MWP

Chapter 12 Landscape and Visual

Ballycar Wind Farm

12. Landscape and Visual

12.1 Introduction

This chapter describes the landscape and visual effects of the proposed wind farm in the townland of Ballycar in County Clare.

The elements of the proposal most relevant to the landscape and visual assessment are the construction of 12 no. wind turbines and associated infrastructure including substation and grid connection to the National Grid. However, all elements of the proposed development are included in the assessment. Please refer to **Chapter 2 Description of the Proposed Development** for a full project description.

The proposed development comprises the works listed below:

- 12 No. Wind Turbines (blade tip height up to 158m). Eleven of the turbines will have a hub height of 90m and a blade length of 68m and one turbine (T10) will have a hub height of 82m and a blade length of 68m.
- 12 No. Wind Turbine foundations and Hardstand areas.
- 1 No. Permanent Meteorological Mast (90m height) and foundation and associated hardstand areas.
- 1 No. electrical substation (110kV) including associated ancillary buildings, security fencing and all associated works.
- 2 No. Developed Site Entrances, one temporary entrance to facilitate construction traffic and one permanent entrance.
- New and upgraded internal site access tracks.
- Provision of an on-site Visitor cabin and parking.
- All associated underground electrical and communications cabling connecting the proposed turbines to the proposed onsite substation.
- Laying of approximately 1.5km of underground electricity cabling to facilitate the connection to the national grid from the proposed onsite substation to connect to an existing 110kV overhead line.
- Temporary works on sections of the public road network along the turbine delivery route (including hedge or tree cutting, relocation of powerlines/poles, lampposts, signage, and local road widening).
- 1 No. Temporary construction site compound and additional mobile welfare unit.
- 1 No. Borrow pit to be used as a source of stone material during construction.
- 3 No. spoil deposition areas (one at borrow pit location).
- Associated surface water management systems.
- Tree felling for wind farm infrastructure.

Grid Connection – the route of the underground cable for connection to the National Grid is approximately 1.5km. From the proposed 110kV substation, an underground cable is routed in a north-west direction where it connects to the existing 110kV overhead line. Requirements for finish and colour are detailed in the 2006 *Department of Environment, Heritage and Local Government Wind Farm Development Guidelines* as follows:

- Turbines shall be finished to a white, off-white, or grey colour to correspond with the colour scheme of existing turbines.
- All surfaces will have a matt non-reflective finish.

It is proposed to install lighting on the turbines in a pattern that is acceptable to the Irish Aviation Authority/AirNav Ireland for aviation visibility purposes.

12.1.1 Study Area

According to Section 5.2 of the GLVIA (3rd Edition 2013):

> *"The study area should include the site itself and the full extent of the wider landscape around it, which the proposed development may influence in a significant manner."*

The Zone of Theoretical Visibility (ZTV) mapping is carried out to assist in identifying the areas from which the proposed wind turbines may be theoretically visible.

The Zone of Theoretical Visibility (ZTV) maps extend to a radius of 20 kilometres, so the extent over which the turbines are theoretically visible are represented for this distance on these maps. The *Wind Energy Development Guidelines* (2006) and *Draft Wind Energy Development Guidelines* (2019) state that the ZTV of 20 kilometres is adequate for turbines over 100m and advise a ZTV radius of 25 kilometres if this would include a landscape of International or National importance. No such landscape lies within 25 kilometres of the proposed development and therefore, the ZTV radius of 20km is appropriate. The study area for landscape and visual assessment is indicated on Figure 12-1 below and is also defined on the ZTV Map and other maps in this chapter. This map is included in a reduced format here and at full size (A3) as Appendix 12A.

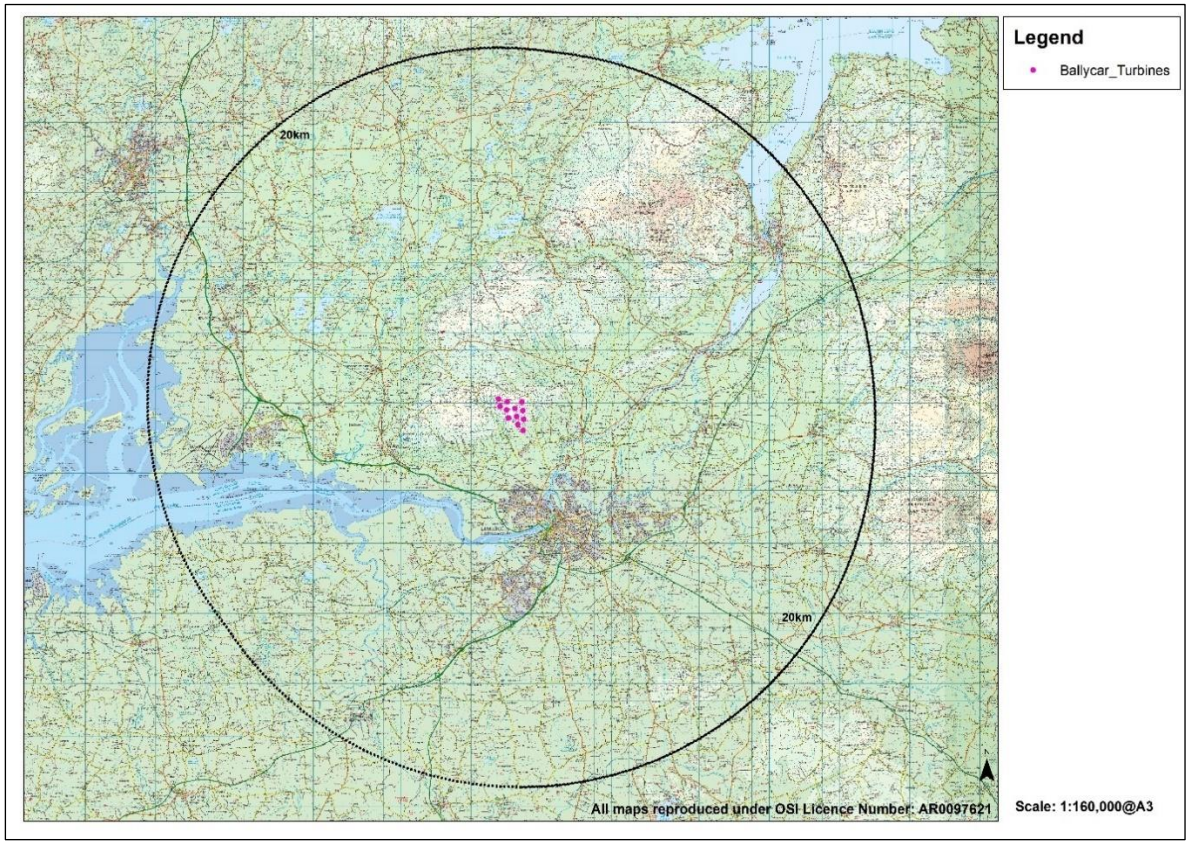


Figure 12-1: Landscape and Visual Study Area (20km radius)

Obviously, there is a considerable variation in the landscape over such a large study area. Therefore in describing the characteristics of the study area, (see Section 12.4) this is described under two headings. The 'Site and Immediate vicinity' heading refers to the site itself and approximately a 3 kilometres radius around it, while the 'Wider landscape' is then described, referring to the areas beyond 3 kilometres, but within the wider study area of 20km.

12.1.2 Competency of Assessor

This Landscape and Visual Assessment was carried out by Evelyn Sikora, BA MA, MILI. She has nine years' experience in Landscape and Visual Assessment (LVIA) and has worked on Landscape and Visual assessments for a range of wind energy developments through Ireland, from single turbine developments to Strategic Infrastructure Developments including the operational Cloncreen windfarm in Co. Offaly, the permitted Drumnahough wind farm in Co. Donegal, the permitted Shronowen wind farm in Co. Kerry and the permitted Carrownagowan wind farm in Co. Clare. She also has experience in a range of other LVIA projects including solar energy, infrastructure, flood relief, residential, commercial and recreation projects. Oversight of the chapter was provided by Declan O' Leary, CMLI, MILI, Managing Director of Cunnane Stratton Reynolds.

12.2 Methodology

12.2.1 Definition of Landscape

Landscape and Visual Impact Assessment (LVIA) is a tool used to identify and assess the significance of the effects of change resulting from development on both the landscape as an environmental resource in its own right and on people's views and visual amenity. The methodology followed for LVIA is that set out in the Guidelines for Landscape and Visual Impact Assessment by the Landscape Institute and the Institute of Environmental Management and Assessment (2013), 3rd Edition (hereafter referred to as the GLVIA 2013).

Ireland is a signatory to the European Landscape Convention (ELC). The ELC defines landscape as 'an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors'. This definition is important in that it expands beyond the idea that landscape is only a matter of aesthetics and visual amenity. It encourages a focus on landscape as a resource in its own right - a shared resource providing a complex range of cultural, environmental, and economic benefits to individuals and society.

12.2.2 Guidance

The Guidelines for Landscape and Visual Impact Assessment 2013 (GLVIA) notes that as a cultural resource, the landscape functions as the setting for our day-to-day lives, also providing opportunities for recreation and aesthetic enjoyment and inspiration. It contributes to the sense of place experienced by individuals and communities and provides a link to the past as a record of historic socio-economic and environmental conditions. As an environmental resource, the landscape provides habitat for fauna and flora. It receives, stores, conveys, and cleans water, and vegetation in the landscape, stores carbon and produces oxygen. As an economic resource, the landscape provides the raw materials and space for the production of food, materials (e.g. timber, aggregates) and energy (e.g. carbon-based fuels, wind, solar), living space and for recreation and tourism activities.

The reversibility of change is an important consideration. If change must occur to meet a current need, can it be reversed to return the resource (in this case, the landscape) to its previous state to allow for development or management for future needs. It should be noted that the proposed development can be considered reversible as the removal of turbines can reverse the main landscape and visual effects.

12.2.3 Key Guidance Documents

Landscape and Visual Impact Assessment (LVIA) is a tool used to identify and assess the significance of and the effects of change resulting from development on both the landscape as an environmental resource in its own right and on people's views and visual amenity.

The methodology for assessment of the landscape and visual effects is informed by the following key guidance documents, namely:

- *Guidelines for Landscape and Visual Impact Assessment*, *3rd Edition*. (Landscape Institute and the Institute of Environmental Management and Assessment, 2013), hereafter referred to as the GLVIA 2013).
- *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*. (EPA, 2022).
- *Wind Energy Development Guidelines* (Department of the Environment, Heritage and Local Government 2006).
- *Wind Energy Development Guidelines Public Consultation Draft* (Department of Housing, Planning and Local Government 2019).
- *Guide to Visual Representation of Wind Farms* (Scottish Natural Heritage, 2017).

The GLVIA (2013) is authored by the Landscape Institute in the UK and the IEMA, which contains a network of members in the UK, Ireland and internationally. The guidance was prepared within the parameters of relevant EU directives at the time and is updated, where necessary, by Landscape Institute bulletins online (including the LI TGN 06-19 *Visual Representation of Development Proposals*). The GLVIA (2013) is used internationally and is the industry standard for LVIA in Ireland. Where topic specific guidance on wind farms is in place, the GLVIA notes that this should be referred to.

The EPA guidance (2022) refers to the use of topic specific guidance and specifically references the GLVIA 2013 in relation to professional judgement. It recognises (at para 3.72) that:

> "*Some uncertainty is unavoidable in EIA, especially about matters that involve an element of judgement, such as assigning a level of significance to an effect. Such judgements should be explicit and substantiated rather than presented as objective fact. This is best done using agreed referable approaches, e.g. the Guidelines on Landscape and Visual Impacts Assessment provide guidance on what constitutes a severe visual effect*".

12.2.4 Policy Documents

- *Clare County Development Plan 2022-2028 and associated documents*

Reference is also made to the Development Plans of various counties including Co. Limerick, and though the development is wholly located within County Clare, a considerable proportion of County Limerick is within the study area (defined in Section 12.1.1) and therefore the key scenic designations are taken into account. Relevant

Designations from the Tipperary County Development Plan are also included as a small proportion of the east of the study area lies within this County.

12.2.5 Landscape and Visual Assessment Process

The GLVIA (2013) outlines the assessment process, which combines judgements on the sensitivity of the resource, and the magnitude of the change as a result of the proposed development. These are then combined to reach an assessment of the significance of the effect.

Another key distinction to make is that in the GLVIA methodology, a distinction is made between landscape effects and the visual effects of a proposed development.

'*Landscape*' results from the interplay between the physical, natural and cultural components of our surroundings. Different combinations of these elements and their spatial distribution create distinctive character of landscape in different places. 'Landscape character assessment' is the method used in LVIA to describe landscape, and by which to understand the potential effects of a development on the landscape as 'a resource'. Character is not just about the physical elements and features that make up a landscape, but also embraces the aesthetic, perceptual and experiential aspects of landscape that make a place distinctive.

Views and 'visual amenity' refer to the interrelationship between people and the landscape. The GLVIA (2013) prescribes that effects on views and visual amenity should be assessed separately from landscape, although the two topics are inherently linked. Visual assessment is concerned with changes that arise in the composition of available views, the response of people to these changes and the overall effects on the area's visual amenity.

The assessment of Landscape and Visual Effects assesses the effects of the development on the landscape as a resource, and on the fabric and character of the landscape. Assessment of visual effects relates to the change in views and visual amenity experienced by groups of people. The assessment includes the review of the proposed development, desktop study, and several site visits both to the site and the wider landscape. This approach emphasises the distinction between the assessment of Landscape effects and Visual effects, which, though related, are assessed separately. The methodology is as follows:

12.2.5.1 Establishment of Baseline

The process set out in the GLVIA (2013) and in EPA (2022) involves the preparation of the baseline or receiving environment characteristics. This includes two stages, which are a desk based study and site visit/field study. These allow the assessor to establish the existing receiving environment and key landscape and visual characteristics and their sensitivities.

The desk based study includes:

- Review of preliminary proposals and identification of preliminary study area.
- Review of current Development Plan(s) within the study area, and any other plans as appropriate, to identify relevant national and local designations and polices.
- This may include designations such as scenic routes, protected views and other landscape designations including any Landscape Character Assessments (International designations such as UNESCO designations would also be relevant here, if present).
- Other information that may be consulted include aerial imagery, OSI Discovery series mapping, historic (6-inch and 25 inch) mapping and CORINE Landcover Maps (2018).

A site visit was/is then carried out to review and/or confirm the findings of the desk based study and provide a more detailed description of the landscape and visual character of the study area. Based on both the desk study and site visit, the assessor identifies landscape and visual receptors and their relative sensitivity. Site visits were carried out in June and July 2022 and May 2023.

12.2.5.2 Assessment of Effects

Once the Baseline is established, and the proposed development drawings and descriptions reviewed, the assessment process is commenced, as per the GLVIA (2013) and as outlined below.

Use of 'Impact and 'Effect'

Section 1.16 of the GLVIA (referring to the EIA Directive), advises that the terms 'impact' and effect' should be clearly distinguished and consistently used in the preparation of an LVIA.

'Impact' is defined as the action being taken. In the case of the proposed development, the impact would include the construction of the proposed wind turbines and other elements.

'Effect' is defined as the change or changes resulting from those actions, e.g. a change in landscape character, land cover, or changes to the composition, character and quality of views in the receiving environment. This report focusses on these effects.

12.2.5.3 Methodology for Landscape Assessment

In Section 12.5.1 and 12.6.1 of this report, the landscape effects of the proposed development are assessed. The nature and scale of changes to the landscape elements and characteristics are identified, and the consequential effects on landscape character are discussed. Trends of change in the landscape are taken into account. The assessment of the significance of the effects takes account of the sensitivity of the landscape resource and the magnitude of change to the landscape, which will result from the proposed development.

Definitions and descriptions of sensitivity, magnitude of change, quality and longevity of effects are derived from the GLVIA (2013). The GLVIA (2013) does not set out specific definitions of descriptions used, but contains key widely used principles and case studies / examples that are intended to inform a professional's methodology, supported by their experience and judgements in relation to landscape and landscape change. These descriptions expand and complement the EPA guidelines as intended, in relation to topic- specific guidance.

Sensitivity of the Landscape Resource

Sensitivity is a combination of Landscape Value and Landscape Susceptibility.

Landscape values can be identified by the presence of landscape designations or policies, which indicate particular values, either on a national or local level. In addition, a number of criteria are used to assess the value of a landscape. These are described further in below, in Section 12.4.7.8.

Landscape susceptibility is defined in the GLVIA as, "the ability of the landscape receptor to accommodate the proposed development without undue consequences for the maintenance of the baseline scenario and/or the achievement of landscape planning policies and strategies." Susceptibility also relates to the type of development – a landscape may be highly susceptible to certain types of development but have a low susceptibility to other types of development.

Landscape susceptibility (in terms of its ability to accommodate the proposed development) in relation to wind energy developments can include consideration of:

- Topography and skyline – uplands can absorb wind energy development depending on siting and design.

- Landscape pattern and landcover – a simple landscape pattern can be less susceptible than a complex pattern, including varying types of landcover.
- Settlement pattern – this can influence susceptibility.

It includes consideration of landscape values as well as the susceptibility of the landscape to change. Landscape sensitivity is a function of its land use, landscape patterns and scale, visual enclosure and distribution of visual receptors, scope for mitigation, and the value placed on the landscape. It also relates to the nature and scale of development proposed.

Landscape Sensitivity ranges from Low to Very High as outlined in Table 12-1.

