particularly from landscapes where LANDMAP identifies their availability as a characteristic, are likely to reveal more of a development.

- Skyline / Background:

Whether the Proposed Development would be viewed against the skyline or a background landscape may affect the level of contrast and magnitude, for example, skyline developments may appear more noticeable, particularly where they affect open and uninterrupted horizons. Conversely, wind turbines may also appear more noticeable when viewed against a darker background landscape, such as forestry.

- Nature of Visibility:

The nature of visibility, whether this is subject to various phases of development change and the manner in which the development may be viewed such as intermittently or continuously, and / or seasonally, due to periodic management or leaf fall, is a further factor for consideration.

- 1.4.15 In addition to the scale or magnitude of the effect, GLVIA3¹ advises that consideration should also be given to the following aspects of a visual effect:

Geographical Extent

- 1.4.16 A visual effect is also considered in terms of the geographical extent, physical area or location over which it would be experienced (described as a linear or area measurement). Visual effects affecting a large geographical area are more likely to be regarded as significant.

Duration and Reversibility

- 1.4.17 A visual effect is also considered in terms of the duration over which the effect would be experienced and whether this would be permanent, temporary or reversible. Duration can be considered as ranging between temporary (short to long term and time limited) or

permanent. Although 'long term' some development such as housing should be regarded as permanent, whilst mineral extraction works usually entail several phases of development, followed by restoration. Wind farm development usually operates for a long term, time limited period, for the proposed Mynydd Carn-y-Cefn Wind Farm 25 years followed by a decommissioning period that would allow the visual effects to be reversed. Reversibility is only assessed as part of the decommissioning stage and cannot factor into the assessment of the time limited operational effects. Permanent visual effects (not time limited) are more likely to be regarded as significant.

- 1.4.18 Further guidance on the evaluation of visual sensitivity and magnitude is provided in **Table 6A.4**.

Table 6A.4 Visual Receptor Sensitivity and Magnitude

Examples of Visual Sensitivity	
High	People in their communities and on long distance, strategic footpaths or popular footpaths and tourist destinations, viewing important landscape features, beauty spots and picnic areas, where the activities are focused on the landscape. Receptors include groups of high susceptibility to change such as residents, tourists / visitors, and walkers travelling through the landscape, viewing and experiencing landscapes of high value and quality.
Medium	People within outdoor sports based recreational spaces such as and golf courses, using local or less well used recreational routes of viewing landscapes of high or medium value. Receptors include groups of medium susceptibility to change receptors such as some walkers, cyclists, road users, and other recreational receptors travelling through the landscape / seascape. Viewing and experiencing landscapes of medium value and quality.
Low	People working on the land or sea, at their place of work, or taking part in activities such as team sports that do not involving an appreciation of the landscape, including vehicular receptors travelling on motorways and other busy trunk and 'A' roads. Often viewing and experiencing landscapes of medium to low value and quality.
Very Low	Not used.
Examples of Visual Magnitude	
High	A major change or obstruction of a view that may be directly visible, appearing as the dominant and contrasting feature appearing in the fore or middle ground.
Medium	A prominent change or partial view of a new element within the view that may be readily noticeable, directly or obliquely visible including glimpsed, partly screened or intermittent views, appearing as a prominent feature in the middle ground or background landscape.
Low	A noticeable or small level of change, affecting a small part of the view that may be obliquely viewed or partly screened and/or appearing in the background landscape although noticeable. May include views experienced whilst travelling at speed.
Very Low	A small or intermittent change to the view that may be obliquely viewed and mostly screened and/or appearing in the distant background or viewed at high speed over short periods and capable of being missed by the casual observer.
No View	There would be no change to the view.

- 1.4.19 The level of visual effect is evaluated through the combination of visual sensitivity and magnitude of change, a process assisted by the matrix in **Table 6A.3**, which is used to guide the assessment. In those instances where there would be no change or no visibility or view of the Proposed Development, the magnitude has been recorded as 'Zero' and the level of effect as 'No View'.
- 1.4.20 Once the level of effect has been assessed, a judgement is then made as to whether the level of effect is 'significant' as required by the relevant EIA Regulations and is set out at **Section 1.6** of this Appendix. Further information is also provided about the nature of the effects (whether these would be direct / indirect, temporary / permanent / reversible, cumulative, or beneficial, neutral or adverse).

1.5 Cumulative Landscape and Visual Assessment

- 1.5.1 The assessment of cumulative effects is essentially the same as for the assessment of the primary landscape and visual effects, in that the level of landscape and visual effect is determined by assessing the sensitivity of the landscape or visual receptor and the magnitude of change. The cumulative assessment, however, considers the magnitude of change posed by multiple developments.
- 1.5.2 A cumulative landscape or visual effect simply means that more than one type of development is present or visible within the landscape. Other forms of existing development and land-use such as woodland and forestry, patterns of agriculture, built form, and settlements already have a cumulative effect on the existing landscape that is already accepted or taken for granted. These features often contribute strongly to the existing character, forming a positive or adverse component of the local landscape. Landscapes however, will have a finite capacity for cumulative development, beyond which further new development would result in landscape character change and could result in the creation of a 'wind farm landscape' where wind farms have become the dominant characteristic.
- 1.5.3 Detailed guidance on the cumulative assessment of wind farm development is provided in the SNH document '*Guidance: Assessing the Cumulative Impact of Onshore Wind Energy Developments*' (2012). This assessment distinguishes between 'additional' cumulative effects that would result from adding the Proposed Development to other cumulative wind farm development and 'combined' cumulative effects that assess the total cumulative effect of the Proposed Development and other cumulative wind farm development. In the latter case a significant cumulative effect may result from the Proposed Development or one of more other existing, under-construction or consented wind farms, or other wind farm applications. In those cases, the main contributing wind farm(s) is identified in the assessment.
- 1.5.4 Types of cumulative effect are defined as follows:
- Cumulative Landscape Effects: Where more than one wind development may have an effect on a landscape designation or particular area of landscape character as defined by LANDMAP Aspect Areas;

- Cumulative Visual Effects: the cumulative or incremental visibility of similar types of development that may combine to have a cumulative visual effect. These can be further defined as follows:
 - ▶ Simultaneous or combined: where two or more developments may be viewed from a single fixed viewpoint simultaneously, within the viewer's field of view and without requiring them to turn their head¹⁵;
 - ▶ Successive or repetitive: where two or more developments may be viewed from a single viewpoint successively as the viewer turns their head or swivels through 360°; and
 - ▶ Sequential: where a number of developments may be viewed sequentially or repeatedly at increased frequency, from a range of locations when travelling along road, Sustrans national or regional cycle route or promoted long distance route within the LVIA Study Area.