Table 12-1: Categories of Landscape Sensitivity

Sensitivity	Description
Very High	Areas where the landscape exhibits a very strong, positive character with valued elements, features and characteristics that combine to give an experience of unity, richness and harmony. The character of the landscape is such that its capacity for accommodating change in the form of development is very low. These attributes are recognised in landscape policy or designations as being of national or international value and the principal management objective for the area is protection of the existing character from change.
High	Areas where the landscape exhibits strong, positive character with valued elements, features and characteristics. The character of the landscape is such that it has limited/low capacity for accommodating change in the form of development. These attributes are recognised in landscape policy or designations as being of national, regional or county value and the principal management objective for the area is conservation of the existing character.
Medium	Areas where the landscape has certain valued elements, features or characteristics but where the character is mixed or not particularly strong. The character of the landscape is such that there is some capacity for change in the form of development. These areas may be recognised in landscape policy at local or county level and the principal management objective may be to consolidate landscape character or facilitate appropriate, necessary change.
Low	Areas where the landscape has few valued elements, features or characteristics and the character is weak. The character of the landscape is such that it has capacity for change; where development would make no significant change or would make a positive change. Such landscapes are generally unrecognised in policy and where the principal management objective is to facilitate change through development, repair, restoration or enhancement.
Negligible	Areas where the landscape exhibits negative character, with no valued elements, features or characteristics. The character of the landscape is such that its capacity for accommodating change is high; where development would make no significant change or would make a positive change. Such landscapes include derelict industrial lands or extraction sites, as well as sites or areas that are designated for a particular type of development. The principal management objective for the area is to facilitate change in the landscape through development, repair or restoration.

Magnitude of Landscape Change

The magnitude of change is a factor of the scale, extent and degree of change imposed on the landscape with reference to its key elements, features, and characteristics (also known as 'landscape receptors'). Five categories are used to classify magnitude of landscape change.

For the purpose of assessment, five categories are used to classify the landscape sensitivity of the receiving environment, from Very High sensitivity to Negligible. These categories are defined in Table 12-2.

Table 12-2: Magnitude of Landscape Change

Magnitude of Change	Description
Very High	Change that is large in extent, resulting in the loss of, or major alteration to key elements, features or characteristics of the landscape and/or introduction of large elements considered totally uncharacteristic in the context. Such development results in fundamental change in the character of the landscape.
High	Change that is moderate to large in extent, resulting in alteration or compromise to key elements, features or characteristics, and/or introduction of large elements considered uncharacteristic in the context. Such development results in a moderate to large change to the character of the landscape.
Medium	Change that is moderate in extent, resulting in partial loss or alteration to key elements, features or characteristics of the landscape, and/or introduction of elements that may be prominent but not necessarily uncharacteristic in the context. Such development results in moderate change to the character of the landscape.
Low	Change that is moderate or limited in scale, resulting in minor alteration to key elements, features or characteristics of the landscape, and/or introduction of elements that are not uncharacteristic in the context. Such development results in minor change to the character of the landscape.
Negligible	Change that is very limited in extent, resulting in no alteration to key elements, features, or characteristics of the landscape, and/or introduction of elements that are characteristic in the context. Such development results in minimal change to the character of the landscape.

12.2.5.4 Methodology for Visual Assessment

In Section 12.5.2 and 12.6.2 of this report, the visual effects of the proposed development are assessed. Visual assessment considers the sensitivity of the viewers, (i.e. groups of people) and the magnitude of the changes to the composition and character of views. The assessment is made for a number of viewpoints selected to represent the range of visual receptors in the receiving environment. The significance of the visual effects experienced at these locations is assessed by measuring the visual receptor sensitivity against the magnitude of change to the view resulting from the proposed development.

Sensitivity of the Visual Receptor

Visual receptor sensitivity is a function of two main considerations:

Susceptibility of the visual receptor to change. This depends on the occupation or activity of the people experiencing the view, and the extent to which their attention or interest is focussed on the views or visual amenity they experience at that location. Visual receptors most susceptible to change include residents at home,

people engaged in outdoor recreation focused on the landscape (e.g. trail users), and visitors to heritage or other attractions and places of community congregation where the setting contributes to the experience.

Visual receptors less susceptible to change include travellers on road, rail and other transport routes (unless on recognised scenic routes which would be more susceptible), people engaged in outdoor recreation or sports where the surrounding landscape does not influence the experience, and people in their place of work or shopping where the setting does not influence their experience.

Value attached to the view. This depends to a large extent on the subjective opinion of the visual receptor but also on factors such as policy and designations (e.g. scenic routes, protected views), or the view or setting being associated with a heritage asset, visitor attraction or having some other cultural status (e.g. by appearing in arts).

For the purpose of assessment, five categories are used to classify visual receptor 's sensitivity. These categories range from Very High to Negligible and are described in Table 12-3.

Table 12-3: Categories of Visual Receptors Sensitivity

Sensitivity	Description
Very High	Viewers at iconic viewpoints - towards or from a landscape feature or area that are recognised in policy or otherwise designated as being of high value or national value. This may also include residential viewers who are focussed to a large extent on the view.
High	Viewers at viewpoints that are recognised in policy or otherwise designated as being of value, or viewpoints that are highly valued by people that experience them regularly (such as views from houses or outdoor recreation features) and views which are highly valued by the local community. This may also include tourist attractions, and heritage features of regional or county value, and viewers travelling on scenic routes.
Medium	Viewers considered of medium susceptibility, such as locations where viewers are travelling at slow or moderate speeds through or past the affected landscape in cars or on public transport, where they are partly but not entirely focused on the landscape, or where the landscape has some valued views. The views are generally not designated, but include panoramic views or views judged to be of some scenic quality, which demonstrate some sense of naturalness, tranquillity or some rare element in the view.
Low	Viewers at viewpoints reflecting people involved in activities not focused on the landscape e.g. people at their place of work or engaged in similar activities such as shopping, etc. The view may present an attractive backdrop to these activities but there is no evidence that the view is valued, and not regarded as an important element of these activities. Viewers travelling at high speeds (e.g. motorways) may also be generally considered of low susceptibility.
Negligible	Viewpoints reflecting people involved in activities not focused on the landscape e.g. people at their place of work or engaged in similar activities such as shopping where the view has no relevance or is of poor quality and not valued.

Magnitude of Change to the view

Classification of the magnitude of change takes into account the size or scale of the intrusion of the proposed development into the view, (relative to the other elements and features in the composition) i.e. its relative visual dominance), the degree to which it contrasts or integrates with the other elements and the general character of the view, and the way in which the change will be experienced (e.g. in full view, partial or peripheral, or

glimpses). It also takes into account the geographical extent of the change, the duration and the reversibility of the visual effects. It should be noted that the proposed turbines are considered a 'reversible' element, as on decommissioning they can be removed.

Five categories are used to classify magnitude of change to a view. These range from Very High to Negligible and are defined in Table 12-4.

Table 12-4: Magnitude of Visual Change

Magnitude of Change	Description
Very High	Full or extensive intrusion of the development in the view, or partial intrusion that obstructs highly valued features or characteristics, or the introduction of elements that are completely out of character in the context, to the extent that the development becomes dominant in the composition and defines the character of the view and the visual amenity.
High	Extensive intrusion of the development in the view, or partial intrusion that obstructs valued features, or introduction of elements that may be considered uncharacteristic in the context, to the extent that the development becomes co-dominant with other elements in the composition and affects the character of the view and the visual amenity.
Medium	Partial intrusion of the development in the view, or introduction of elements that may be prominent but not necessarily uncharacteristic in the context, resulting in change to the composition but not necessarily the character of the view or the visual amenity.
Low	Minor intrusion of the development into the view, or introduction of elements that are not uncharacteristic in the context, resulting in minor alteration to the composition and character of the view but no change to visual amenity.
Negligible	Barely discernible intrusion of the development into the view, or introduction of elements that are characteristic in the context, resulting in slight change to the composition of the view and no change in visual amenity.

In this case, a number of tools are used to assist in the assessment of visual effects which include ZTV (Zone of Theoretical Visibility) Mapping, as well as photomontages, which are produced from selected viewpoints. These viewpoints are selected following topic-specific guidance contained in SNH (2017) as set out in Section 12.6.2. Initial viewpoints for photomontages are selected during the desk study with the exact location confirmed in the field during the site visit. The completed photomontages are also used to assist in the assessment of visual effects. These are described in further detail below.

ZTV Maps

The ZTV Maps were prepared by Innovision Media. Applying SNH guidance, the creation of Zone of Theoretical Visibility (ZTV) maps utilised Ordnance Survey 10m Digital Terrain Model (DTM) data. Advanced GIS software (ArcGIS Desktop) was employed, accounting for both Earth curvature and light refraction. As per SNH guidance, observer heights were set at 2m to address potential data discrepancies, providing a worst-case scenario perspective.

"Viewer height in a ZTV map is generally set at 2m above ground level. This is higher than the camera height recommended for photographic visualisations (1.5m) to compensate for potential inaccuracies in digital terrain data and to ensure that the 'worst case' is represented."

ZTV Maps are produced to indicate theoretical visibility and are based on topographical information (the data supplied uses contours at 10 metres intervals) to indicate areas which may have views of the turbines. It is important to note that these maps, though useful, have limitations as they are based on topography alone, and represent a bare-earth scenario, that is, a landscape without any structures, buildings, or vegetation. In reality many of these elements combine to screen our views of the landscape, so the ZTV maps represent a greater extent of visibility than in reality.

It is important to note the limitations of ZTV maps which include those identified by Scottish Natural Heritage (SNH, 2017):

- ZTV maps do not include any vegetation, buildings or other structures in the landscape so are different to actual visibility.
- ZTV maps give information on the likely extent and pattern of visibility but not the nature or magnitude - and what the visual effect is likely to be.
- It is not easy to test the accuracy of a ZTV in the field, though some verification will occur during the assessment from viewpoints.

ZTV maps are useful to determine potential visual receptors and viewpoints, as they show areas which will not have any visibility of the proposed development. They also show the pattern of visibility, the numbers of turbines likely to be visible, and how much of the turbines is potentially visible. However, they do not take into account the presence of vegetation or structures in the landscape, and therefore areas showing theoretical visibility on the ZTV maps will not always have visibility in reality.

Photomontages

Photomontages are also used as a tool to assist in the assessment of visual effects and in particular, the nature of the visual effect. They are used in the development of the wind farm design; and can help to illustrate the location and nature of the visual effects of a proposed wind farm. Further details on the photomontages are contained below as well as the assessment in Section 12.6.2. The Photomontage Booklet is contained in Volume IV.

Preparation of Photomontages

Innovision has adhered to the guidelines as set out by the Scottish Natural Heritage guidelines "*Visual Representation of Wind Farms,* Updated February 2017" for the production of the Ballycar Wind Farm photomontages. Using professional cameras and tripod set-up, and fixed 50mm focal length prime lens, Innovision carried out the field work at the best available weather opportunity. All necessary additional information is captured on-site including camera position, date and time as well as locations of any key objects which can aid accurate placement of the proposal. The above information is recorded using mapping-grade professional GPS equipment. Once the field work has been carried out and photography processed, the proposed development is "placed" into the existing photography using professional GIS and 3D modelling software. Once placement has been achieved, a photo-realistic render is output depicting what the proposed development will look like if built. At this point, any landscape mitigation can be added to the image if necessary. The resulting output is a highly accurate, verifiable photomontage formatted to the specifications as set out in the guidelines mentioned above. The camera height for the photography was set up at 1.65m approximately.

The recommended camera height as per the GLVIA guidelines states that the height should be between 1.5 to 1.7m.

A set of 26 no. photomontages were produced from carefully selected viewpoints, to assist in assessing the visual effects, from various locations throughout the study area. These photomontages were produced by Innovision Media Ltd. and are included in the Photomontage Booklet in Volume IV.

While these photomontages are extremely useful in giving an impression of the proposed turbines and assist in the assessment as well as the layout of the proposed turbines, the SNH guidance notes the uses and limitations of visualisations. These include:

- Visualisations provide a tool for assessment but should never be considered as a substitute for visiting a viewpoint in the field.
- It must be noted that photographs cannot replicate a view as seen by the human eye. They also only represent a view from a single location, at a particular time and in particular weather conditions.
- Static visualisations cannot convey the effect of turbine blade movement.

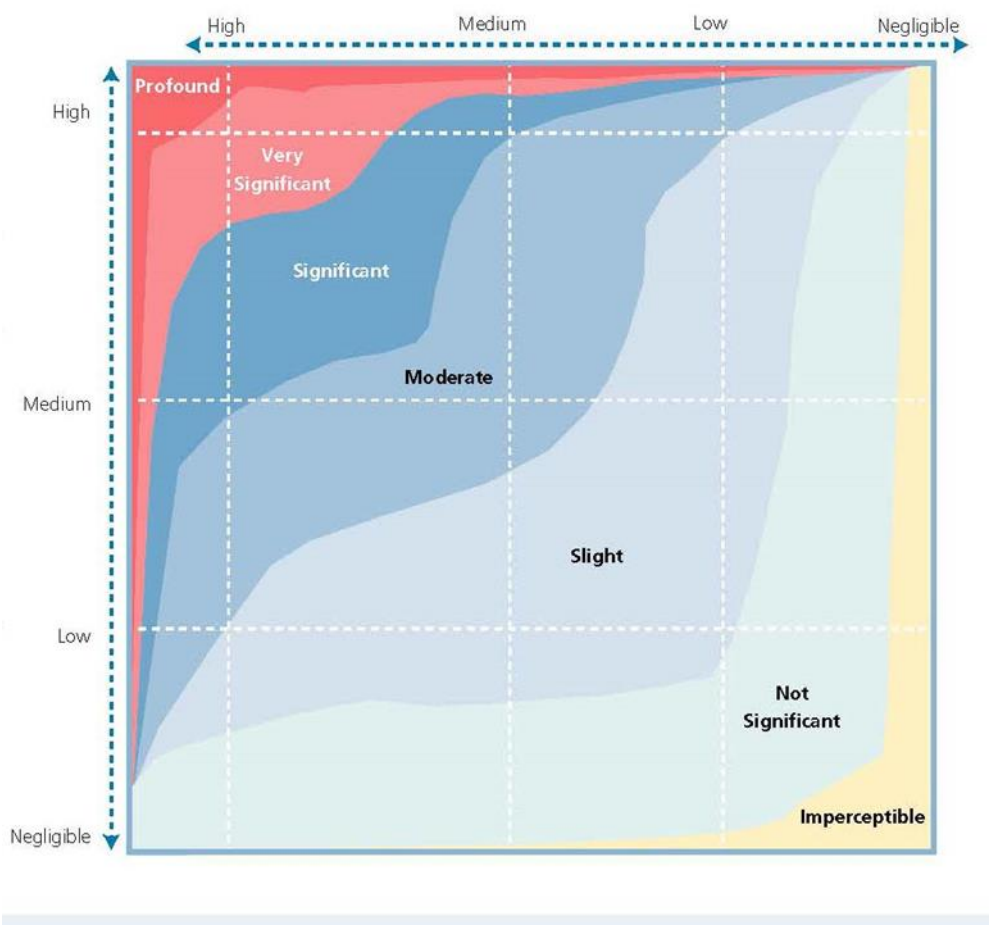
12.2.5.5 Significance of Effect

In order to classify the significance of landscape and visual effects, the predicted magnitude of change is measured against the sensitivity of the landscape/viewpoint. The definitions used by the EPA (2022) provide a useful scale to describe the significance of the effects.

There are seven classifications of significance, namely: (1) imperceptible, (2) not significant, (3) slight, (4) moderate, (5) significant, (6) very significant, (7) profound.

The relationship between the magnitude of change and sensitivity of the receptor with the varying classifications of significance is illustrated on the below extract from the EPA (2022) Guidelines (with labels simplified based on GLVIA principles).

Table 12-5: Significance Matrix (based on EPA, 2022)

	Sensitivity of Receptor
Magnitude of change	

Note: This table is a guideline only, but is useful in illustrating the way in which judgements are combined to arrive at a judgement regarding significance, while illustrating that an element of professional judgment is also applied. The assessor also uses professional judgement informed by their expertise, experience and common sense, to arrive at a classification of significance that is reasonable and justifiable.

The GLVIA 3rd Edition recognises (at para 2.23) that:

"*professional judgement is a very important part of LVIA. While there is scope for quantitative measurement of some relatively objective matters, much of the assessment must rely on qualitative judgements*." The predicted impacts are also classified as beneficial, neutral, or adverse. This is not an absolute exercise; in particular, visual receptors' attitudes to development, and thus their response to the impact of a proposed development, will vary. However, the methodology applied is designed to provide robust justification for the conclusions drawn. These qualitative definitions are included in Table 12-6.

Table 12-6: Quality of Effect

Quality of Effect	Definition
Adverse	Scheme at variance with landform, scale, pattern. Would degrade, diminish or destroy the integrity of valued features, elements or their setting or cause the quality of the landscape(townscape)/view to be diminished.
Neutral	Scheme complements (or does not detract from) the scale, landform and pattern of the landscape(townscape)/view and maintains landscape quality.
Beneficial	Improves landscape(townscape)/view quality and character, fits with the scale, landform and pattern and enables the restoration of valued characteristic features or repairs / removes damage caused by existing land uses.

Impacts/effects are also categorised according to their longevity or timescale as in **Table 12-7.**

Table 12-7: Duration of Effect

Definition of duration	
Duration	Description
Temporary	Effects lasting one year or less
Short Term	Effects lasting one to seven years
Medium Term	Effects lasting seven to fifteen years
Long Term	Effects lasting fifteen to sixty years
Permanent	Effects lasting over sixty years

As noted above, the proposed turbines are considered reversible as they can be removed. They have a lifespan of approximately 35 years.

12.2.6 Limitations

Limitations of tools (ZTV, montages) are considered in the text in **Section 12.2.5** above. No limitations were experienced in the current assessment.

12.3 Receiving Environment – Policy Context

12.3.1 Site Location and Description

The study area for Landscape and Visual Assessment is described in **Section 12.1.1**. The site is located in the townlands of Glennagross, Cappateemore East, Ballycannan West, Ballycannan East, Ballycar South, Ballycar North which is an area of high ground, with lands sloping to the south in a rural area of southeast Clare. The site is approximately 3km northwest of Ardnacrusha, 3km northwest of Limerick City and Suburbs and 6.7km east of Sixmilebridge. Woodcock Hill, a local landmark, which is the location of a radar dome, lies approximately 2.2

kilometres west of the nearest turbine. The small settlement of Meelick lies approximately 1km to the south while the northern suburbs of Limerick City lie approximately 3km to the south.