1.5.5 The SNH document '*Siting and Designing Wind farms in the Landscape*' (Version 3a) explains that the development of multiple wind farms within a particular area may create different types of cumulative effect, such as where:

"The wind farms are seen as separate isolated features within the landscape character type, too infrequent and of insufficient significance to be perceived as a characteristic of the area;

The wind farms are seen as a key characteristic of the landscape, but not of sufficient dominance to be a defining characteristic of the area; [a landscape with wind farms] and

The wind farms appear as a dominant characteristic of the area, seeming to define the character type as a 'wind farm landscape character type.'"

1.5.6 Wind farm development that results in the creation of a '*wind farm landscape*' as opposed to a '*landscape with wind farms*' or '*landscape with occasional wind farms*' is likely to be assessed as significant. Equally the '*additional effect*' of a proposed wind farm development, adding to a scenario where there are already a number of other existing or consented wind farms, may be less than the effect of the Proposed Development either on or primary basis or in an area where there are few or no wind farms existing. This is because wind farm development has already been established as a characterising influence and the additional effect of further development may or may not alter this.

1.5.7 Whilst the CLVIA considers other wind farm development, it should not be considered as a substitute for individual LVIA assessment in respect of each of the other cumulative developments included in the CLVIA.

Defining the Cumulative Study Area

1.5.8 The cumulative study area is a 28km radius from the proposed wind turbines, slightly larger than the defined LVIA Study Area as illustrated in **Figure 6.4**. Other existing, consented, planning application and scoping wind energy sites included within this study area are noted and considered in terms of their likely relevance to the CLVIA. Sites within the Cumulative Search Area which are considered likely to contribute to a significant

¹⁵ Note: A person's field of view is variable but is approximately 90° when facing in one direction.

cumulative effect in 'addition' or in 'combination' with the Proposed Development are included in the CLVIA.

Predicting Cumulative Landscape Effects

- 1.5.9 The CLVIA considers the extent to which the Proposed Development, in combination with other existing, consented or proposed wind farm may change landscape character through either an 'additional' or 'in combination' effect on characteristic elements, landscape characteristics and quality of the baseline landscape character as defined in LANDMAP. Identified cumulative landscape effects are described in relation to each individual scoped in LANDMAP Aspect Area and for any scoped in designated landscape areas assessed within the LVIA Study Area.

Predicting Cumulative Visual Effects

- 1.5.10 The assessment of cumulative visual effects involves reference to the cumulative visibility ZTV maps and the cumulative viewpoint analysis. The cumulative visibility of other existing and consented wind energy developments and applications is established in the first instance using the computer programme (Resoft Wind Farm© software) to identify areas where wind energy developments are theoretically visible. Cumulative visibility maps are analysed to identify the visual receptor locations and routes where cumulative visual effects on the landscape and people may occur as a result of the Proposed Development.
- 1.5.11 With potential receptor locations identified, cumulative effects on individual receptor groups are then explored through viewpoint analysis, which involves site visits informed by wireline illustrations that include other wind energy developments. The computer programme itself can also be used to 'drive' particular routes to assess the visibility of different wind energy developments and inform the assessment of sequential cumulative effects that may occur along a route or journey, and compared to actual visibility experienced along a route during the site visit.

Evaluation of Cumulative Landscape and Visual Effects

- 1.5.12 The evaluation of cumulative effects is assisted by the matrix in **Table 6A.5**, which is used to guide the assessment.
- 1.5.13 The cumulative assessment has been prepared to ensure that, as well as the primary effect of the Proposed Development (LVIA) the 'additional' cumulative effects and the 'combined' cumulative effect (CLVIA) is also reported to account for two cumulative Scenarios as follows:
- Existing + Proposed Development:
 - ▶ The primary effect in the context of the current baseline of operational wind energy developments as summarised in **Table 6.6 in Chapter 6: Landscape and Visual Impact Assessment**.
 - Scenario 1: Existing + Consented + the Proposed Development:

- ▶ The additional and combined cumulative effects of any consented wind energy developments with the Proposed Development are assessed.
- Scenario 2: Existing + Consented + Applications + the Proposed Development:
 - ▶ The additional and combined cumulative effects of the existing and consented wind energy developments and any live applications (which would include schemes at scoping), with the Proposed Development are assessed.

1.5.14

Due to the numbers of other wind energy developments scoped into the CLVIA, the overall cumulative effects may be greater than for the primary effect or additional effect for the Proposed Development assessed in the main LVIA. The resulting level of cumulative effect may remain at the same level of effect or increase to a higher level of effect. The point at which these effects become significant or not significant in landscape and visual terms is still a matter for professional judgement, although four scenarios or combinations of cumulative effect, taking account of other wind energy development can occur as follows:

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

1.5.15

The nature of a cumulative effect may also be described as direct / indirect, temporary / permanent, or beneficial / adverse. The probability of a cumulative effect occurring may also be described (certain, likely or uncertain / unknown).

1.6 Evaluating Landscape and Visual Effects

1.6.1

The level of effect relating to landscape and visual effects and / or cumulative landscape and visual effects is determined by the combination of sensitivity (ranging from High to Very Low) and magnitude of change (ranging from High to Zero), which is assisted by the matrix illustrated in **Table 6A.5**. In addition to the scale or magnitude of the effect, the

GLVIA3¹ advises that consideration should also be given to the geographical extent and duration or reversibility of the effect as described earlier.

Types of Landscape and Visual Effect

1.6.2 The relevant EIA Regulations also require that the level of effect is described in terms of its 'type' or 'nature' of effect (whether the effect is permanent / temporary, direct / indirect, beneficial/neutral/adverse and or cumulative) as well as the scale over which the effect would occur. For example, an effect may be locally significant, or significant with respect to a small number of receptors, but not significant when judged in a wider context. These terms are defined below:

- Temporary or Short Term / Long term / Permanent:

The time period over which an effect may occur is referred to as temporary / short term, long term, or permanent. Wind farm development is considered 'in perpetuity' due to the long-term periods of operation typically occurring over 25 years. However, the Proposed Development is time-limited and the effects would also be reversible upon completion of the Proposed Development's decommissioning.

- Direct / Indirect effects:

Direct effects relate to the host landscape elements and LANDMAP Aspect Areas and concern both physical and perceptual effects on these receptors. Indirect effects relate to those LANDMAP Aspect Areas, designated landscapes and visual receptors which separated by distance or remote from the Proposed Development. Such receptors can only be impacted via of visual or perceptual effects pathways. The Landscape Institute also defines indirect effects as those which are not a direct result of the Proposed Development but are often produced elsewhere or from a complex pathway e.g. localised road widening to facilitate delivery of turbines along the proscribed access route.

- Beneficial / Neutral / Adverse:

The landscape and visual effects generated may be beneficial, neutral, or adverse. The LVIA assumes that the nature of the effects would be 'adverse' unless otherwise stated i.e. adopts a worst-case scenario and in the case of wind farm development, the most noticeable effects and changes are likely to be visual. However, GLVIA3¹ cautions against the automatic assumption that all change would result in an adverse effect.

- ▶ In Landscape Terms: a beneficial effect would require development to add to the landscape quality and character of an area. Neutral landscape effects would include changes that neither add nor detract from the quality and character of an area including development that may be reasonably accommodated within the scale and capacity of the landscape in the context of landscape management and change as defined in LANDMAP commentaries, and very low magnitudes of change. An adverse effect may include the loss of landscape elements such as mature trees and hedgerows as part of construction or operation that exceeds landscape capacity, leading to a reduction in landscape quality and character of a LANDMAP Aspect Area or a landscape designation;

- ▶ In Visual Terms: beneficial or adverse effects are less easy to define or quantify and require subjective consideration of a number of aesthetic factors affecting the view, which may be beneficial, neutral, or adverse. Not all change, including high levels of change, is necessarily an adverse experience. Public opinions as to the visual effects of wind farms vary widely, however this LVIA is not an assessment of public opinion. Rather, an LVIA considers architectural and aesthetic factors such as the visual composition of the landscape in the view together with the wind farm design, which may or may not be reasonably accommodated within the scale and character of the landscape as perceived from the receptors' location. Neutral visual effects would include changes that are not dominating, overbearing, or oppressive. They include development that appears reasonably well accommodated within the scale and landscape setting or context and also includes very low magnitudes of change. An adverse effect may include poor visual design quality such as overlapping ('stacking') turbines, inappropriate scale of development relative to the underlying landscape, or other visual factors that may reduce scenic quality, such that the wind farm would appear dominating, overbearing, or oppressive.

Probability of Cumulative Effect

- 1.6.3 The probability of cumulative effects is variable. Those effects related to existing wind energy development and those under construction are considered as certain; effects related to development with planning consent are considered as likely. Wind energy development sites for which there is a submitted planning application are considered as uncertain.

Determining the Significance of Effects

- 1.6.4 In accordance with the relevant EIA Regulations it is important to determine whether the effects, assessed as a result of the Proposed Development, are likely to be significant. Significant landscape and visual effects will be highlighted in **bold** in the text and in most cases, relate to all those effects that result in a '**Major**' or '**Major/Moderate**' effect as indicated in **Table 6A.5**.
- 1.6.5 In some circumstances, '**Moderate**' levels of effect also have the potential, subject to the assessor's opinion, to be considered as significant and these exceptions are also highlighted in bold and explained as part of the assessment, where they occur.
- 1.6.6 Wind turbines are tall, visible structures and the existence of what would inevitably be a significant effect does not mean that the proposal should be considered 'unacceptable' and consent refused.
- 1.6.7 In accordance with the overall significance matrix used for the EIA, some moderate, moderate/minor, minor and negligible effects, are determined as 'not significant'. In those instances where there would be no effect, the magnitude has been recorded as 'Zero' and the level of effect as 'None'.

Table 6A.5 Evaluation of Landscape and Visual Effects

		Landscape and Visual Sensitivity			
		High	Medium	Low	Very Low
Magnitude of Change	High	Major (Significant)	Major/Moderate (Significant)	Moderate (Potentially Significant)	Moderate/Minor (Not Significant)
	Medium	Major/Moderate (Significant)	Moderate (Potentially Significant)	Moderate/Minor (Not Significant)	Minor (Not Significant)
	Low	Moderate (Potentially Significant)	Moderate/Minor (Not Significant)	Minor (Not Significant)	Negligible (Not Significant)
	Very Low	Moderate/Minor (Not Significant)	Minor (Not Significant)	Negligible (Not Significant)	Negligible (Not Significant)
	Zero	None / No View			

1.6.8 In line with the emphasis placed in GLVIA3¹ upon application of professional judgement, the adoption of an overly mechanistic approach through reliance upon a matrix as presented in **Table 6A.5** will be avoided. This will be achieved by the provision of clear and accessible narrative explanations of the rationale underlying the assessment made for each landscape and visual receptor over and above the outline assessment provided by use of the matrix. Matrices for landscape and visual effects are provided as a summary in support of the narrative explanations. Wherever possible cross references will be made to baseline figures and/or to photomontage visualisations to support the rationale

Residential Visual Amenity Assessment

1.6.9 Residential amenity is a planning matter that involves a wide number of effects (such as noise and shadow flicker) and benefits, of which residential visual amenity is just one component. The Residential Visual Amenity Assessment (RVAA) is limited to the consideration of visual effects on residential amenity and the methodology accords with the advice in GLVIA3¹, the Landscape Institute’s *Technical Guidance Note 02/19: Residential Visual Amenity Assessment*⁶.