12.3.2 Landscape Policy Context –Clare County Development Plan 2023-2029

There are a number of policy documents which are relevant, including local policy contained in the relevant County Development Plans, as well as National policy on wind energy developments. These are summarised below. While the site lies entirely in County Clare, the site is relatively close to Limerick City, and considerable parts of the wider study area (a 20km radius) lie within County Limerick and a small proportion in County Tipperary.

The Clare County Development Plan 2023-2029 contains several relevant policies and objectives.

12.3.2.1 Living Landscapes

Co Clare's landscapes are categorised into areas which have similar characteristics for which similar planning policies are applicable. The Plan notes that the approach builds on the Landscape Character Assessment of County Clare. The 'Living Landscapes' approach sets out three main categories, recognising that the different parts of the County have different potential. The Plan notes that the different approaches that are the most suitable for each area can be accommodated, and that the landscapes are not constant but seen as alive and continually changing. The three categories are listed below:

- Settled Landscape – areas where people live and work.
- Working Landscapes – intensively settled and developed areas within Settled Landscapes or areas with a unique natural resource.
- Heritage Landscapes – areas where natural and cultural heritage are given priority and where development is not precluded but happened more slowly and carefully.

These areas are illustrated in Map 14A Landscape Designations in the Clare County Development Plan, which is also included as Figure 12-2 below – with the proposed turbines at Ballycar indicated in pink.

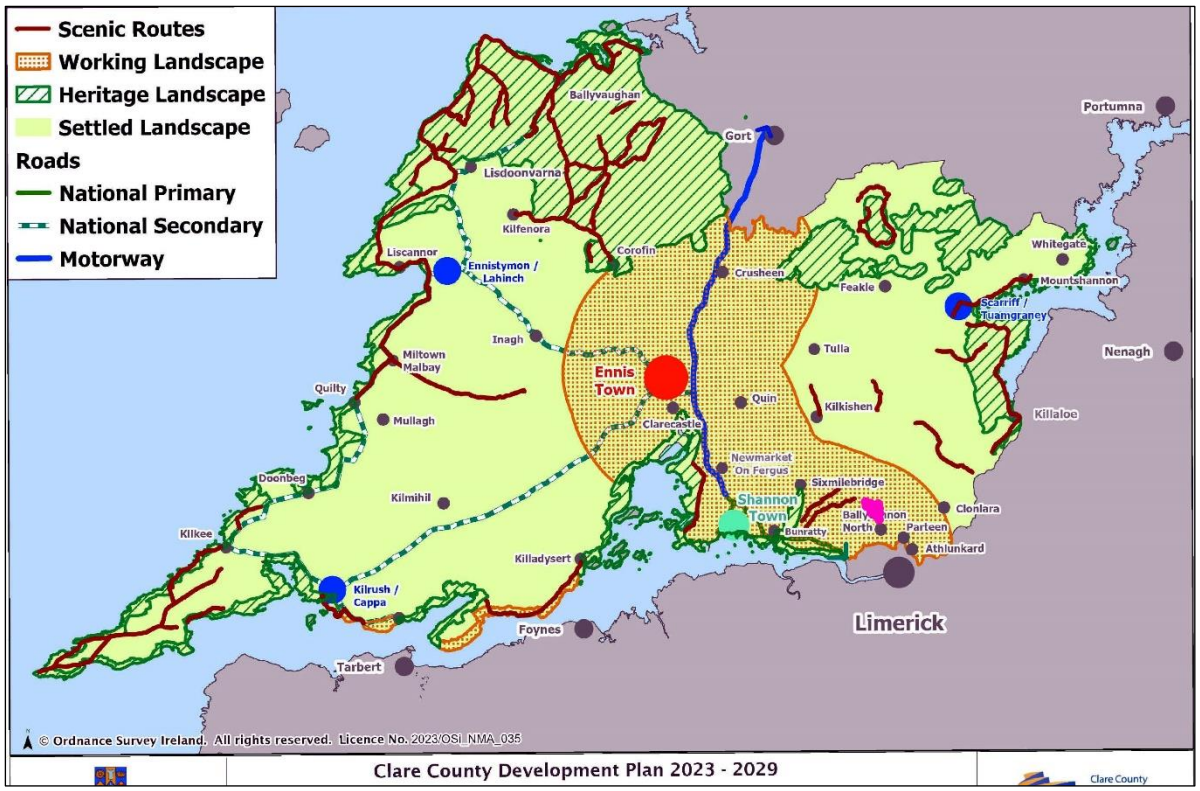


Figure 12-2: Extract from County Development Plan with turbines indicated in pink – in working landscape.

The proposed development is located in a Working landscape type. There are two main working landscape areas identified in the Development Plan. The proposed development site is located in the largest Working Landscape type, the Western Corridor Working Landscape, which includes the area north of Limerick City, including Parteen, Cloonlara and Ardnacrusha, extending west to include Ennis and north to include Crusheen. A second area is the Shannon Estuary Working Landscape which includes the coastal areas between Moneypoint and Ballynacragga excluding Clonderlaw Bay. It should be noted that the Plan defines the areas of the Western Corridor Working Landscape as

"All lands within 10km on either side of the N18/M18 – except as excluded by Heritage Landscapes".

The development plan contains the following policy relating to Working Landscapes (Western Corridor):

CDP 14.3: It is an objective of Clare County Council:

a) To permit development in these areas that will sustain economic activity, and enhance social well-being and quality of life - subject to conformity with all other relevant provisions of the Plan and the availability and protection of resources;

b) To ensure that selection of appropriate sites in the first instance within this landscape, together with consideration of the details of siting and design, are directed towards minimising visual impact;

c) To ensure that particular regard should be had to avoiding intrusions on scenic routes and on ridges or shorelines. Developments in these areas will be required to demonstrate:

i. That the site has been selected to avoid visual prominence;

ii. That site layouts avail of existing topography and vegetation to reduce visibility from scenic routes, walking trails, public amenities and roads;

iii. That design of buildings and structures reduces visual impact through careful choice of form, finishes and colours and that any site works seek to reduce the visual impact of the development.

The wider 20km study area includes areas of both Settled and Heritage landscapes, of which Heritage Landscapes are the more sensitive, as outlined above. These along with the Scenic Routes (described below) are illustrated in Figure 12-3.

Though the proposed development is not in a Heritage Landscape, several areas lie within the wider study area. These are described in the Development Plan as:

Heritage Landscape 1: Lough Derg and the Eastern Uplands;

Heritage Landscape 3: The Fergus/ Shannon Estuary.

In terms of the closest area of Heritage Landscape, Heritage Landscape 3 along the Owenogarney River as it travels from Sixmilebridge towards the Shannon Estuary and east towards Ballymorris, (approximately 5.1km to the west) has few receptors. The other area of Heritage landscape within the study area is referred to in the Development Plan as Heritage Landscape 1, in the vicinity of Killaloe, on the eastern slopes of the Slieve Bernagh mountains, approximately 12.8 kilometres from the nearest turbine.

These Heritage Landscapes are also illustrated along with the scenic routes on Figure 12-3, included below in a reduced format with the A3 version included in Appendix 12B, Volume III. Note this also includes scenic routes in County Limerick and County Tipperary. The potential visibility from these areas is further discussed in Section 12.4.2.8 and 12.4.2.9.

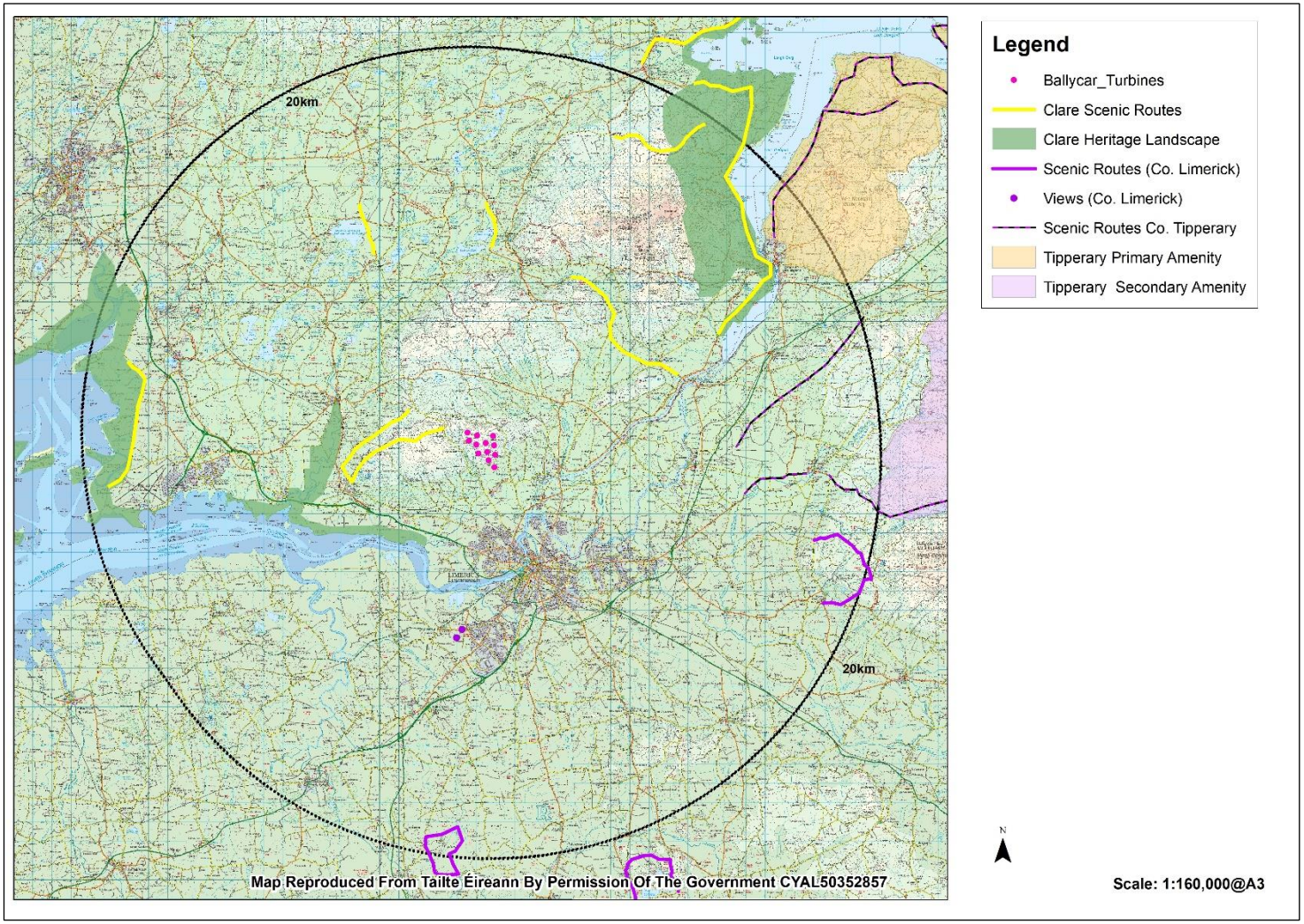


Figure 12-3: Landscape Designations – Co. Clare, Co Limerick and Co. Tipperary

12.3.2.2 Scenic Routes

Section 14.5 of the Clare County Development Plan contains a number of objectives in relation to scenic routes. The Plan notes that there is a need to protect and conserve views adjoining public roads throughout the county where views are of high amenity value, however it notes that it is not proposed that this should give rise to the prohibition of development along these routes but that development, where permitted, should not seriously hinder or obstruct these views and should be designed to minimise visual impact. A list of scenic routes in included in Appendix 5 of the Plan.

Several scenic routes are in the vicinity of the proposed development. All scenic routes within 20 kilometres are listed in **Table 12-8** below and shown, along with other landscape designations including the Heritage landscapes designations, and the proposed turbines, on **Figure 12-3** above. However only some will experience visibility.

The scenic routes were overlaid on the ZTV (Zone of Theoretical Visibility) Map, and this indicated that the closest scenic route, S23, is mainly outside the ZTV and therefore most of the route will not have theoretical visibility. A short section east of Woodcock Hill has potential visibility, however visibility on the ground indicates dense screening by forestry as one travels further east. The next nearest scenic route, S26, has a relatively short section of theoretical visibility between Ballyquin More and Bridgetown, but few open views, and the scenic qualities are the views in the opposite direction towards Lackareagh and the Slieve Bernagh Hills. There is some theoretical visibility along the R463 northeast of O' Briensbridge, however this route is densely screened with few open views in the direction of the site.

Table 12-8: Scenic Routes, Co. Clare

Scenic Route No and Description	Distance from nearest turbine	Potential Theoretical Visibility
21 - Road through Ballysallagh east, southwards to Ballycally	16.9km	Yes - Intermittent sections
23 - Road from Cratloe northeast through Galllows Hill to Glennagross	1.2km	Small section of road (c.1.7km) east of Woodcock Hill has theoretical visibility
24 - Views in and out of Lough Cullaunyheeda	10.4km	No
25 - Views in and out of Doon Lough	9.6km	No
26- R466 between Broadford and O' Briensbridge	7.9km	Partial theoretical visibility between O' Connell's Bridge and Bridgetown
27 - R463 from O' Briensbridge (Ardclooney) through Killaloe to outside Ogonelloe	12.8km	Very limited theoretical visibility along southern part of route at Ardclooney and Cloonfadda but not section approaching Killaloe

The scenic routes are further described in **Section 12.3.7** and **12.4.9**. The plan contains the following objective in relation to scenic routes.

CDP 14-7: It is an objective of Clare County Council:

a) To protect sensitive areas from inappropriate development while providing for development and change that will benefit the rural community;

b) To ensure that proposed developments take into consideration their effects on views from the public road towards scenic features or areas, and are designed and located to minimise their impact; and

c) To ensure that appropriate standards of location, siting, design, finishing and landscaping are achieved.

12.3.2.3 Landscape Character Assessment of County Clare

The landscape designations in County Development Plan have evolved over the years. Section 14.2.1 of the Plan refers to the Landscape Character Assessment of Co. Clare (2004), which identified 26 Landscape Character Types (LCTs) which categorise the landscape into areas of uplands, lowlands, and coastal areas. The Assessment also identified 21 Landscape Character Areas (LCAs). Though the Assessment document is not part of the current Development Plan, the LCA map of the 21 areas remains in the Plan. The Assessment document provides useful information on the landscape character and is referenced below.

The site of the proposed development is located primarily within LCA 8 in the Slieve Bernagh hills, (which are described in the Assessment as part of the Upland Hill LCTs). These are described as rolling upland hills with core areas above 200 metres, rising to 526 metres at the highest point, with occasional small lakes and small streams draining these slopes. It also notes that the land cover is blanket bog but has been modified over time by coniferous planting, resulting in a mosaic with open areas of heather, gorse, blanket bog, rough grasses, and forestry. It notes that the upland hills are often open and reflect commonage, some with enclosures. These areas have little settlement and roads, apart from forestry access tracks.

The County is divided into 21 LCAs, which are illustrated on **Figure 12-4** below which is a reproduction of Figure 14.2 in the Plan, with the proposed Balllycar turbines included. The majority of the site of the proposed development is located within LCA 8, Sliabh Bernagh Uplands, however one of the turbines is located in the LCA 9 Shannon Estuary Farmland. These LCAs are illustrated in **Figure 12-4** which is included in reduced format here and at full size (A3) in **Appendix 12C** in **Volume III.**

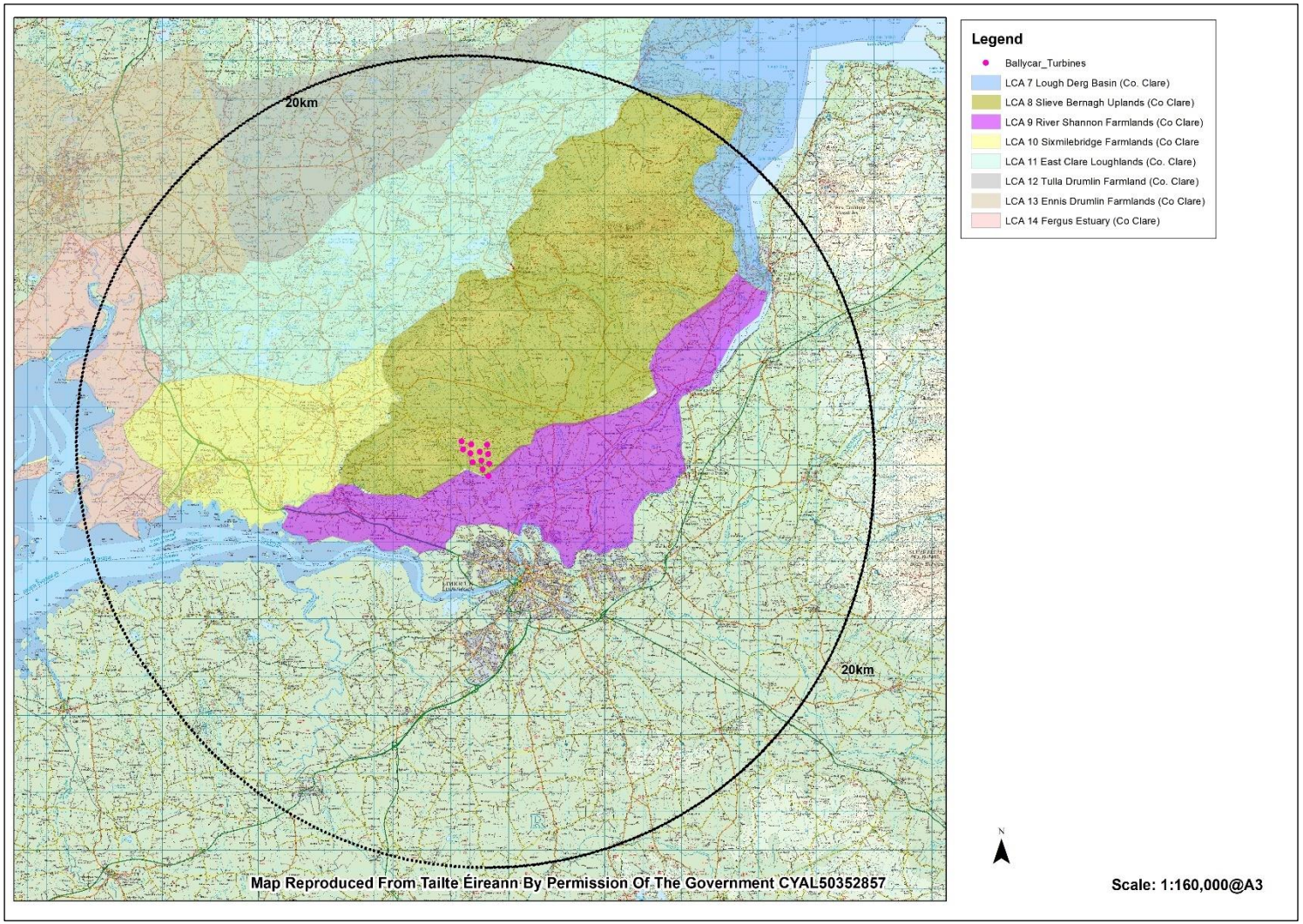


Figure 12-4: Landscape Character Areas in Co. Clare (with proposed Ballycar turbines in magenta)

Neighbouring LCAs including LCA 11 East Clare Loughlands, which lies approximately 6.2 kilometres to the northwest, and LCA 12 lies approximately 13.6 kilometres northwest. LCA 10 Sixmilebridge Farmland lies approximately 4.4 kilometres to the west. A section of LCA 14 lies within the study area at a distance of 16.1 kilometres from the nearest turbine. To the northeast, LCA 7 Lough Derg Basin lies some 15.9 kilometres from the nearest turbine.