1.6.10 Planning law contains a widely understood principle that the outlook or view from a private property is a private interest and not therefore protected by the UK planning system. However, the planning system also recognises situations where the effects on residential visual amenity are considered as a matter of public interest. This matter has been examined at a number of public inquiries in Wales (as well as in Scotland and England) where the key determining issue was not the identification of significant effects on views, but whether the proposed turbines would have an overbearing effect and/or result in unsatisfactory living conditions, leading to a property being regarded, objectively, as unattractive (as opposed to a less attractive) place in which to live.



- 1.6.11 The visual assessment methodology consequently provides for a much more detailed assessment of the closest residential properties in communities. This allows the assessor, and the determining authority, to make a judgement as to whether the residents at these properties and communities would be likely to sustain unsatisfactory living conditions which it would not be in the public interest to create. Reviews of decisions demonstrate that significant visual effects or changes to the views available from residential properties and their curtilage are not the decisive consideration, rather it is the residential amenity and, with regard to an LVIA, residential *visual* amenity that is determinate.
- 1.6.12 The methodology for assessing the visual effects on views from residential properties is therefore slightly different from the assessment of other visual receptors and allows for two stages of assessment as follows:
- Stage 1: Undertake a visual assessment to identify any significant effects upon residents in communities; and
 - Stage 2: Undertake a Residential Visual Amenity Assessment (RVAA).
- 1.6.13 A residential property, for the purposes of environmental impact assessment, should be one that was designed and built/converted for that purpose and currently (at the time of the assessment) remains in a habitable condition, of a safe construction, wind and watertight with appropriate vehicle access, and services (drinking water, sanitation, and power supply). Other buildings such as barns/outbuildings, garages, huts and derelict properties should generally be excluded from the RVAA, unless they form part of the curtilage of an existing residence.
- 1.6.14 The assessment of residential properties or groups of residential properties is limited to those which appear on the Ordnance Survey 1:25,000 scale map and any expectations such as known recent 'new-builds'. Planning permissions and conversions are not included. Whilst most of the properties can be viewed at close range from public roads and footpaths, or have otherwise been visited, some of these properties are accessed via private or gated roads and due to these access limitations, they have been assessed from the nearest public road or footpath which may be at greater distance from the property. Where this is the case, the RVAA should be regarded as a 'best estimate' of the likely visual effects.
- 1.6.15 Baseline conditions across many parts of the Valleys area in south Wales are such that communities are often located within the proscribed 2 km radius RVAA study area with these communities containing large numbers of residential properties. This situation is applicable to the proposed Mynydd Carn-y-Cefn Wind Farm. Undertaking visual assessments and subsequently RVAAs at individual residential properties in these communities is neither practical nor desirable. Residential properties in communities are therefore grouped together based upon shared relevant characteristics as listed in paragraph 1.6.11 under Stage 2: Residential Visual Amenity Assessment.

Stage 1: Visual Assessment

- 1.6.16 A visual assessment is undertaken to identify those properties where a significant visual effect on a view from the property available to the resident(s) is likely to occur. The

methodology for this is set out above and combines an assessment of the residents' 'sensitivity' with an assessment of 'magnitude'.

- 1.6.17 The sensitivity of individual residential receptors in the community has been assessed as 'High' due to the high susceptibility of residents in accordance with GLVIA3¹, paragraph 6.33. The value of the view is also likely to be regarded as high by the residents themselves, but the views in the closest communities to the proposed Mynydd Carn-y-Cefn Wind Farm are not nationally and only infrequently locally designated for their scenic value and generally accord a medium value in this respect.
- 1.6.18 Other wind energy development may be visible to residents in some communities within the 2 km radius RVAA study area. However, it is considered unlikely that it would contribute to an effect on the RVAA because as shown in **Table 6.6** and **Figure 6.4**, the operational wind energy developments that are the closest (within 4-5 km) and which are most likely to be visible from the residential receptors within the RVAA study area are scattered turbines under 100m blade tip height. The exceptions are the scoping schemes, comprising wind farms with turbines 180-200m blade tip height at Mynydd Llanhilleth, Abertillery and Manmoel that are all located within a ~5km radius and consequently have the potential for significant cumulative effects with the Proposed Development.

Stage 2: Residential Visual Amenity Assessment

- 1.6.19 The second stage is to consider the residential visual amenity and whether, in terms of the wider public interest, the visual effects would result in unsatisfactory living conditions, leading to properties being regarded, objectively, as an unattractive (as opposed to a less attractive) place in which to live. Relevant information considered as part of the Stage 2 assessment may include, but is not limited to the following:
- Scale of Wind Farm:
 - ▶ Number and height of visible turbines;
 - ▶ The horizontal and vertical extent or AoVs of the visible turbine array;
 - ▶ Separation distance (closest and furthest visible turbines); and
 - ▶ Height differentials in metres Above Ordnance Datum (AOD) between the property groups in the valleys and the turbine bases on the ridgeline.
 - Description of property groups, as far as this can be ascertained and as applicable to a majority of individual properties in a defined group:
 - ▶ Orientation and size of properties and whether views from the properties towards the wind farm would be direct or oblique;
 - ▶ Location of principal rooms and main living areas such as living/dining rooms, kitchens and conservatories, as opposed to upstairs rooms (bedrooms / bathrooms), working areas such as farm buildings and utility areas;
 - ▶ Location of principal garden areas which may include patios and seating areas as opposed to less well used areas within curtilages such as paddocks or garages; and
 - ▶ The effects of any screening by landform, vegetation or nearby built development.