LCA 8 Sliabh Bernagh

LCA 8 Sliabh Bernagh Uplands is a large LCA, extending from Cratloe in the southwest, to Ogonelloe to the northeast, on the shores of Lough Derg. This LCA is described as an area of gently rolling hills, reaching about 530 metres, the tallest in the north of the LCA west of Lough Derg. The LCA consists of uplands and slopes around Sliabh Bernagh, and the Broadford hills, southwest of Broadford village, and Woodcock Hill, on the slopes above Cratloe village to the south. The site of the proposed development lies in the Southern part of the LCA, east of Woodcock Hill.

Panoramic views of the drumlin farmland and the Shannon Estuary is mentioned, and these views are relevant to the site of the proposed development at Ballycar.

The description of the LCA in the Clare County Landscape Assessment notes that the area is extensively planted with coniferous plantations in parts, the open upper slopes are largely blanket bog and wet heathy landcover with some turbary evident, with pasture on the lower slopes. It also notes that the upper slopes are generally remote but that several communications masts on the summit of Woodcock Hill interrupt this sense of isolation.

The Assessment includes principles for Landscape Management, which include:

- Consideration of siting and design of new forestry plantations as well as careful management of clear-felling regimes.
- Conserve the open character of remaining areas.
- Stronger coordination required for masts.
- Promote proactive management of windfarms.
- The LCA notes that the higher slopes are sensitive to development.

It should be noted that the Landscape character assessment was used as a baseline for the Clare Wind Energy Strategy (WES) which designated the proposed development site as a “Strategic” area for windfarms as discussed below.

The relevant policy in the County Development States:

CDP 14.1: It is an objective of Clare County Council:

a) To encourage the utilisation of the Landscape Character Assessment of County Clare, the forthcoming Regional Landscape Strategy and other relevant landscape policy and guidelines and to have regard to them in the facilitation, protection and management of appropriate landscape change in County Clare.

LCA 9 River Shannon Farmland

The southern part of the proposed development site (and one turbine) lies within this LCA This LCA is described as a lowland farming area with the meandering River Shannon providing the key focus. This area includes the River Shannon corridor and lower lands which extends south from Killaloe, skirting the lower slopes of Sliabh Bernagh LCA, and concluding further west to where the Owenogarney River enters the Shannon estuary.

The key characteristics are:

- Small settlements/villages such as Parteen and Cloonlara.
- Agricultural, rural landscape with intact features and well maintained.
- Framed by undulating lowland farmland with Sliabh Bernagh and Broadford Hills in the distance.
- O'Briensbridge is an Architectural Conservation Area (ACA).

The Landscape Character Assessment of County Clare describes the features of LCA 9 which includes a number of villages such as Parteen, Cloonlara and O 'Briensbridge, in addition with a more dispersed settlement pattern of single and two storey farmhouses with slated sheds and corrugated barns accessed by a network of roads crisscrossing a number of small lanes.

The Landscape Character Assessment of County Clare also notes that this area was also considerably impacted by the drainage and canalisation of the River Shannon to provide for hydropower at Ardnacrusha. In addition, a number of farms were divided and submerged, the national school and post office of Parteen were demolished, as they were in the path of the tail-race.

The Landscape Character Assessment also notes that:

> *'this remains a largely rural, agricultural landscape with fields usually enclosed by hedgerows, hedgebanks and trees. This helps create an intimate, well wooded landscape. The meandering Shannon also provides an important landscape feature throughout this area. However, the influence of Limerick is increasingly apparent, particularly in the southern part of this area. This is reflected in increased pressure for housing and expansion of existing settlements. This contrasts with the northern part around Killaloe, which is also subject to similar pressures (though perhaps not to the same degree) that has retained a more rural sense.'*

The principles for landscape management include the following, though it is noted that none are relevant to wind energy development:

- Guidance should be provided on siting, location and style of new houses that reflects vernacular styles;
- Careful consideration is needed regarding the expansion of existing settlements, landscape criteria could be included in design briefs to improve boundary treatment and planting regimes;
- Encourage uptake of REPs;
- Retent (assume retention) canal banks at Cloonlara;
- Preserve the bridge at O'Briensbridge, a listed protected structure of regional importance;
- Preserve riverside grounds, walks and woodlands at Parteen;
- Provide guidance on any new planting regimes with emphasis on native species indigenous to the area.

Seascape Assessment

A seascape assessment was carried out as part of the Landscape Character Assessment and is briefly summarised in the Clare County Development Plan in Section 14.4. It is noted that the Regional Seascape Character Assessment for Ireland (2020) was carried out, and was reviewed, however more detail is included in the Clare County Landscape Character Assessment.

One seascape area (SCA) the River Shannon SCA 11, lies within the study area. This extends from Limerick to east of Moneypoint. It is bounded by Kerry Head to the South and Kilrush farmlands to the North. However, within the study area of the proposed development, it extends from Limerick to south of Shannon Airport. At its nearest point, the SCA 11 is approximately 5.5 kilometres south-west of the nearest turbine.

The key characteristics as set out in Section 5 of the Landscape Character Assessment include:

- Coastal fringe is flatter and slopes down towards the sea.
- Views to scattered farmhouse settlements.
- Deep water berthing facilities.
- Views of shipping, commercial, industrial activity, pastureland and forestry.
- Focal point for travelling the waterways of Ireland.
- Shannon Airport is a landmark transport node of transcontinental significance (also, Fergus Estuary Seascape Area below).
- Car ferry service to Tarbert along the north coast of County Kerry.

The LCA notes that the estuary is in 'moderate to good condition', however it notes that industrial and commercial activity dominates the view from land to sea and that the low-lying nature of the land increase the areas' sensitivity to shipping and industrial activities in particular.

Regarding principles for seascape management, the Landscape Character Assessment notes that:

- Best practice forestry guidelines should be adhered to in order to avoid inappropriately siting or design of plantations.
- Infrastructural developments including road widening along the coastline should consider local landscape character.
- Linear development along the coastline should be avoided and all other development should be screened appropriately.

It should however be noted that like some parts of the southern parts of LCA 9 River Shannon Farmland and LCA 10 Sixmilebridge Farmlands, the coastline has few visual receptors with some areas having limited accessibility to the coast. This is discussed further in Section 12.4.9.

12.3.2.4 Wind Energy Strategy

The Clare Wind Energy Strategy (WES) is included as Volume 6 of the Development Plan. A key priority was to identify sites of strategic regional and national importance which have the potential to accommodate wind energy development.

The WES designates areas as follows:

- Strategic Areas.
- Acceptable in Principle.
- Open to Consideration.
- Not Normally Permissible.

The site of the proposed development is located in a *Strategic Area.*

Landscape capacity and suitability of the development site

The WES states in Section 2.3.5, that it takes into account landscape designations including Scenic Routes, and Heritage Landscapes. The Landscape Character Assessment of County Clare, referred to above, was also used as a baseline to assess the capacity of areas to accommodate wind energy development. In addition, the WES states that landscape designations of neighbouring counties were also taken into consideration. Viewshed analysis, which maps visibility from a particular location, was also undertaken in certain upland areas such as Sliabh Callan and Slieve Bernagh. However, the WES notes that this does not include vegetation or buildings and does not replace detailed modelling of wind farm developments but are a useful guide.

The Sliabh Bernagh LCA, where the proposed development site is located, is described in the WES in some detail in Table 4a. The Strategic Area where the proposed development will be located, lies on the southern part of the LCA closer to the Broadford Hills than the Sliabh Bernagh hills themselves. The WES described the LCA's capacity for wind farms as follows:

> *There are certain parts of this LCA that are highly sensitive due to their nature designations and scenic qualities. In particular, the foothills and mountains over-looking Lough Derg and the unenclosed bogs of Lackeragh and Glenvagalliagh Mountain.*
>
> *However, other areas on the north west and westerly aspects of the mountain are more robust and can accommodate number of large or medium wind farms. In the Broadford Hills areas, the area around Woodcock Hill, Ballycar, Corlea and Knockaunnamoughily are identified as Strategic Areas.*

This therefore includes the location of the proposed development at Ballycar as a Strategic Area. **Figure 12-5** below shows the Clare WES with the site location, indicating its location in a Strategic Area.

This WES notes that the Sliabh Bernagh LCA is considered to have Medium to low sensitivity to wind farm developments, and able to accommodate large wind farms, defined in the WES (**Section 1.4**) as between 11-25 turbines. The proposed development aligns with this.

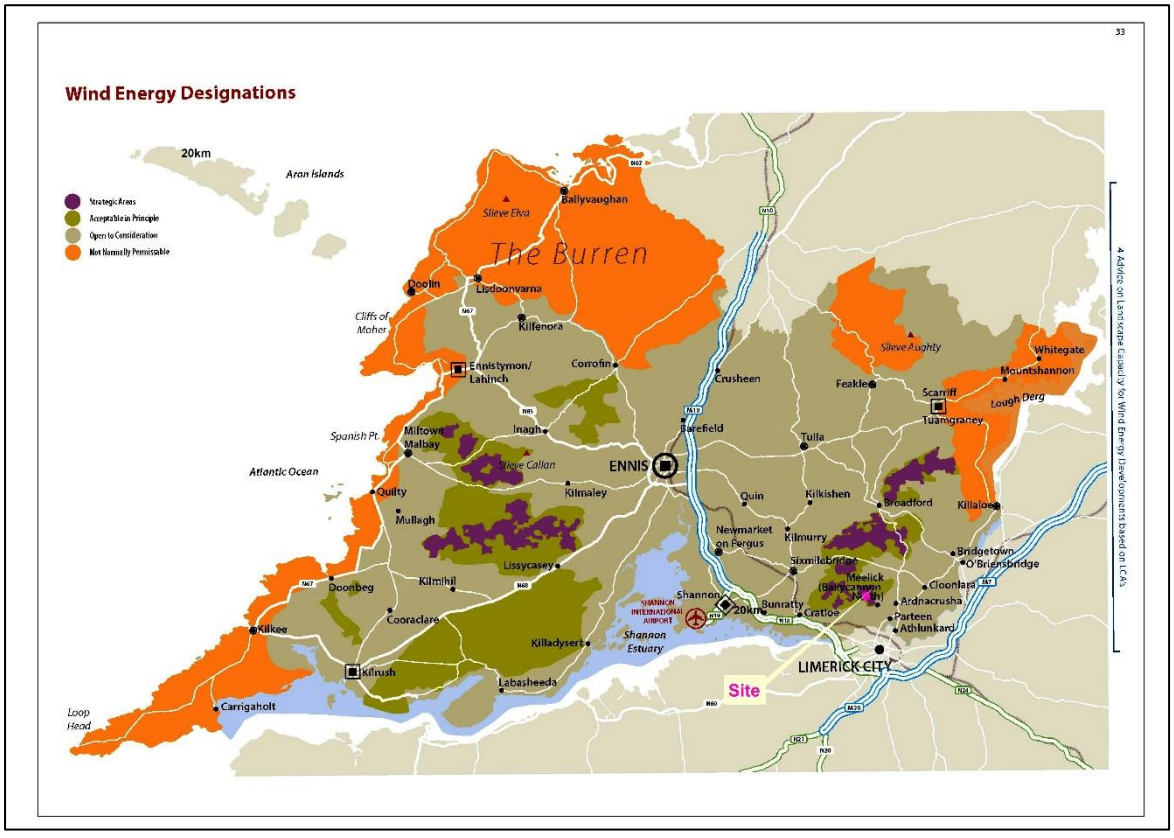


Figure 12-5: Strategic Areas in Co. Clare (Source: Clare County Council WES (2017))

12.3.3 Limerick Development Plan 2022-2028

A considerable proportion of the study area falls partly within Co. Limerick, therefore an overview of the relevant landscape policies in the Limerick Development Plan is included below. The Plan includes both City and Rural areas.

12.3.3.1 Landscape Character

Policy EH P8: Landscape Character Areas

> *It is a policy of the Council to promote the distinctiveness and where necessary safeguard the sensitivity of Limerick's landscape types, through the landscape characterisation process in accordance with the 'Draft Guidelines for Landscape and Landscape Assessment' (2000) as issued by the Department of Environment and Local Government, in accordance with the European Landscape Convention (Florence Convention) and with 'A National Landscape Strategy for Ireland – 2015- 2025'. The Council shall implement any relevant recommendations contained in the Department of Arts, Heritage and the Gaeltacht's National Landscape Strategy for Ireland, 2015 – 2025.*

Section 5.4 of the Limerick Development Plan 2022-2028 includes the Landscape Character Areas from the 2010-2016 Plan (as extended) as well as a number of Landscape Character Areas in the City.

The northern boundary of Limerick County is approximately 2.9 kilometres south of the nearest turbine (LCA Caherdavin in the Figure below). A number of the Landscape Character Areas fall within the study area. These are illustrated in Figure 12-6 below along with those of Co. Tipperary. Figure 12-6 is included here in reduced size and at full size (A3) in Appendix 12D, Volume III.

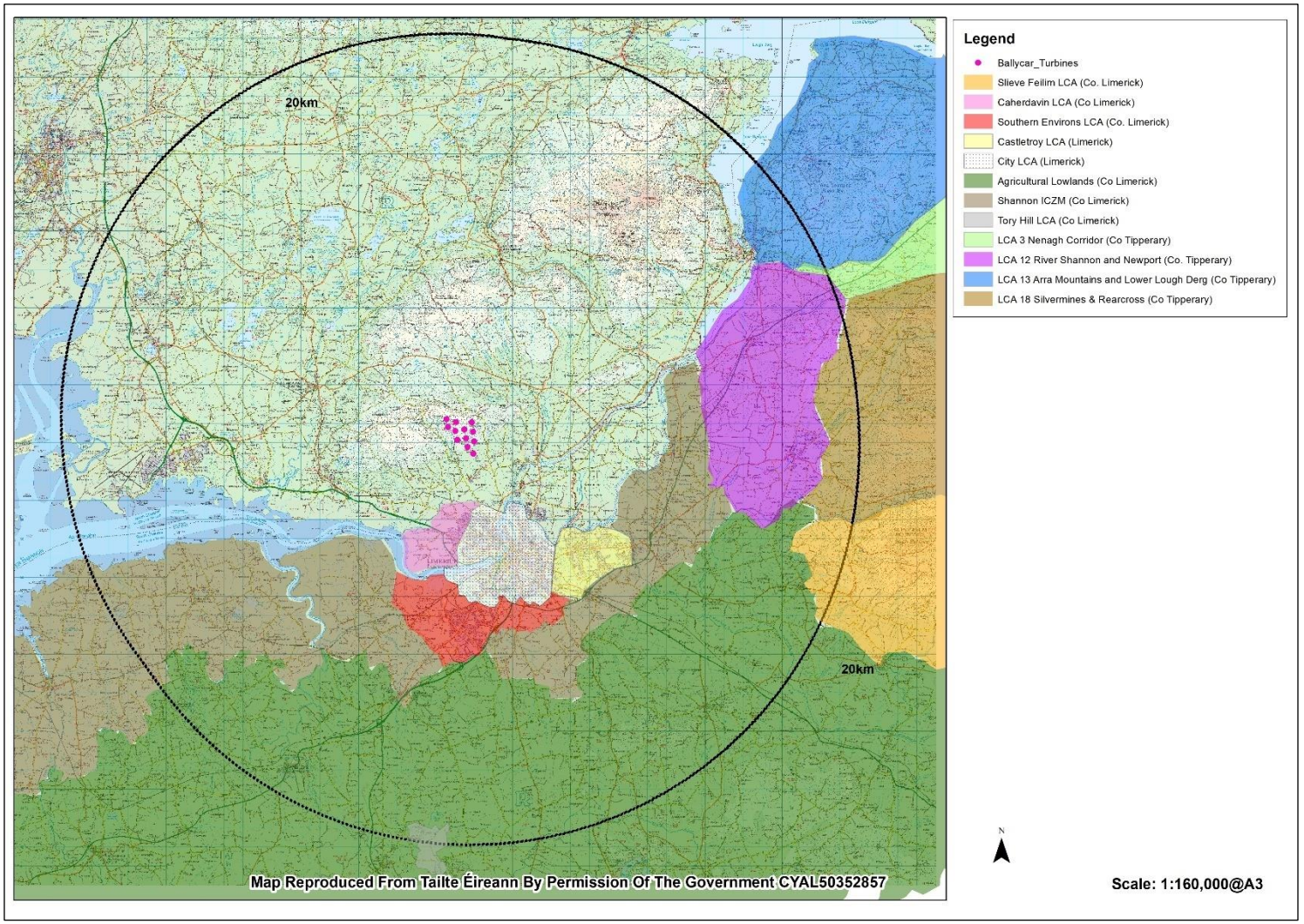


Figure 12-6: Landscape Character Areas in Co Limerick and Co. Tipperary

Landscape Character Areas within the study area include:

- City LCAs - of Caherdavin, City and Castletroy and the Southern Environs.
- Shannon Coastal Zone (ICZM) area along the Shannon estuary.
- Part of the Agricultural Lowlands which is the largest LCA and covers most of the County.
- The Tory Hill LCA straddles the southern edge of the study area while the Slieve Feilim LCA straddles the south-eastern boundary of the study area.