- Location and context:
 - ▶ The aspect of the property in terms of the overall use and relationship to the garden areas and surrounding landscape;
 - ▶ The principal direction of main views and visual amenity;
 - ▶ The context and nature of any intervening structures e.g. other existing wind farm development, farm buildings or forestry.

- 1.6.20 The RVAA will take account of the likely views from the ground floors of properties and main garden areas but excludes upper floors and other non-residential land that may be associated with the properties. These areas cannot usually be assessed from public areas unless they have been subject to further on-site assessment with the resident's permission.
- 1.6.21 Other factors affecting residential amenity such as noise and shadow flicker are not considered as part of the RVAA.

1.7 Night-time Assessment

- 1.7.1 The night-time assessment follows the same methodology used for the assessment of landscape, visual and cumulative effects. The only difference is that it is conducted during periods of dawn to dusk and assesses the baseline night-time environment against the proposed additional, artificial lighting, in this case aviation warning lights, to be fitted to the proposed turbines.
- 1.7.2 The study area for the night-time assessment is also the same as the LVIA Study Area, although typically significant effects are not predicted to occur from turbines lights over distances of ~5km to 10km from the Proposed Development, particularly given the settled nature of the valleys in the study area that include artificial lighting along major road corridors and the majority of the settlements.
- 1.7.3 As with the landscape and visual assessment, the sensitivity of the visual receptor to the Proposed Development (aviation warning lights) and the magnitude of change are combined to determine the level of effect likely to result from the aviation warning lights. The evaluation of significance and the nature of these effects is also described following the methodology used for the assessment of landscape, visual and cumulative effects.
- 1.7.4 Importantly, the night-time assessment is not a technical lighting impact assessment based on quantitative measurement of light levels, rather the assessment relies on professional judgement of what the human eye can reasonably perceive.
- 1.7.5 The night-time assessment is supported by a baseline night-time environment or darkness survey, ZTV plots and baseline photography and wirelines from selected viewpoints. These visualisations help to assess both the level of night-time visual impact for particular visual receptors and focus the assessment.

Night-time Viewpoint Analysis

- 1.7.6 A range of viewpoints are examined in detail and analysed to determine whether a significant visual effect would occur. By arranging the viewpoints in order of distance it is

possible to define a threshold or outer limit, beyond which there would be no further significant night-time effects.

- 1.7.7 The night-time viewpoint analysis involves visiting the viewpoint locations during periods of dawn or dusk and viewing wirelines and photomontages prepared for each viewpoint location. The fieldwork is conducted in periods of fine weather with clear skies and considers seasonal changes such as reduced leaf cover or hedgerow maintenance.

Baseline Night-time Environment or Darkness Survey

- 1.7.8 During site visits a baseline night-time environment survey or 'darkness survey' is carried out at each viewpoint location. The purpose of the darkness survey is to establish the existing light levels perceived by the landscape architects at the viewpoints and determine their sensitivity to change. The following observations are recorded:
- Areas of darkness with no artificial light;
 - Direct artificial lighting (where the light source is directly visible from the viewpoint);
 - Indirect artificial lighting (where the light source is not visible but the light emanating from the light source is visible as in the case of 'sky glow');
 - Static lighting, for example emanating from built development or street lighting; and
 - Mobile or transient lighting, for example associated with moving vehicles, trains or aircraft.
- 1.7.9 Baseline photographs at each of the night-time assessment viewpoints are obtained and presented.

1.8 Production of ZTVs and Visualisations

- 1.8.1 Zones of Theoretical Visibility (ZTVs) and visualisations (wirelines / wirelines and photomontages) are graphical images produced to assist and illustrate the LVIA and the cumulative assessment. The methodology accords with the SNH guidance *Visual Representation of Wind Farms*, Version 2.2³. Further, additional guidance is provided by the Landscape Institute Technical Guidance Note: *Visual Representation of Development Proposals*⁵.

Methodology for Production of ZTVs

- 1.8.2 The ZTVs are calculated using ArcGIS software to generate the zone of theoretical visibility of the proposed Mynydd Carn-y-Cefn Wind Farm. This software creates a 3D computer model of the existing landscape and the development using Ordnance Survey Terrain 5. This data provides a digital record of the existing landform of Great Britain based on 5m grid squares and models representing the specified geometry and position of the proposed turbines. The computer model includes the defined and detailed LVIA Study Area and takes account of atmospheric refraction and the Earth's curvature.

- 1.8.3 The resulting ZTV plots are overlaid on Ordnance Survey mapping at an appropriate scale and presented as figures using desktop publishing/graphic design software.
- 1.8.4 Resoft Wind Farm© software is used to calculate cumulative ZTV plots based on the intervisibility of the Proposed Development with other existing, consented and application wind farms included in the CLVIA. In addition to the methods as described above, the layouts and geometries of the surrounding existing, consented and application wind farms are loaded into the same computer programme.

Methodology for Baseline Photography

- 1.8.5 Once a viewpoint has been selected, it is visited, confirmed, and assessed with the aid of a wireline or similar visualisation in the field. A photographic record is taken to record the view and the details of the viewpoint location and associated data are recorded to assist in the production of visualisations and to validate their accuracy. All site photography included in the LVIA is taken in accordance with *Visual Representation of Development Proposals. Technical Guidance Note 06/19*⁵.
- 1.8.6 The following photographic information is recorded:
- Date, time, weather conditions and visual range;
 - GPS recorded 12 figure grid reference accurate to ~5 m;
 - GPS recorded Above Ordnance Datum (AOD) height data;
 - The focal length of lens is confirmed;
 - Horizontal field of view (in degrees); and
 - Bearing to Target Site (Proposed Development).
- 1.8.7 All photographs included in this assessment were recorded with a digital SLR camera set to produce photographs equivalent to that of a manual 35 mm SLR camera with a fixed 50mm focal length lens.
- 1.8.8 All the resulting visualisations have been prepared to show other cumulative wind energy development in order that they may assist the cumulative assessment as well as the LVIA.
- 1.8.9 Whilst no two-dimensional image can fully represent the real viewing experience, the visualisation aims to provide a realistic representation of the Proposed Development, based on current information and photomontage methodology.

Methodology for Production of Visualisations

- 1.8.10 The view from each viewpoint has been illustrated with a photograph, a wireline and a photomontage indicating the Proposed Development. It should be noted however, that the SNH guidance advises that beyond 20 km the visibility of turbines in the printed photomontages is difficult to see or reproduce realistically. Consequently, the view from the most distant proposed viewpoint (Craig-y-Fan Du, Brecon Beacons National Park) at ~20 km has only been produced as a wireline.

- 1.8.11 The wirelines and photomontages are produced using Resoft Wind Farm© software to generate a perspective view of the wind farm. This software creates a 3D computer model of the existing landscape and the development using digital terrain data and models representing the specified geometry and position of the proposed turbines. The computer model includes the entire LVIA Study Area and all visualisations take account of the effects caused by atmospheric refraction and the Earth's curvature. The computer model does not take account of the screening effects of any intervening objects and forestry, unless specified (see individual figures).
- 1.8.12 A wireline of the Proposed Development and the existing landform is generated for each viewpoint within the LVIA Study Area. These wirelines are used to assist the assessment on location at each viewpoint, the position of which, if required, is adjusted on site to achieve the most visible vantage-point of the Proposed Development (e.g. to avoid buildings, forestry, and general foreground clutter, potentially interfering with the view). Photographs are then taken using a digital SLR camera in combination with a panoramic head equipped tripod. Detailed information is then recorded on site to enable the accurate alignment of the photographs with the wireline model (data such as: GPS grid co-ordinates; ground level information; compass bearings; and any other known references and viewpoint information).
- 1.8.13 The photographs from the viewpoint are then joined to form a planar or cylindrical projection image or panorama as required by the SNH guidance, using computer software to remove 'barrel distortion' caused by the camera lens. This panorama, combined in Resoft Wind Farm© with the data recorded on site, enables the wireline to be superimposed and aligned. To produce the photomontage, the wireline turbines are rendered to appear 'life-like' considering the time of the photography and weather conditions occurring on the day.
- 1.8.14 Site infrastructure, including the site access, on-site access tracks and crane hard standing areas and the substation may also be theoretically illustrated in the photomontages for closer-range viewpoints to inform the assessment conclusions, however this was assessed not be required because the lower parts of the turbine towers and ground level infrastructure would be screened from the closer range viewpoints where there is a potential for this site infrastructure to influence the overall magnitude of change.
- 1.8.15 The completed panoramas, wirelines, photomontages and accompanying data are then presented as figures using desktop publishing/graphic design software in accordance with referenced SNH and Landscape Institute guidelines.

Printing of Maps and Visualisations

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

1.9 Glossary of Terms and Abbreviations

- 1.9.1 Note: Those descriptions marked with an asterisk are as per the terminology provided in the GLVIA3¹ glossary.

Term/abbreviation	Definition
AOD	Above Ordnance Datum
AoV	Angle of View
Artificial light	Light produced by electrical means.
BT	Blade Tip
Candela	A unit of measure of luminous intensity, in a given direction.
CLVIA	Cumulative Landscape and Visual Impact Assessment
Constant light	Uninterrupted light source over a given time period.
Cumulative effects	Additional changes caused by a proposed development in conjunction with other similar developments or as a combined effect of a set of developments, taken together' (SNH, 2012)
Cumulative landscape effects	Effects that 'can impact on either the physical fabric or character of the landscape, or any special values attached to it' (SNH, 2012)
Cumulative visual effects: In combination In succession Sequentially	<p>Effects that can be caused by combined visibility, which 'occurs where the observer is able to see two or more developments from one viewpoint' and/or sequential effects which 'occur when the observer has to move to another viewpoint to see different developments' (SNH 2012)</p> <ul style="list-style-type: none"> • In combination: Where two or more developments are or would be within the observer's arc of vision at the same time without moving his/her head (GLVIA3¹, Table 7.1). • In succession: Where the observer has to turn his/her head to see the various developments – actual and visualised (GLVIA3¹, Table 7.1). • Sequential cumulative effect. Occurs where the observer has to move to another viewpoint to see the same or different developments. Sequential effects may be assessed for travel along regularly used routes such as major roads or popular paths (GLVIA3¹, Table 7.1).
Darkness survey	Visual survey the night-time environment and the identification of artificial light sources.
Development*	Any proposal that results in change to the landscape and/or visual environment.
Degree of change	A combination of the scale, extent and duration of an effect also defined as 'magnitude'.
Designated Landscape*	Areas of landscape identified as being of importance at international, national or local levels, either defined by statute or identified in development plans or other documents.
Direct light	The artificial light source is visible. Note that light emanating from the window of a building is considered to be a 'direct' light source.

Term/abbreviation	Definition
EIA	Environmental Impact Assessment
Elements*	Individual parts which make up the landscape, such as, for example, trees, hedges and buildings.
Enhancement*	Proposals that seek to improve the landscape resource of the site and its wider setting beyond its baseline condition.
Environmental fit	The relationship of a development to identified environmental opportunities and constraints in its setting.
Feature*	Particularly prominent or eye-catching elements in the landscape such as tree clumps, church towers or wooded skylines OR a particular aspect of the project proposal.
FoV	Field of View – the horizontal angle of the view illustrated in a visualisation.
Geographical Information System (GIS)	A system that captures, stores, analyses, manages and presents data linked to location. It links spatial information to a digital database.
GLVIA 3	Guidelines for Landscape and Visual Impact Assessment, Third Edition, published jointly by the Landscape Institute and Institute of Environmental Management and Assessment, 2013.
Heritage	The historic environment and especially valued assets and qualities such as historic buildings and cultural traditions.
HH	Hub Height
Historic Landscape Characterisation (HLC) and Historic Land-use Assessment (HLA)	Historic characterisation is the identification and interpretation of the historic dimension of the present-day landscape or townscape within a given area. HLC is the term used in England and Wales, HLA is the term used in Scotland.
Indirect effects*	Direct effects relate to the host landscape and concern both physical and perceptual effects on the receptor. Indirect effects relate to those landscapes and receptors which separated by distance or remote from the development and therefore are only affected in terms of visual or perceptual effects. The Landscape Institute also defines indirect effects as those which are not a direct result of the development but are often produced away from it or as a result of a complex pathway.
Indirect light	The light source is not visible but the light emanating from the source is apparent.
Infrared light	A type of light not visible to the human eye.
Iterative design process	The process by which project design is amended and improved by successive stages of refinement which respond to growing understanding of environmental issues.
Key characteristics	Those combinations of elements which are particularly important to the current character of the landscape and help to give an area its particularly distinctive sense of place.