The LCAs within the City are the closest to the site. These are described as follows, numbered UA01-04, each with a number of Specific Objectives. However, almost all of the Specific Objectives refer to developments within these areas, apart from UCA03 where the protected views at Mungret are mentioned.

> UCA O1 City: *Within the city area there are number of distinguishing features, the Georgian part of Limerick is justly famous and has its own attractive character. The River Shannon also lends character to this area.* This area lies approximately 2.9km south of the nearest turbine.
>
> UCA O2 Castletroy: *This area lies to the east of the city and contains the University of Limerick and the National Technology Park.* This area lies approximately 6km south of the nearest turbine.
>
> *UCA 03 Southern Environs*: *This area lies to the south and west of the city and contains the Regional Hospital, Raheen business Park and many modern housing developments dating in large part from the 1960s. Currently major housing initiatives are under way in this area.*
>
> *b) Special Control Area in Mungret College Area to be retained, together with protected views.*
>
> This area lies approximately 2.9km south of the nearest turbine.
>
> *UCA O4 Caherdavin*: *This area contains many housing development from the 1960s city, but also contains the Limerick Institute of Technology and Thomond Park, an important sporting focal point in the city.*
>
> This area lies approximately 2.3km south of the nearest turbine.

LCA Shannon Coastal Zone

This LCA lies to the south-east and south-west of the proposed development, approximately 6.3 kilometres from the nearest turbine. The Limerick County Development Plan describes this LCA as follows:

> *This zone comprises a large area of northern Limerick and is bounded on one side by the Shannon Estuary, while its southern boundary is defined by the gradually rising ground, which leads onto the agricultural zone and the western hills to the south west. The presence of the estuary is the defining characteristic of the region. The landscape itself is generally that of an enclosed agricultural type, essentially that of a hedgerow dominant landscape. This differs from the other agricultural landscapes of the County, in that the field patterns, particularly close to the Estuary, tend to be less regular than those elsewhere in Limerick.*

LCA 01 Agricultural Lowlands

This LCA occupies the southern part of the study area and lies approximately 10.2 kilometres south of the nearest turbine. The Limerick County Development Plan describes this LCA as follows:

> *This is one of the largest Character Areas in Limerick and comprises almost the entire central plain. This landscape is a farming landscape and is defined by a series of regular field boundaries, often allowed to grow to maturity. This well-developed hedgerow system is one of its main characteristics. In terms of*

topography, the landscape is generally rather flat with some locally prominent hills and ridges. The pastoral nature of the landscape is reinforced by the presence of farmyards.

The Slieve Feilim Uplands LCA lies to the southwest of the Study Area, approximately 17.5 kilometres from the nearest turbine and these hills are described as the most dominant feature in this part of the County, due to the relatively low lying areas around them. They are more rounded in shape and pastoral in character with well development field boundaries. The Tory Hill LCA lies approximately 19.3km south of the nearest turbine and only a very small proportion of this LCA, defined by a hill, is within the study area and at some distance from the proposed development.

12.3.3.2 Views and Prospects

Section 6.4.2 of the Plan refers to Views and Prospects, and identifies important prospects in Limerick County, including views of prominent landscapes or views of special amenity value. These include views in the south of the County (as shown in Figure 12-7 below) which are routes near Galbally, Ardpatrick and Ballylanders, close to the Ballyhoura mountains, as well as Lough Gur and Tory hill views and prospects.

The views are illustrated on Map 6.2 in the Plan and reproduced here as Figure 12-7 below and include both views in the County, as well as four protected views in the City. While important views and prospects are also referenced in the text within the City area, these are not categorised as protected views and are not represented on this map. (The views in the County are also included in Figure 12-3 which is included at full size in Appendix 12B, Volume III).

In the city centre, the Plan notes the many views of significance in the city, including riverscapes, townscapes and landscapes and the importance of landmark buildings such as King John's Castle.

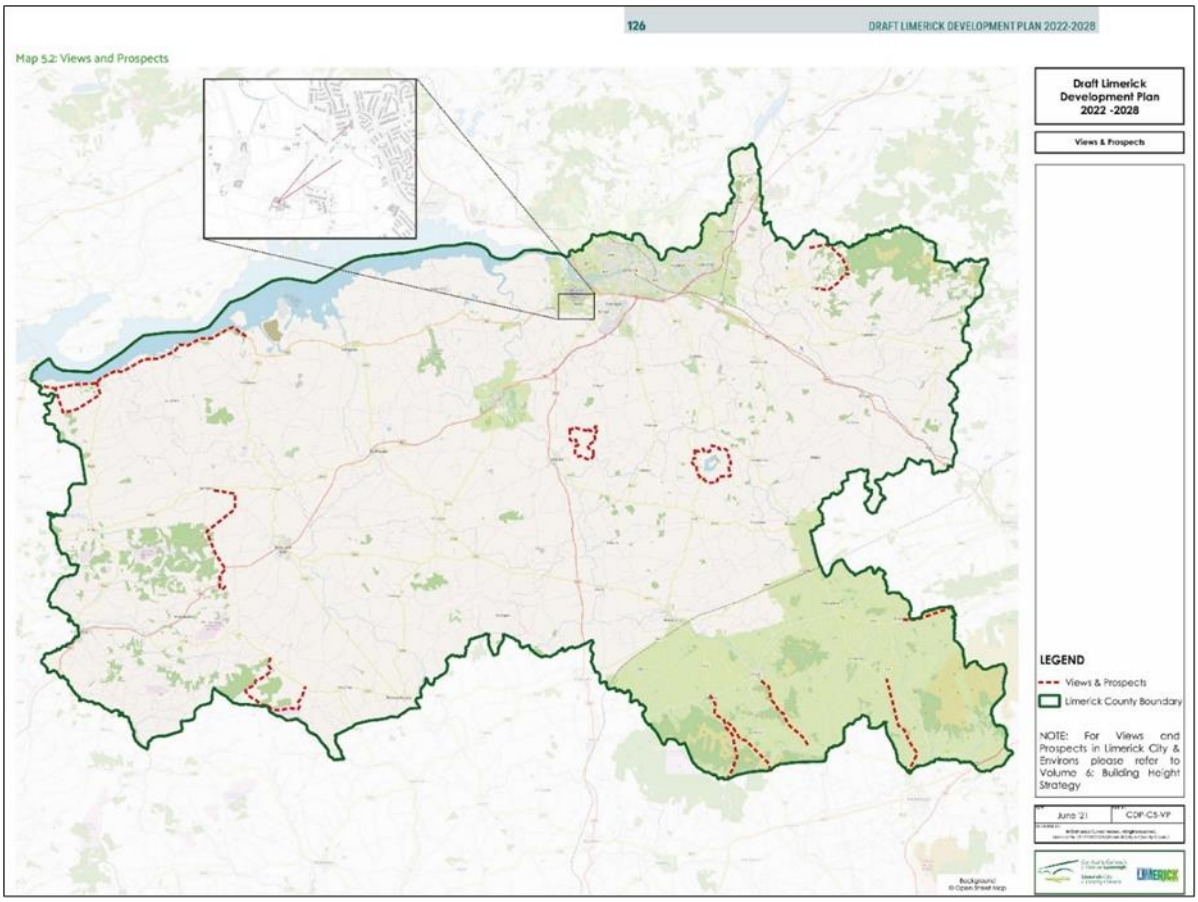


Figure 12-7: Views and Prospects in Limerick

The inset area of the above Figure 12-7 indicates a number of protected views and prospects near the City. There are four short range views of the Monastic Site in Mungret, to the southwest of the City. It has been confirmed by the Council's forward Planning department that there are no other protected views in the City or Environs.

It should be noted that the map shows the majority of the views in the County as scenic routes, which correlate to stretches of road on the map, while the views at Mungret are views from a particular point. From the comparison of the map and the text below it appears that in two of these views, the viewpoint location is at Mungret College, with the focal point being the monastic complex. However, the location of the views indicated to the northern side of the R589 are not as clear on the map, with the text indicating the views are from the monastic complex to the northwest. The views from Mungret college are relevant to the proposed development.

Section 6.5.2 of the Plan relates to Special Control Areas, of which Mungret is one and the following policy is relevant and relates to the city views illustrated in Figure 12-7 above:

> ***Objective EH O35 Special Control Areas Mungret:*** *It is an objective of the Council to protect and maintain the integrity of the Special Control Areas at Mungret Monastic Complex, incorporating all national monuments and protected views including:*
>
> *1) View from Mungret College northeast to the Monastic Complex and;*
>
> *2) Views northwest across the Monastic Complex.*

Development within this area will be prohibited with the exception of leisure facilities and moderate extensions to existing dwellings, which will not adversely impact on the character or setting of the complex. The Council will facilitate the provision of interpretative panels and directional signage for Mungret Monastic Complex and park, will be considered in consultation with local community groups.

In addition to the two views at Mungret, of the views and prospects outside the city, illustrated on the above map, there are two routes which fall within the 20km study area:

Table 12-9: Views and Prospects within 20km (County Limerick)

View/Prospect Description	Distance from nearest turbine	Potential Theoretical Visibility
View from Mungret College northeast to the Monastic Complex	9.0km	Yes
Views northwest across the Monastic Complex.	8.5km	Yes
View from Local roads in vicinity of Tory Hill	18.7km	Yes, however views are to the east and south towards Tory Hill itself.
View from Local roads west of Muroe	17km	Yes

Objective EH O30 Views and Prospects. It is an objective of the Council to:

a) Preserve, protect and encourage the enjoyment of views and prospects of special amenity value or special interests and to prevent development, which would block or otherwise interfere with views and/or prospects.

b) In areas where scenic views and prospects are listed in the Draft Plan, there will be a presumption against development, except that required to facilitate farming and appropriate tourism and related activities. The development must be appropriately designed so that it can be integrated into the landscape.

Other Views in Limerick City and environs

The Plan categorises views in the city as either Linear Views, or River Prospects. It also refers to views from approach roads (which may include views towards the City at a distance). These views are clearly important but are not protected views (confirmed by Limerick City and County Council) and not depicted on Figure 12-7 above.

The plan describes the categories of city views as follows:

Linear Views of Landmark Buildings, the City Walls & City Skyline

Linear Views occur when a single landmark building (e.g. King John's Castle) is the main point of focus within the view path. Views tend to be framed within relatively narrow viewing corridors. The city skyline is a combination of elements - the general scale of buildings, streets and spaces from area to area, major landmarks on the skyline, other individual higher buildings, higher building groups and landscape elements.

River Prospects

The Draft Plan states that River Prospects are usually (though not exclusively so) experienced while crossing a bridge. While many bridge crossings allow opportunities to pause and appreciate views, many of these views can also be enjoyed in motion as a viewer moves across a bridge. River Prospects in this instance refer to the ability to see landmark building(s) from bridges

Views in the Plan from both the above categories are illustrated in **Figure 12-8** below.

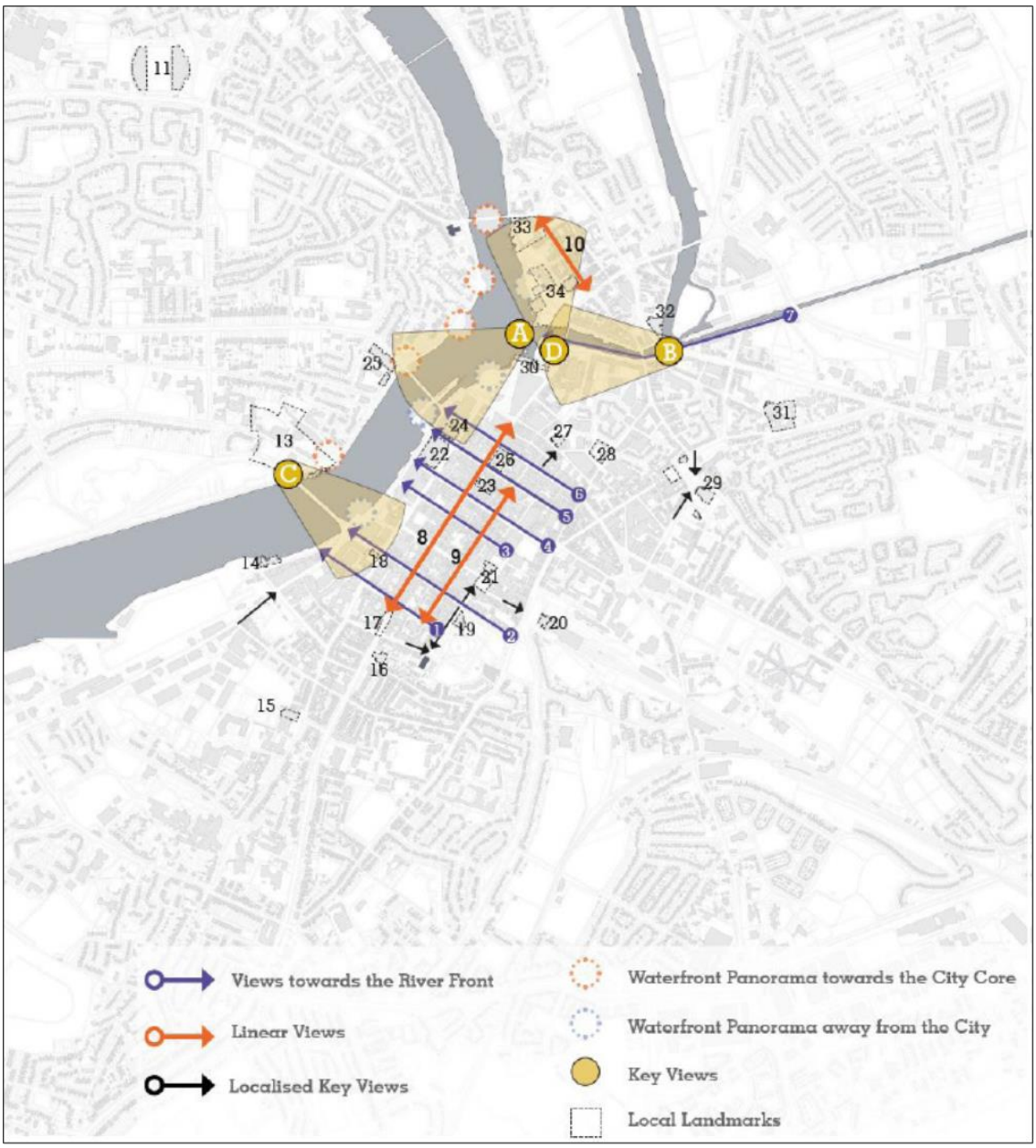


Figure 12-8: Key Views and Landmarks Diagram

There are several Waterfront Panoramas indicated in Figure 12-8 above, not listed as a separate category, which are presumably related to the river views as they are at the river's edge. The image indicates several panoramic views either directed towards the city core (on the eastern bank) or away from the city. The most northernly waterfront panorama is also a bridge view from Thomond Bridge, and though the Plan indicates the key view is south, towards the city centre, it is noted that a view would be available in the opposite direction, towards the proposed development.

Other potentially relevant views would include the waterfront views located near the Shannon Bridge and on the eastern bank, which are considered further in Section 12.4.

Building Heights Strategy - Approach Road Views and Key Views

The Building Height Strategy for Limerick City is a supporting document to the Development Plan, with the introduction to the document stating that the Strategy was prepared to inform the review of the Limerick City Development Plan, 2010 – 2016 (as extended) and the Limerick County Development Plan, 2010 - 2016 (as extended) and the production of the Limerick Development Plan which encompasses both City and County. The Strategy states:

> *As part of the new Limerick Development Plan, 2022 - 2028 it will seek to drive general increases in building heights and ensure an appropriate mixture of uses while also considering the quality of development and balancing amenity and environmental considerations.*

Section 3 of the Strategy is entitled 'Urban Analysis', and it notes that the purpose of the analysis is to achieve a

> *comprehensive understanding of the urban structure of Limerick City, through urban analysis, that will inform the categorisation of areas within Limerick City that are suitable, have potential, need careful consideration and are unsuitable for tall buildings.*

Therefore, while these views are considered in some detail, it should be borne in mind that these views are part of analysis with regard to identifying areas suitable and unsuitable for tall buildings, rather than identifying views of the landscape outside the city.

The Urban Analysis section notes Approach Road views and Key Views.

> *'Approach Road prospects often give the visitor the vital 'first impressions' of a city. The approach roads into Limerick City give the viewer an instant appreciation of the topography and character of Limerick. New developments in these areas will be required to take due cognisance of these qualities and clearly demonstrate how they will preserve and enhance their visual appearance and amenity'.*

These approach views are likely to be from further out, including from the Ennis Road, Cratloe Road, Dock Road and Dublin Road. Views of the proposed development from the Dock Road are unlikely as the built form will likely screen the views, while the Ennis Road would be travelling east and again built form would screen views. Viewers along parts of the Old Cratloe road will have views of the proposed development off to the side (to the north) as one approaches the city.

In terms of Key views (views A-D, illustrated on Figure 12-8 above), these were reviewed for potential relevance to the proposed development. However, the Plan includes images to illustrate the views A,B,C, and D. None of these show views towards the subject site. The image in the Plan from location D indicated that the view is not toward the subject site but towards the castle, cathedral and Limerick District Court, and is reproduced in Figure 12-9 below.