Term/abbreviation	Definition
LANDMAP	LANDMAP is a whole landscape approach that covers all landscapes, designated and non-designated, it covers the natural, rural, peri-urban and urban areas in Wales, (excluding the Cities of Cardiff and Swansea), it includes inland waters and coastal areas to the low water mark. LANDMAP is an all-Wales GIS (Geographical Information System) based landscape resource where landscape characteristics, qualities and influences on the landscape are recorded and evaluated into a nationally consistent data set. In Wales, LANDMAP is the formally adopted methodology for landscape assessment and is advocated by Planning Policy Wales.
Land cover	The surface cover of the land, usually expressed in terms of vegetation cover or lack of it. Related to but not the same as land use.
Landscape and Visual Impact Assessment (LVIA)	A tool used to identify and assess the likely significance of the effects of change resulting from development both on the landscape as an environmental resource in its own right and on people's views and visual amenity.
Landscape Character Assessment	The process of identifying and describing variation in the character of the landscape, and using this information to assist in managing change in the landscape. It seeks to identify and explain the unique combination of elements and features that make landscapes distinctive. The process results in the production of a Landscape Character Assessment.
Landscape character*	A distinct, recognisable, and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.
Landscape classification	A process of sorting the landscape into different types using selected criteria but without attaching relative values to different sorts of landscape.
Landscape constraints	Components of the landscape resource such as views or mature trees recognised as constraints to development. Often associated with landscape opportunities.
Landscape effects*	Effects on the landscape as a resource in its own right. An assessment of landscape effects deals with the effects of change and development on landscape as a resource. The concern here is with how the proposal will affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character. (GLVIA3 ¹ , Para 5.1).
Landscape fit	The relationship of a development to identified landscape opportunities and constraints in its setting.
Landscape patterns	Spatial distributions of landscape elements combining to form patterns, which may be distinctive, recognisable, and describable e.g. hedgerows and stream patterns.
Landscape quality (condition)*	A measure of the physical state of the landscape. It may include the extent to which typical character is represented in individual areas, the intactness of the landscape and the condition of individual elements.

Term/abbreviation	Definition
Landscape qualities	A term used to describe the aesthetic or perceptual and intangible characteristics of the landscape such as scenic quality, tranquillity, sense of wildness or remoteness. Cultural and artistic references may also be described here.
Landscape receptors *	Defined aspects of the landscape resource that have the potential to be affected by a proposal
Landscape resource	The combination of elements that contribute to landscape context, character, and value.
Landscape sensitivity	The sensitivity of the landscape to a particular development considers the susceptibility of the landscape and its value.
Landscape strategy	The overall vision and objectives for what the landscape should be like in the future, and what is thought to be desirable for a particular landscape type or area as a whole, usually expressed in formally adopted plans and programmes or related documents.
Landscape value*	The relative value that is attached to different landscapes by society. A landscape may be valued by different stakeholders for a whole variety of reasons. The value of the landscape units that may be affected, based on review of any designations at both national and local levels, and, where there are no designations, judgements based on criteria that can be used to establish landscape value.
Level of effect	Determined through the combination of sensitivity of the receptor and the proposed magnitude of change brought about by the development.
Lux	A unit of illumination, the amount of light on a surface per unit area.
Magnitude (of effect)*	A term that combines judgements about the size and scale of the effect, the extent of the area over which it occurs, whether it is reversible or irreversible and whether it is short term or long term in duration.
Mitigation	Measures which are proposed to prevent, reduce and where possible offset any significant adverse effects (or to avoid, reduce and if possible remedy identified effects. (GLVIA3 ¹ , Para 3.37).
NRW	Natural Resources Wales
Natural light	Light supplied by the sun, directly or indirectly, the moon and stars.
Perception	Combines the sensory (that we receive through our senses) with the cognitive (our knowledge and understanding gained from many sources and experiences).
Perceptual Aspects	A landscape may be valued for its perceptual qualities, notably wildness and/or tranquillity. (GLVIA3 ¹ , Box 5.1)
Photomontage*	A visualisation which superimposes an image of the proposed development upon a photograph or series of photographs.
Beneficial or Adverse Types of Landscape Effect	The landscape effects may be beneficial, neutral, or adverse.