Figure 12-9: View D (Extract from Limerick Development Plan)

Of the numbered views, illustrated in Figure 12-8, View 10 (Linear View, along St Nicholas Street) was also considered further but this view was visited, and shows views of the streetscape and key buildings as noted above in the definition of Linear Views. At the southern end, St Mary's Cathedral is visible to the left hand side of the street, which, along with the dense built form, restricts views. The most likely location for views of the site is at the northern end of the street, near the entrance to King John's Castle. There are no open views of the subject site with most of the site screened by buildings, but a glimpse of a small section of the site the site is available.

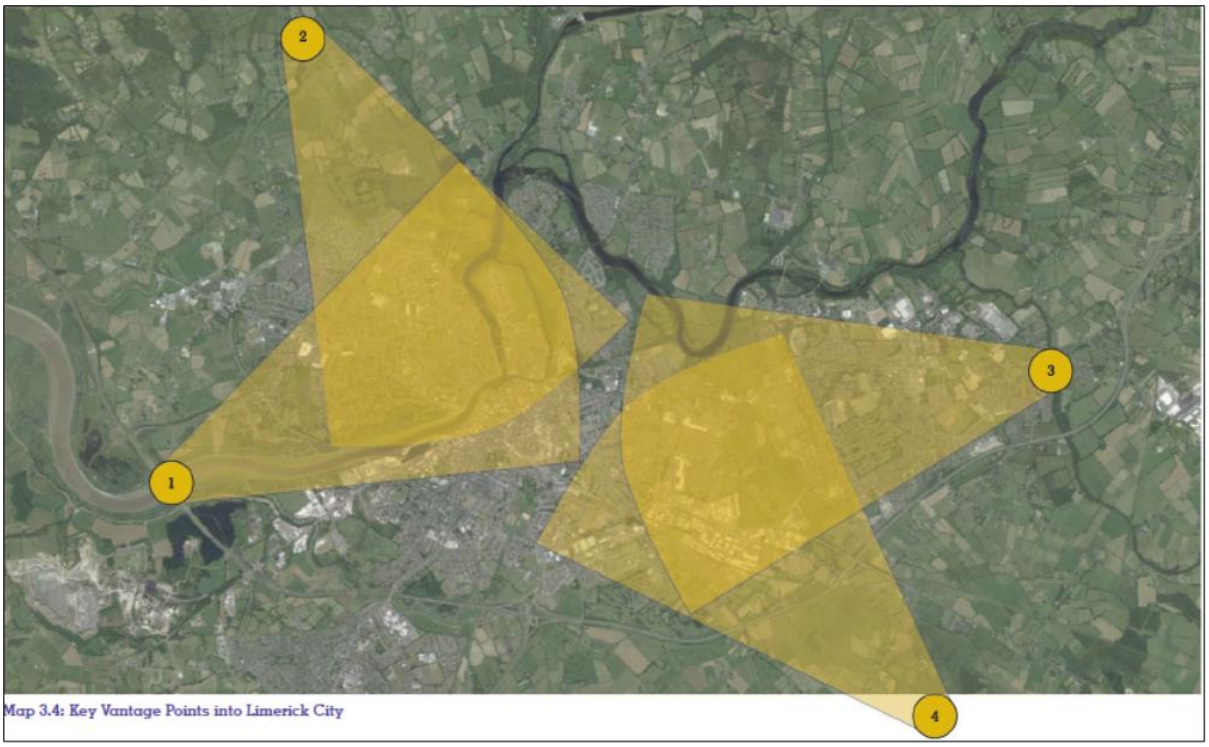


Figure 12-10: Key vantage points in Limerick City

The Locations in Figure 12-10 above are identified as follows:

1 -Shannon Estuary – Loch Luimnagh Estuary

2- Woodcock Hill Bog, Co. Clare

3- Annacotty, Co. Limerick

4- Ballyneety, Co. Limerick

However, correspondence with Limerick City and County Council indicates that these views are relevant to the assessment of building height strategy (as outlined above) and are not protected views as illustrated on Figure 12-10 above.

12.3.4 Tipperary Development Plan 2022-2028

A relatively small proportion of the County lies within the study area, the closest turbine is approximately 12.3 kilometres west of the county boundary. However, some relevant policies including landscape and visual designations and the Landscape Character Areas are outlined below.

12.3.4.1 Scenic Routes and Views

The Tipperary County Development Plan 2022-2028 includes a Landscape Character Assessment in Volume 3 of the Plan. This includes mapping and description of Landscape Character Areas (LCAs) but also scenic routes and protected views.

Volume 3 of the Plan designates scenic views, scenic routes and two types of designated landscapes, Primary and Secondary Special Amenity. These landscape designations and scenic routes are included on Figure 12-3 in Section 12.3.2 which is also reproduced at full size in Appendix 12B, Volume III.

The Development Plan notes that views include key heritage sites and inter-county scenic tourism routes. In assessing new development, consideration will be given to ensuring that views are not obstructed or significantly altered, and that the visual impact of new development be minimised by careful design and siting. Views and routes are outlined in the Volume 3 Landscape Character Assessment and illustrated in Figure 11.1 of this Volume of the Tipperary County Development Plan. These scenic views are listed as outlined in Table 12-10 below, however the Landscape Character Assessment also includes 1-2 sample views for each scenic route, and these are also used to determine the direction of the intended scenic view. Note the discrepancy between descriptions of V57 and the description and photograph of the intended scenic view.

Table 12-10: Scenic Routes Co. Tipperary

View/Prospect Description	Distance from nearest turbine	Potential Theoretical Visibility
V44 Views west and sections of the Road to the east of the R494	17.8km	No
V55 North and south of the R503 from Newport to Ballycahill	17.3km	Yes, however the scenic views in question are to the north and south of the R503 and not in the direction of the proposed turbines.
V57 View west on the Cork Road approach to Newport	13.0km	Yes, however the sample views (and most scenic views) are approaching Newport from the west, looking east towards the Slieve Feilim hills and not in the direction of the proposed turbines.
V59 Views of surrounding landscape from M7 including Annaholty and Rossfinch	12.5km	Yes. However, for health and safety reasons no photography is taken from motorways.

There are two categories of landscape designations, Primary and Secondary Amenity areas. These include Lough Derg and the Glen of Aherlow/Galtee Mountains. These areas are described as:

> *'particularly notable by virtue of their scenic and visual quality and offer significant opportunities for tourism development and rural recreational activities. The Council will seek to ensure that a balance is achieved between the protection of sensitive landscapes and the appropriate socio-economic development of these areas. In this respect, development proposals will be required to demonstrate that they integrate and respect the visual quality of the amenity area.'*

These designated areas are at some distance from the proposed development, the nearest Primary Amenity area at a distance of 17.3km to the north-west and the nearest Secondary Amenity area at approximately 19.3km east of the proposed development (illustrated on Figure 12-3). Therefore, no significant landscape and visual effects are expected.

12.3.4.2 Landscape Character Assessment

The Landscape Character Assessment of Co. Tipperary divides the County into 23 Landscape Character Areas. Four of these LCAs lie partly within the study area, as follows:

- LCA 3 Nenagh Corridor (approximately 18.5km form the nearest turbine).
- LCA 12 River Shannon and Newport (approximately 11.9km from the nearest turbine).
- LCA 13 Arra Mountains and Lower Lough Derg (includes are of Primary Scenic Amenity, approximately 17.5km from the nearest turbine).
- LCA 18 Silvervines and Rearcross (approximately 17.1km from the nearest turbine).

Of these four LCAs, the majority of LCA 12 lies within the study area and is the closest of the four LCAs to the proposed development. It is noted that Scenic Route V55 is located within this LCA. While small sections of LCAs 3,13 and 18 are within the study area, they are all more than 17 kilometres from the nearest turbine, therefore no significant landscape and visual effects are expected.

LCA 12 Arra Mountains and Lower Lough Derg

The key characteristics of this LCA are described as follows:

- *Diverse landforms with rolling hills, broad valley, river plain and raised bogs creating a varied* ***landscape.***
- *Strong westwards orientation towards County Limerick and the River Shannon.*
- *Long history of providing access with N7 alignment following ancient Sli Dala route; the access is further reinforced by the alignment of the Dublin to Limerick railway corridor.*
  Proximity to Limerick results in quite heavy settlement and noticeable amount of new buildings, ***however nucleated settlements are limited to Newport town and Birdhill.***
- *Undulating hills create an intimate landscape with occasional views from elevated points afforded* ***eastwards to the Silvermines and Arra Mountains.***
- *Lower boggy areas create remote landscape offering contrast with more heavily settled hilly* ***areas.***

The document also identifies principles for Landscape Management which are as follows:

- *Design guidance in respect of commercial forestry should be provided in order to integrate this* ***landuse into the landscape.***
- *Sensitive siting and design of individual buildings and groups of buildings as well as site treatment appropriate to the area will be of importance in this landscape. Specific design guidance should be provided to facilitate these outcomes.*
- *In terms of towns, the landscape impacts of the expansion of Newport need careful consideration given the scenic landscape setting of this town as a whole.*
- *The ecological and amenity value of waterways (Lough Derg and Newport River) needs to be managed in a positive way.*
- *The ecological and amenity value of the bog areas needs to be preserved.*
- *A need to improve on the management of these habitats is evident.*

It is evident that the management principles are mainly in relation to developments within these LCAs as opposed to developments outside these LCAs.

12.3.5 National Policy – DoEHLG Guidelines

The Department of the Environment Wind Energy Guidelines (2006) provides guidelines on aesthetic considerations, including the siting and design of windfarms. It is also noted that in December 2019, a draft revised version of the Wind Energy Development Guidelines was published. These have been reviewed and the siting and design advice referred to below remains the same as the 2006 Guidelines, which is set out below. However, the 2006 guidance remains current.

The Guidelines state that landscape character types (LCTs) provide a useful basis for practical application of siting and design guidelines in relation to wind energy developments. Siting and design guidelines are set out for six Landscape Character Types which represent most of the landscape types in the country, which include:

- Mountain Moorland;
- Hilly and Flat Farmland;
- Flat Peatland;
- Transitional Marginal Land;
- Urban/Industrial;
- Coast.

The Guidelines note that it is common for a wind energy development to be located in one landscape character type and visible from another. This requires the entire visual unit to be considered, and to decide which landscape character area more strongly influences the approach. For each of these character types listed above, guidance is given on the location, spatial extent and scale, cumulative effect, spacing, layout and height of the turbines.

The Clare WES notes that the Slieve Bernagh Uplands Strategic Area, in which the site is located, is best characterised as Mountain Moorland. It is the case that while most of the site falls within this character type, as well as the lands to the west (Woodcock Hill and bog) and the densely forested and remote lands north of the site, some of the lands particularly south of the site which are at lower elevations, mainly agricultural lands which are more densely settled, would be characterised differently.

Mountain Moorland

Mountain Moorland is described as having the following key characteristics:

- Peaked, ridged or rolling mountains and upland with steep sides or gently formed valleys;
- Generally unenclosed;
- Landcover comprising blanket bog, a mottling of heather, wild grasses and some rush in wet flushes; and
- A landscape type of relative remoteness and often comprising pristine, unspoilt and remote landscapes.

The site and surrounding landscape displays many of the above characteristics. However, it is evident that the landcover on the site itself is currently mainly comprised of coniferous forestry which may previously have been moorland (including areas which have been felled). Surrounding areas of peatland are evident on aerial imagery. It is considered the most appropriate of the landscape character types for the majority of the site, though as noted some nearby areas would have some of the characteristics associated with Transitional Marginal landscapes, or Hilly and flat Farmland.

Siting and Design Guidance for Mountain Moorland:

- *Location: (Defined as elevation and position of the wind energy development). It may be acceptable to locate wind energy development on ridges and peaks. They may also be appropriate in certain instances, in a saddle between two peaks where they will be partially contained or 'framed'. A third acceptable*

location is lower down on sweeping mountainsides. The topography of the proposed development site is that of a gently sloping hillside which is similar to this third location option.

- *Spatial Extent: (This is defined as the area covered by a wind energy development, reflecting the number of turbines and their spacing.) Given the typical extensive areas of continuous unenclosed ground, larger wind energy development can generally be accommodated because they correspond in terms of scale. However, the spatial extent of a wind energy development would need to be reduced where a suggestion of smaller scale is provided by a nearby landscape features.* The spatial extent or size corresponds to the WES where large wind farms (11-25) are compatible and therefore, the proposed development of 12 turbines is at the lower end of this scale.
- *Spacing: All spacing options are usually acceptable. Where a wind energy development is clearly visible on a crest of ridge there is considerable scope to vary the rhythm, though on simple ridges, regular spacing may be more appropriate. On sweeping and continuously even area of mountain moorland or upland plateaux, regular spacing may be most desirable.*
- *Layout: All layout options are usually acceptable. However, the best solutions would either be a random layout, and clustered where located on hills and ridges, or a grid layout on sweeping and continuously even area of moorland or plateaux. Where a wind energy development is close to a linear element, such as a river, road or long escarpment, a corresponding linear layout or staggered line might be most desirable.* A random layout with the turbines 'sweeping down the hillside' would best describe this layout.
- *Height: There would generally be no height restrictions on mountain moorlands as the scale of landscape is so great. However, shorter turbines may be more appropriate where they are located on small peaks and outcrops in order to maintain an appropriate scale. Profile, whether even or uneven, is dependent on topography: the more rugged and undulating (e.g. knolls and crags) the more uneven it will be. The profile of the wind energy development should not necessarily run in parallel to that of the topography. Taller turbines respond to the large scale of the landscape.*
- *Cumulative Effect: The open expanse of such landscapes can absorb a number of wind energy developments, depending on their proximity. The cumulative impact will also depend on the actual visual complexity of landform, whether steeply rolling, undulating or gently sweeping. The more varied and undulating an area is topographically, the greater its ability to absorb and screen wind energy developments. The aesthetic effect of wind energy developments in these landscapes is acceptable where each one is discrete, standing in relative isolation.* The montages discussed in Section 12.6.2 (available in Volume IV) show other wind farms at considerable distances and standing well apart.

There are several other windfarms in the planning process and two existing single turbines within 20km of the proposed development. The Cumulative effects are discussed in Section 12.6.3.

It is noted that the lower parts of the site could be characterised as Transitional Marginal lands, though it is noted that not all the key characteristics are relevant here and the landscape in general would not be described as small-scale or intimate and the field size is not small. Other aspects of this part of the site partly relate to Hilly and Flat Farmland.

12.4 Receiving Environment - Landscape Character of Site and Surrounds

12.4.1 Site context and study area

This section describes the landscape character of the site and the wider context, which includes the landscape within a 20 kilometres radius of the site as illustrated on Figure 12-1. The proposed development site is in south County Clare, and close to the border with County Limerick in the townlands of Glennagross, Cappateemore East, Ballycannan West, Ballycannan East, Ballycar South, Ballycar North. Limerick city centre lies approximately 4.9 kilometres from the nearest turbines while the northern suburbs of Ballynanty are approximately 3 kilometres south of the nearest turbine.

The landscape character is described under several headings below, with the landscape character of the site itself and immediate surrounds (the area within 3 kilometres from the site) described separately to the character of the wider landscape. The wider study area includes Limerick City and the surrounds, west as far as Shannon, and taking in the Broadford and Slieve Bernagh Hills to the north, including Killaloe to the north-east, and including the rural areas south of Limerick and the towns of Caherconlish and Adare.

12.4.2 Topography and Drainage

Site and immediate surrounds

The topography of the site slopes noticeably from north to south, from a height of approximately 262m OD in the vicinity of Ballycar South and Glennagross, to approximately 60m OD in the townland of Ballycannon West, north of Meelick.

Plate 12-1: Sloping land on the site with Limerick City in the distance

Plate 12-1 above illustrates the sloping nature of the land, and the larger expanse of flatter land below with Limerick City in the distance to the south.

Woodcock Hill lies west of the site at a height of approximately 310m OD, while the Fisherman's Hill lies north of this. East of the site, the ridge of higher ground tapers off to a level of 100m near the townland of Trough.

Plate 12-2: Woodcock Hill seen to the west of the site.

Together with the summit at Ballycar, these hills are seen as a landmark from the flatter lands to the south, as illustrated in Plate 12-3 below, which shows the view from Limerick city with the hills forming a backdrop. North of the site, the ground slopes steeply to a narrow valley which contains the local road, and a plateau of ground (above 150m OD) stretches to the northwest, with lower and undulating topography beyond.

Plate 12-3: The high ground at Ballycar, visible from flatter topography along Limerick's riverfront

Several streams rise on the higher ground on the site and flow south, with the Crompaun River (which partly defines the Limerick-Clare county boundary) to the south-west of the site. To the east, several watercourses join the Shannon near Quinn's Pool. North of the site, the Trough River runs through a shallow valley to join the Blackwater River to the east. These all eventually drain into the River Shannon, which is an important feature in the wider landscape.

Wider Landscape

The site is part of a ridge of higher ground directly northwest of Limerick City, (as shown in Plate 12-3 above) while to the north of this ridge is a further area of higher ground known as the Broadford Hills, or locally as the 12 O' Clock Hills near Kilkishen. Further northeast of the village of Broadford lies the Slieve Bernagh Hills.

To the east of the Slieve Bernagh mountains is the town of Killlaloe at the southern end of Lough Derg, with the Arra Mountains on the eastern shore of Lough Derg. South of Killaloe, the River Shannon flows through a flatter landscape southwest through O' Briensbridge and Castleconnell. The Headrace canal, diverted from the Shannon, flows from north of O' Briensbridge through the power station at Ardnacrusha and into the River Shannon at Parteen.

South of Limerick City, on the shores of the Shannon estuary, the remaining landscape is generally flat. The Shannon estuary is an important feature of the landscape. There are views of this landscape from the ridge of higher ground near Woodcock Hill towards the estuary as shown in Plate 12-4.

Plate 12-4: Views towards Shannon estuary from ridge of higher ground near Woodcock Hill

Flatter lands are also found to the east and south-east, until the ground rises again towards the Slieve Feilim mountains at the boundary of the study area.

12.4.3 Landcover

Site and immediate surrounds

The landcover of the site consists of a mixture of agricultural grassland to the south, and along the east and west fringes of the site, with areas of coniferous plantation to the north and centre of the site. The fields are enclosed by hedgerows, with small, scattered areas of scrub. Other landcover types include smaller areas of other grassland habitats, including dry-humid acid grassland, some wet heath, wet grassland and a very small section of blanket bog, as outlined in Chapter 6 Biodiversity.

Plate 12-5: Agricultural grassland and coniferous forestry on the site

Field sizes vary, some are enclosed by well-defined hedgerows while others have been enlarged. Areas under forestry have no field patterns that are easily distinguished. A number of farm tracks are found on the site. There are some sections to the north of the site which consists of wet heath with some scrub.

Plate 12-6: Mosaic of forestry, wet heath, and grassland on the northern part of the site

Immediately around the site, the lands are mainly composed of agricultural grassland, some coniferous forestry and tracts of heath or moorland, particularly to the west on Woodcock Hill as in Plate 12-2, which is known as Woodcock Hill bog.

A quarry lies to the northeast of the site, but it is largely screened by surrounding forestry. Scattered farms and houses are found near the northern part of the site, while clusters of houses are found in the vicinity of Cappanteemore, and near Meelick, south of the site.

Wider landscape

The wider landscape consists of a combination of agricultural lands and coniferous plantation to the north, on both sides of the R471 which links Sixmilebridge to Cloonlara. North of the R471 are the 12 O' clock hills which are also a mosaic of coniferous forestry and heath, and are a recreational destination as they offer a number of walking trails. To the west of Woodcock Hill, extensive coniferous plantations clothe the hills which slope down to the village of Cratloe. South of the site the landcover becomes increasingly urban south of the village of Meelick, including the suburbs of Limerick City, as well as the villages of Ardnacrusha and Parteen. Limerick City and suburbs occupy a proportion of the landcover of the study area, with the Shannon estuary also a feature.

The Shannon estuary lies west of Limerick City, with low-lying lands along the Shannon estuary consisting of mainly agricultural landcover but also some industrial areas such as the Irish Cement plant at Mungret. Water based activities are found along parts of the Shannon.

12.4.4 Cultural Heritage and Built Form

Chapter 13 Cultural Heritage contains a full assessment of the archaeology and cultural heritage. This chapter identified those sites which are important parts of the landscape character, and some are also locations which are visited by large numbers of viewers.

Site and immediate vicinity

The site itself contains just one area of cultural heritage interest to the north, where a cairn, standing stone and ring barrow are located. These are recorded monuments and located on private land. Chapter 13 Cultural Heritage describes this as a '*small prehistoric complex comprising of ring-barrow CL052-064003, standing stone CL052-064002 and cairn CL052-064001 are situated c.110m to the N of proposed T2; c.270m to the S of proposed T1, and c.400m to the SW of proposed T3 and c.500m NW of proposed T4.*

Plate 12-7: Barrow and standing stones in agricultural land at Glennagross, in the northwest of the site

South of the site, there is a Holy Well and two graveyards in Meelick, one which is in present use at Ballycannon, and an older graveyard at Killavoher. There are a relatively low number of recorded monuments on private land in the vicinity. The power station at Ardnacrusha, approximately 2.6 kilometres from the nearest turbine, is listed on the NIAH and is of architectural, historical and scientific interest, built in the 1920s to generate electricity from the hydroelectric turbines.

Wider Landscape

In the wider landscape, a number of areas of cultural heritage interest are located in Limerick City, to the west at Bunratty, at Craggannowen near Quin. A number of recreational trails are found in Limerick City, near Cratloe at Cratloe woods, as well as to the north of the site in Co. Clare and in the vicinity of Killaloe and Lough Derg. Limerick City contains a number of features of cultural heritage interest, including King John's Castle (A National Monument), located on 'King's Island', the Thomond and Sarsfield Bridges and several churches, the Cathedral, and museums, as well as some piers. The Georgian heritage of the city is also a well-known feature. The Shannon riverfront is an easily accessible area with a walkway (the Riverside Walk) running along the riverfront on the eastern and western bank, with views available to several of the city's important landmarks. Views from the bridges and riverfront towards the site of the proposed development are available and several are illustrated in Plates 12-8 and 12-9. In general, open views of the site were observed from the vicinity of Thomond Bridge, as well as from parts of the eastern riverside walk between these bridges, north of Wellesley Pier as shown in Plate 12-8, and in the vicinity of the Courthouse and Council office. Views from Sarsfield Bridge are restricted and focus on the Courthouse and city walls due to the curve in the river. In general, views from the western bank are slightly more restricted but some views are available in the vicinity of the Curraghgower falls and north as one approaches Thomond Bridge. The visibility is discussed further in Section 12.4.9 and in 12.6.2. Plate 12-8 below shows a number of these sites of cultural heritage interest, with the ridge of higher ground in the background.

Plate 12-8: Views of Wellesley Pier, Strand Barracks, St Mary's Cathedral and King John's castle from the riverwalk

Plate 12-9: View from Thomond Bridge towards site

It should be noted that the Development Plan's waterfront views describes the view from Thomond Bridge, but the view is towards the city (to the south and in the opposite direction away from the proposed development).

The view from the Shannon bridge as it reaches the eastern bank is a Waterfront view which includes visibility of the site.

The recreational area at Cratloe woods lies to the east of the site (approximately 5.5km) however, the dense vegetation will prevent views from the majority of the trails and walkways.

Bunratty castle (a National Monument) and historic town contains a number of cultural heritage attractions, and lies approximately 10 kilometres southeast of the nearest turbine. This is a well-known heritage site which includes the castle itself, a bawn, enclosure, bridges and the remains of a walled garden and is also a tourist destination. There are open views towards the proposed development from the N18/M18 road on the far side of the village but views from the base of the castle and enclosure and village appear screened by buildings, as shown in Plate 12-10 below.

Plate 12-10: Bunratty Castle and Durty Nelly's to the right, screening the views of the hills

Potential views could be available from the battlements of Bunratty castle, and this is considered further in Section 12.4.9.

Mungret Monastic site is another element of cultural heritage in the wider landscape, south of Limerick City. This consists of a number of churches and a graveyard as well as the remains of a Monastery. Both churches are National Monuments as outlined in Chapter 13 Cultural Heritage.

12.4.5 Recreation and Amenity areas and Trails

Recreation and Amenity related landscape elements include recreation trails both in Limerick City and the wider landscape to the north in Co. Clare.

The Lough Derg Way extends from Limerick City centre, beginning at the quays, at the city's Riverside walk, and extending along the canal. It follows along sections of the Shannon and the headrace canal (which diverts water to Ardnacrusha) to Killaloe. Between Limerick City Centre and the University of Limerick, this trail runs through mainly wooded riverbanks on both sides, however some glimpses of the site at Ballycar are available. However,

these are intermittent views, and the majority of the route will be largely screened once vegetation is in leaf. One such view is illustrated below, along the trail to the east of the Lock Quay canal bridge as shown in **Plate 12-11**.

Plate 12-11: Glimpse of site through trees along Lough Derg Way between Limerick city and University of Limerick

The East Clare Way extends from north of Tulla, at the edge of the study area boundary, south and west to Killaloe in the east of the study area. The trail skirts south of the summit of Knockaphunta which is approximately 4.9 kilometres north of the site. Another set of nearby trails which appear to be more well used are the 12 O' Clock hills routes, three looped walks which begin at the trailhead near Snaty, east of Kilkishen, and extend to the summit of Knockanaurha, approximately 5.6 kilometres north of the nearest turbine. The 12 O' Clock hills trails include two parking areas and appear to be well used trails, mostly off-road and on forestry tracks but also through coniferous forestry and on the higher ground of the hills.

The Mid Clare Way is another waymarked walking trail which traverses a short section of the study area from Newmarket on Fergus north to Quin and beyond, at a distance of approximately 14.7 km from the proposed development at its closest point.

These trails are all illustrated on **Figure 12-11** which is included in reduced format below and at full size in **Appendix 12E, Volume III**.

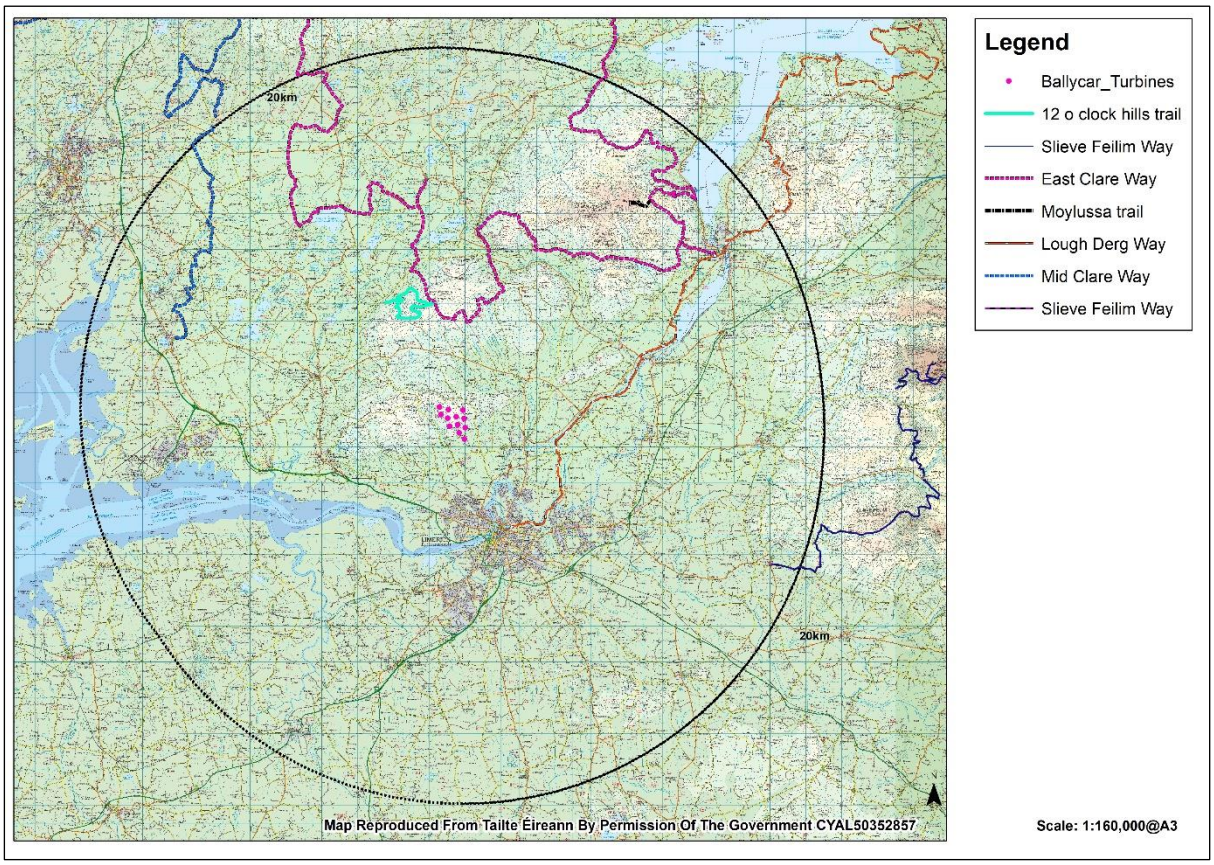


Figure 12-11: Recreation Trails Map

12.4.6 Land Use

Site and immediate vicinity

Land use on the site itself consists of a mixture of agriculture (grazing) and coniferous forestry. Scattered houses and farms are found in the vicinity of the site, and a quarry is located to the north-east of the site. To the west, Woodcock Hill is the location of a radar dome and several telecommunications masts.

Wider Landscape

Land uses in the wider landscape include agricultural, forestry, recreation, as well as retail and commercial uses in the towns and villages, and in Limerick City. The Shannon estuary is an important area for maritime and industrial lands uses with the Limerick Docks, Foynes Port and Moneypoint and Tarbert power stations providing electricity generation.

12.4.7 Settlement and Transport

Site and immediate vicinity

The closest settlements to the proposed development are the small settlement of Meelick, approximately 1 kilometre south of the nearest turbine, and Parteen (2.9 kilometres) to the east. Limerick City centre lies approximately 4.9 kilometres to the south, while the northern suburbs of Ballynanty are approximately 3 kilometres south of the nearest turbine.

The site is bordered by a network of relatively narrow local roads to the north, with slightly wider roads towards the southern end of the site. These local roads connect to the R464 to the south and the R471 to the north. The environs to the immediate north of the site have a remote feel, with narrow roads and scattered dwellings and farms, and some coniferous forestry as shown in Plate 12-12 below. South of the site, the area is more populated, with farms and clusters of dwellings (see Plate 12-13) interspersed with agricultural lands and small settlements.

Plate 12-12: More remote character north of site

Plate 12-13: More settled areas south-west of site

While a Scenic route (S23) lies approximately 1.2km west of the site, as stated in Section 12.3.3, only part of the road within the area of theoretical visibility will have potential views of the site due to dense coniferous forestry east of Woodcock Hill. Open views from the scenic route indicate that views from this part of the road are focussed on the Shannon Estuary as shown in Plate 12-14 below. The most open views will therefore be from the open section of road in the vicinity of the Woodcock Hill radar dome, and the track leading out to the dome, which appears to be a popular area for walkers. From the track leading to the radar domes, there are panoramic views to both the south and to the east to the Tipperary mountains. The northern part of the scenic route (it is actually in two sections as illustrated on Figure 12-3) which runs from Brickhill Bridge in Cratloe to the junction at Clogga has a very short stretch of theoretical visibility (approximately 470 metres). This is likely to be further reduced by intervening vegetation on the southern side of the road. Therefore, Viewpoint 9 represents visibility from Woodcock Hill, which is just adjacent to the most open views along the scenic route and a popular viewing point of the surrounding landscape.

Plate 12-14: Views over Shannon Estuary from scenic route west of Woodcock Hill (left) and Plate 12-15: Views to the higher ground looking east from Woodcock Hill (right)

Wider landscape

The villages of Sixmilebridge (6.7 kms) and Cratloe (6.7 kms) lie to the west of the site. As noted above, the village of Parteen as well as northern suburbs of Limerick are within 3 kilometres of the site, while the Limerick City centre lies approximately 4.9 kilometres south of the site. The N18/M18 road lies within the study area, to the west and south of Limerick City, while the Limerick-Dublin Motorway, the M7, lies within the study area to the east of the city. The N20 Limerick-Cork Road runs through the study area, south of Limerick City.

Further south the towns of Patrickswell, Adare and Caherconlish are also within the study area. Ardnacrusha village lies 2.6 kilometres to the east, and beyond this lie Cloonlara (6.5km) and Castleconnell (10.2km) east of the nearest turbine.

Scenic routes and views in the wider landscape are identified in **Section 12.3.3** above and include roads to the north in Co. Clare. As identified in **Table 12-8**, the next nearest scenic route with theoretical visibility is the S26, the R466 from O' Briensbridge to Broadford. Approximately 2 kilometres of the route is within the ZTV, in a southwest-northeast orientation. Along the section of road closer to Bridgetown, mature trees are likely to screen the views, with localised topography and vegetation allowing few open views towards the site to the south-west. Some glimpses of the higher ground to the south-east occurs as well as more striking views to the Slieve Bernagh Hills, which are in the opposite direction to the proposed development. A short section of the Scenic Route 27 – the R463 between Ardclooney Bridge and Cloonfadda is within the ZTV. The scenic qualities would appear to be glimpses of the River Shannon, apart from pleasant mature roadside trees, and some views to the Slieve Bernagh Hills.

A number of routes are located south of the study area, including those in Co. Limerick. The scenic route at Tory Hill, though within the ZTV, but at some distance from the proposed development, has views which are focussed away from the site of the proposed development and towards the hill itself (looking south and east). There are glimpses of views to the north over the flatter landscape but at some distance from the turbines. The scenic route at Murroe to the east of the study area has some views through vegetation, towards the site and is represented by Viewpoint 18. Scenic Routes in Co. Tipperary include the scenic route along Lough Derg (V44) with views of both Lough Derg and the Slieve Bernagh hills, however this is outside the ZTV.

Other scenic routes listed in **Section 12.3.4** include V59, the closest scenic route which is a section of the M7 motorway north-west of Castleconnnell and west of Birdhill. However, while views may be available depending on intervening vegetation, the nature of motorway driving means receptors are driving at high speeds and are

considered less sensitive receptors. This is approximately 12.5km from the proposed development. Health and safety issues prevent photography from this section. Other scenic routes (V55 and 57) are along the R503 west and east of Newport. The views from V57 appear most striking towards the Slieve Feilim mountains to the east with few notable views to the west, in the direction of the proposed development. One view from the route east of Newport is towards the site, however again this is at some distance (over 17km).

12.4.8 Summary of Landscape Character

In summary, the landscape character of the site and immediate vicinity has the following characteristics:

- The site is located in southern Co. Clare, on sloping topography north of Limerick City.
- The site itself is rural, covered in agricultural pastureland and coniferous forestry with smaller areas of heath. The land in the north of the site is at a higher elevation, and slopes south with extensive views to the south, over Limerick City and the Shannon estuary.
- The site is also visible, with the adjacent Woodcock Hill, from the flatter land to the south, including along the Shannon Estuary and parts of Limerick City, where Woodcock Hill, along with its radar dome and masts, act as a landmark.
- The northern and eastern environs of the site are more remote and tranquil in character with areas of dense forestry plantation and narrow roads, and an undulating topography, while the southern site environs are more populated and closer to settlement.
- The immediate vicinity of the site includes agricultural pasture, which to the northwest is interspersed with coniferous forestry, areas of broadleaf forest, peatland at Woodcock Hill Bog, and some areas of semi-natural vegetation. To the southeast of the site the land is mainly agricultural pasture with a quarry to the northeast of the site.
- Limerick City and the Shannon estuary are features of the wider landscape to the south, on generally flatter land.
- Flatter farmland is found south of Limerick City, with some settlements and transport networks.
- The land to the north of the study area is more undulating, with several areas of higher ground, and some settlements. To the northeast, Killaloe and the southern end of Lough Derg lie just within the study area boundary, with some areas of higher ground east of Killaloe. Further south, topography starts to rise gently east of Birdhill and Newport, Co. Tipperary.