Term/abbreviation	Definition
	In landscape terms – a beneficial effect would require development to add to the landscape quality and character of an area. Neutral landscape effects would include low or negligible changes that may be considered as part of the ‘normal’ landscape processes such as maintenance or harvesting activities. A adverse effect may include the loss of landscape elements such as mature trees and hedgerows as part of construction leading to a reduction in the landscape quality and character of an area.
Beneficial or Adverse Types of Visual Effect	The visual effects may be beneficial, neutral, or adverse. In visual terms – beneficial or adverse effects are less easy to define or quantify and require a subjective consideration of a number of factors affecting the view, which may be beneficial, neutral, or adverse. Opinions as to the visual effects of wind energy developments vary widely, however it is not the assumption of this assessment that all change, including substantial levels of change is a adverse experience. Rather this assessment has considered factors such as the visual composition of the landscape in the view together with the design and composition, which may or may not be reasonably, accommodated within the scale and character of the landscape as perceived from the receptor location.
Probability of Effect	The probability of a landscape and visual effect occurring as a result of this Development should be regarded as certain, subject to the stated project design and the continuance of the existing, baseline landscape resource, including known changes such as other permitted wind farm development. The probability of cumulative effects however is variable. Whereas those effects related to existing wind energy development and those under construction are considered as certain, effects related to development with planning consent are only considered as likely. Wind energy development sites for which there is a submitted planning application are considered as uncertain and other wind energy development for which no planning application has been made are considered as uncertain / unknown, as the level of uncertainty would be greater.
Proximity activated lighting	Lighting which is turned on by the detection of moving objects, such as aircraft detected by radar.
Rarity	The presence of rare elements or features in the landscape or the presence of a rare Landscape Character Type. (GLVIA3 ¹ , Box 5.1)
RD	Rotor Diameter
Receptor	Physical landscape resource, special interest, or viewer group that will experience an effect.
Recreation Value*	Evidence that the landscape is valued for recreational activity where experience of the landscape is important. (GLVIA3 ¹ , Box 5.1)
Representativeness*	Whether the landscape contains a particular character and/or features or elements which are considered particularly important examples.
Residual effects	Likely environmental effects, remaining after mitigation.

Term/abbreviation	Definition
Scale Indicators	Landscape elements and features of a known or recognisable scale such as houses, trees, and vehicles that may be compared to other objects, where the scale of height is less familiar, to indicate their true scale.
Scenic quality	Depends upon perception and reflects the particular combination and pattern of elements in the landscape, its aesthetic qualities, its more intangible sense of place or 'genius loci' and other more intangible qualities. (GLVIA3 ¹ , Box 5.1)
Seascape	Landscapes with views of the coast or seas, and coasts and adjacent marine environments with cultural, historical and archaeological links with each other.
Sense of Place (genius loci)	The essential character and spirit of an area: 'genius loci' literally means 'spirit of the place'.
Sensitivity*	A term applied to specific receptors, combining judgements of the susceptibility of the receptor to the specific type of change or development proposed and the value associated to that receptor.
Significance	A measure of the importance or gravity of the environmental effect, defined by significance criteria specific to the environmental topic.
Significant Effects	<p>It is a requirement of the EIA Regulations to determine the likely significant effects of the development on the environment which should relate to the level of an effect and the type of effect.</p> <p>The significance of an effect gives an indication as to the degree of importance (based on the magnitude of the effect and the sensitivity of the receptor) that should be attached to the impact described.</p> <p>Whether or not an effect should be considered significant is not absolute and requires the application of professional judgement.</p> <p>Significant – 'noteworthy, of considerable amount or effect or importance, not insignificant or negligible'. The Concise Oxford Dictionary.</p> <p>Those levels and types of landscape and visual effect likely to have a major or important / noteworthy or special effect of which a decision maker should take particular note.</p>
Sky glow	The brightness of the night sky in a built-up area as a result of light pollution, apparent as a diffuse artificial light in the sky above major towns and cities.
SNH	Scottish Natural Heritage
Susceptibility*	The ability of a defined landscape or visual receptor to accommodate the specific proposed development without undue negative consequences.
Sustainability*	The principle that the environment should be protected in such a condition and to such a degree that ensures new development meets the needs of the present without compromising the ability of future generations to meet their own needs.
Temporary or permanent effects	Effects may be considered as temporary or permanent. In the case of wind energy development the application is for a 25-year period after which the assessment assumes that decommissioning will occur and that the site will be restored. For these reasons the development is referred to as long term and reversible.

Term/abbreviation	Definition
Time depth	Historical layering – the idea of landscape as a ‘palimpsest’, a much written-over asset of landscape.
Townscape	The character and composition of the built environment including the buildings and the relationships between them, the different types of urban open space, including green spaces, and the relationship between buildings and open spaces.
True View Visuals	A mobile 3D augmented reality (AR) tool used to aid with the assessment. The True View Visuals tool indicates visibility of the Proposed Development to assist in confirming viewpoint positions as well as indicating limited or no visibility of turbines in particular locations. Whilst the images are indicative only, the AR tool provides a comparable image to the accurate wirelines produced.
Type or Nature of effect	Whether an effect is direct or indirect, temporary or permanent, beneficial (positive), neutral or adverse (negative) solus or cumulative.
Viewpoints	<p>Selected for illustration of the visual effects fall broadly into three groups:</p> <p>Representative Viewpoints: selected to represent the experience of different types of visual receptor, where larger numbers of viewpoints cannot all be included individually and where the significant effects are unlikely to differ – for example certain points may be chosen to represent the view of users of particular public footpaths and bridleways;</p> <p>Specific Viewpoints: chosen because they are key and sometimes promoted viewpoints within the landscape, including for example specific local visitor attractions, such as landscapes with statutory landscape designations or viewpoints with particular cultural landscape associations.</p> <p>Illustrative Viewpoints: chosen specifically to demonstrate a particular effect or specific issues, which might, for example, be the restricted visibility at certain locations. (GLVIA3¹, Para 6.19)</p>
Visual amenity	The overall views and surroundings, which provide a visual setting or backdrop to the activities of people living, working, participating in recreational activities, visiting or travelling through an area.
Visual dominance	A visual effect often referred to in respect of residential properties that in relation to development would be subject to blocking of views, or reduction of light / shadowing, and high levels of visual intrusion.
Visual effect*	Effects on specific views and on the general visual amenity experienced by people.
Visual Receptors*	Individuals and/or defined groups of people who have the potential to be affected by a proposal.
Visual sensitivity	The sensitivity of visual receptors such as residents, relative to their location and context, to visual change proposed by development.
Visualisation	Computer visualisation, photomontage, or other technique to illustrate the appearance of the development from a known location.
Wireline / Wireframe	A computer-generated line drawing of the DTM (digital terrain model) and the proposed development from a known location.

Term/abbreviation	Definition
Zone of Theoretical Visibility (ZTV)*	A map, usually digitally produced, showing areas of land within which, a development is theoretical visible.