12.4.8.1 Landscape Value

The GLVIA (2013) Guidelines sets out the methodology for assigning landscape sensitivity. This is based on combining judgements on landscape value, and landscape susceptibility which relates to the type of development proposed. Landscape susceptibility is addressed in Section 12.2.2, along with the assessment of effects.

Landscape values are derived from both indications of value as seen in national and local policy, as well as other indications that a landscape or landscape element, is valued. These values can further be categorised in two ways – values which should be conserved, and those that provide opportunity for enhancement.

Landscape value can therefore be identified by the presence of landscape designations or policies which indicate particular values, either on a national or local level. These include international designations (such as UNESCO World Heritage sites), national designations, and local designations such as scenic routes, scenic views or amenity designations which are included in County Development Plans. Important tourism, cultural heritage or recreational areas are also indicative of value. In addition, where landscapes do not have designations, a number

of criteria are used to assess the value of a landscape. For undesignated landscape in the vicinity of the site, the criteria identified in Section 5.28 of the GLVIA (2013) include:

- Landscape Quality/Condition;
- Cultural Heritage/Conservation value;
- Aesthetic/Scenic Quality;
- Rarity or Representativeness;
- Public Accessibility and Recreation Value.

Based on the above criteria, we can describe the landscape values of the site and immediate vicinity, which are not designated, and the wider landscape.

Site and immediate vicinity

The majority of the site has been modified in some way, either by agricultural practices or the planting of coniferous forestry. A barrow and some standing stones remain on the northwest part of the site, and some matures treelines and hedgerows can be seen defining the fields which are of some cultural heritage value but are not publicly accessible. There are considerable views to the south over Limerick City and the flatter lands, including glimpses of the Shannon, and the hills to the southeast. These views are probably one of the more distinctive aspects of the site, but the site in itself is not considered scenic. There are few rare elements (apart from the archaeological remains), and the site is not used for recreation and not publicly accessible. In the immediate environs, the landscape quality and condition varies, with agricultural pasture land, coniferous forestry and peatlands (Woodcock Hill bog) present, of which the peatlands and some areas of broadleaved woodland are the most valued.

In general, the landscape value of the site and immediate vicinity is considered Low (areas of coniferous forestry, agricultural pastureland) with some areas considered Medium (Woodcock hill Bog and areas of broadleaved forest including some limited areas of other landcover including other types of grasslands (dry-humid grassland, wet grasslands, wet heath), and a very limited section of upland blanket bog).

Wider Landscape

The wider landscape contains several areas which would be considered of High value, including the Heritage Landscapes illustrated on **Figure 12-3**, which include parts of the Slieve Bernagh hills to the northeast of the study area, near Lough Derg, which are valued for their recreational and aesthetic values. Other elements of Heritage Landscape closer to the site include the shoreline of the Shannon estuary to the south and the Fergus estuary to the southwest which appear to be valued for their views out to the Shannon estuary and character of the shoreline, but with few recreational opportunities. Closer to the site, the 12 O' Clock hills would appear to be valued for their recreational uses as well as for panoramic views. There are several areas of particular cultural heritage value including Bunratty castle and historic settlement, King John's Castle and Limerick's medieval heritage as well as buildings and river-related structures and the River Shannon, Cragaunnowen castle and Crannog. To the south of Limerick City, Mungret monastic complex is an important archaeological feature (and is also the subject of a protected view).

12.4.9 Potential Visual Receptors and Theoretical Visibility

Potential visual receptors include a variety of viewers, both in close proximity to the proposed development and those at some distance as turbines are likely to be seen over a wider area than other types of development. The

proposed turbines are the element of the wind farm most likely to cause visual effects. As set out in **Table 12-4**, sensitive visual receptors are identified by combining viewers of high susceptibility to the proposed change in views, with highly valued viewpoints. Potentially sensitive receptors are indicated below.

Two ZTV Maps have been prepared, one showing theoretical visibility to Hub height and one showing to Tip height. These are included in **Appendix 12F** and **12G** in **Volume III**. Both ZTVs are also included in reduced format below as **Figure 12-12 (Hub Height)** and **Figure 12-13 (Tip Height)**. As noted in **Section 12.2.2.1**, they do not include surface objects including vegetation and buildings. They are referred to here as they give an indication of areas that may, and areas that will not have visibility of the turbines. Therefore, the maps are of assistance in identifying potential visual receptors, in areas where theoretical visibility is illustrated, and ruling out receptors in areas where there will be no visibility.

The site of the proposed development refers to the site and the immediate vicinity (within approximately 3 kilometres of the proposed development) where the visual effects are likely to be the most pronounced.

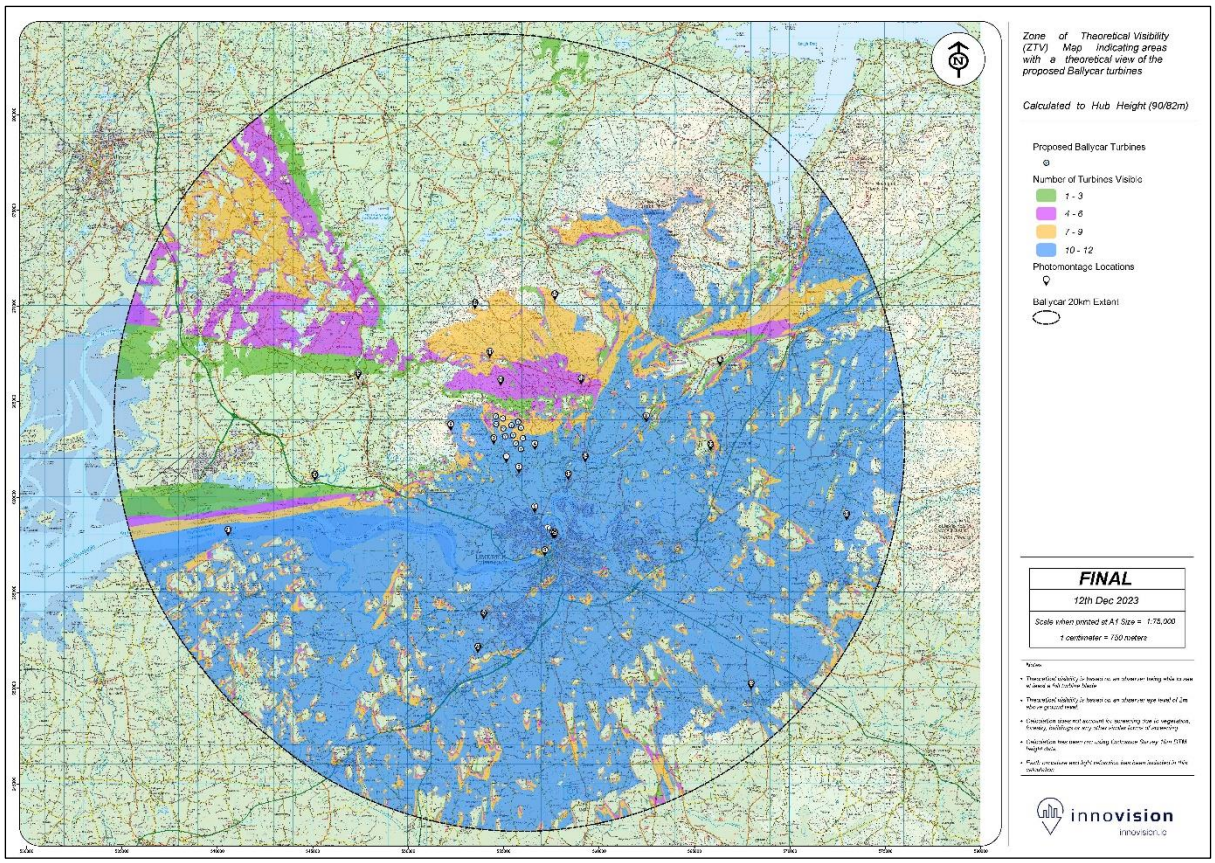


Figure 12-12: Hub Height ZTV

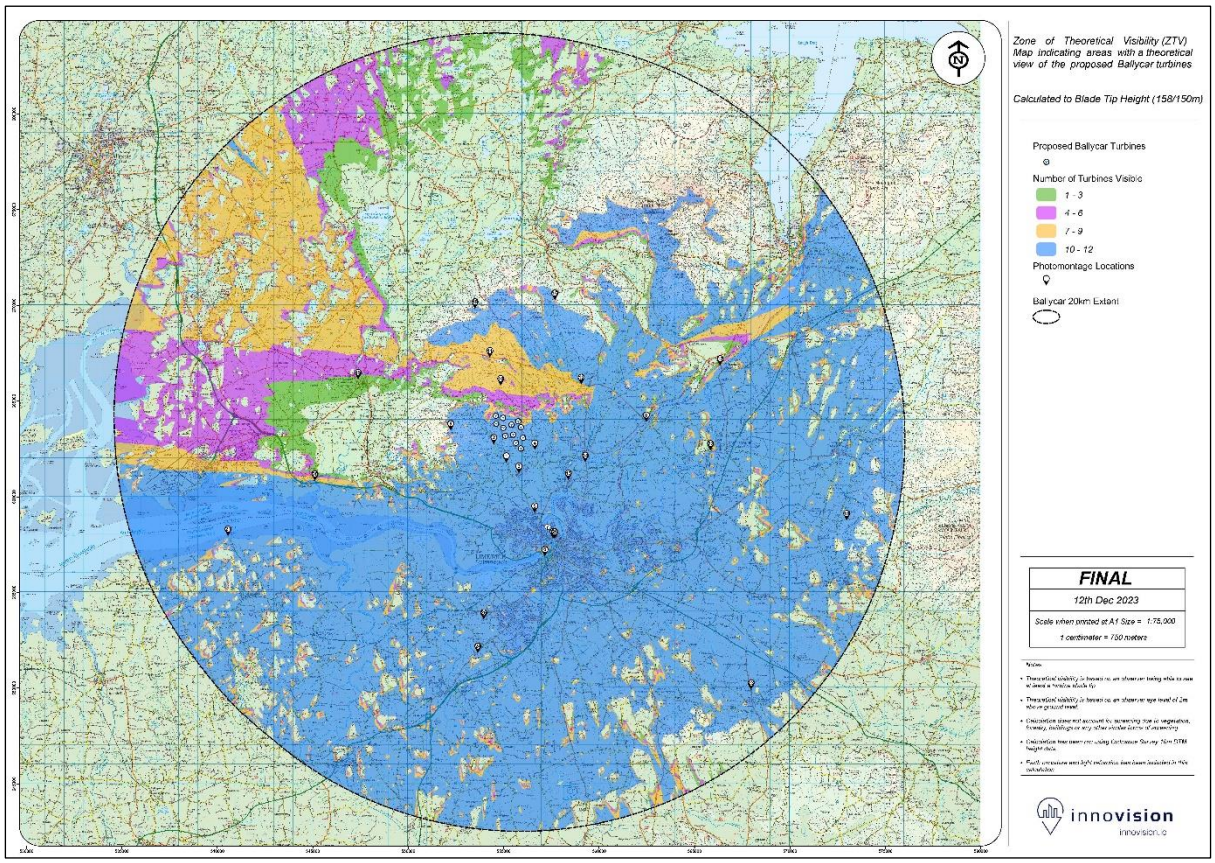


Figure 12-13: Tip Height ZTV

The Tip Height ZTV is referred to for the description below unless otherwise noted. As noted in the Visual Representation of Wind Farms (SNH, 2017), including both hub and tip height ZTV is a useful comparison that helps to identify areas where turbine blades may be visible, but not the tower.

ZTV Description – pattern and extent of theoretical visibility and actual visibility

Site and immediate surroundings

The site and immediate vicinity are shown in both the Hub and Tip Height ZTVs to have theoretical visibility of all turbines. Where there are open views in the immediate vicinity of the site, there are likely to be views of all 12 turbines (areas shaded blue). The more open views are from the south, and the local roads to the immediate east and west of the site, with some tree clumps and single dwellings restricting views from these roads. Viewers on the local road at Meelick, for example, would likely experience intermittent views, where there is vegetation and built form along the northern part of roadside, restricting views. To the north of the site, the topography restricts visibility with fewer turbines visible, and the fact that they are on a sloping hillside means that from this area, some will be largely screened by the topography with blade tips showing. To the east, more open views will show views of many or all of the turbines, however many views will be restricted by vegetation and landform. The area east of Woodcock Hill as far as Cratloe is outside the ZTV and therefore there will not be visibility of the turbines. Some areas will have visibility of blade tips only. This includes the majority of the two scenic routes as described in Section 12.3.3 and 12.4.7.

As there are more densely settled areas (Meelick, Parteen and parts of Limerick City) within 3 kilometres of the site, there are a higher number of potentially sensitive receptors. The choice of viewpoint locations reflects this.

Areas without visibility

There are several areas which have no theoretical visibility on the Tip Height ZTV map (**Figure 12-13**). Though the ZTV maps and actual visibility are discussed in some detail with reference to potential visual receptors and also in **Section 12.6.2**, below, it is useful to note areas which do not need further consideration. The following areas will not have visibility of the proposed turbines:

- West of the site, from the summit of Woodcock Hill to the R471 at Cloughlea, west of the Owenogarney River, there is an area with no visibility of the turbines. This also includes the majority of Scenic Route 23, as well as the majority of an area of Heritage Landscape stretching along the Owenogarney River between Cratloe and Sixmilebridge. The majority of Cratloe Woods recreation area is also outside the ZTV (and the Hub height ZTV shows no visibility at hub height).
- Another area north of the site, with no visibility includes the area north of the summits of Knockanaurha and Seefin (the summits themselves are within the ZTV) which are part of the 12 O' Clock Hills. Other areas without visibility include Lough Cullyhnaheeda, Doon Lough and the settlements of Broadford and O'Callaghansmills. The Broadford Gap and the Glenomra river valley between Broadford and Ballyquin More are also outside of the ZTV.
- North-east of the site, the northern slopes of the Sliabh Bernagh hills are outside the ZTV, as is the southern part of Lough Derg (the only part of the lake within the Study Area), and the town of Killaloe, the eastern shore of Lough Derg and scenic route 44, and the eastern slopes of Glenvagalliagh.

Areas with blade tip visible only

Comparison between the Tip Height and Hub Height ZTVs indicates the areas where the blade tips only will be theoretically visible. These include areas to the north near Tulla and some areas to the east and west of the town and some small areas to the south of Limerick City. Other areas where blade tips only are visible to the west of the site include Bunratty, Shannon town and airport, Sixmilebridge town and Cratloe Woods. Other information that can be gained from comparison between the two ZTVs are the areas which will have theoretical visibility of fewer turbines. An example would be the areas to the north of the site in the vicinity of Viewpoints 11 and 12, where the Tip Height ZTV (**Figure 12-13**) shows theoretical visibility of 7-9 turbines (areas shaded orange), however the Hub Height ZTV (**Figure 12-12**) shows theoretical visibility of only 4-6 turbines (shaded pink).

Potentially Sensitive Receptors

This section identifies the potential visual receptors while also reviewing the likely theoretical visibility as outlined on the ZTV Maps. This then informs the selection of representative viewpoints, from which photomontages will be produced, to assist in the assessment of visual effects.

The potential visual receptors fall into several categories, with those of higher sensitivity as follows:

- Residences in close proximity: Residential clusters in the vicinity of the site, in the townlands of Ballycannon West and Ballyfinneen to the southeast, and Cappateenmore to the southwest, as well as in the vicinity of Meelick to the south. The ZTV maps (**Figure 12-12** and **Figure 12-13 Appendix 12D** and **12E**) shows these areas as within the ZTV, unless localised screening prevents views. These areas should be represented by viewpoints.

- Recreational Trails/Amenity Areas: This includes Cratloe Woods, which are shown as within the area of Theoretical visibility for Tip height, (see **Figure 12-12** and **Figure 12-13**) however the dense tree canopy

will prevent views outwards from the woods. Potential visual receptors along other trails include the Riverside walk at Limerick, the Lough Derg Way which begins at the Riverside walk and extends along the canal and River Shannon up to Cloonlara and O' Briensbridge. The majority of this trail will be from lower-level areas along the waterways, however some parts where the elevation rises (such as at bridge crossings and from the Limerick riverfront) may have visibility and should be represented by a viewpoint. Viewers at the Riverside Walk in Limerick (from parts of the riverfront between the Shannon Bridge to Thomond Bridge) are likely to have views of the proposed turbines.

Visibility is also possible from parts of the East Clare Way, the Mid Clare Way, where forestry allows views, and parts of the 12 O' Clock hills trails, near Kilkishen, particularly among the open and elevated areas at the summit of Knocknaurha, where the coniferous forestry is not present to screen views.

- Scenic Routes and Protected Views: In Co. Clare, part of scenic route 23 to the west of the site along Woodcock Hill and Gallows Hill lies within the ZTV, however visibility is likely to be screened by dense forestry. Other scenic routes within the ZTV (as outlined in **Table 12-8**), include relatively short sections of scenic routes 26 and 27 which lie at some distance.

- Potential visibility is also available from two sections of scenic routes in Co. Limerick, (listed in **Table 12-9**) at Tory Hill and near Murroe, though both areas on the boundary of the study area. Site visits indicated that the views at Tory Hill are towards the hill itself, and therefore to the south and east and not in the direction of the proposed development. Potential sensitive receptors include those with visibility from three sections of scenic routes in Tipperary. The closest is the M7 motorway and health and safety concerns prevent photomontages from being taken in these locations. Visual receptors on motorways are not considered highly sensitive. The other routes are more distant, and the majority of scenic views are in other directions and not towards the proposed development.

- Potential sensitive visual receptors from Limerick City include viewers from the Riverside walk to the north, and views from The Shannon and Thomond bridges which are noted in the Development Plan. At Mungret, visual receptors are regarded as potentially sensitive at Mungret College where a protected view is mapped over the Monastic settlement (the two churches are both National Monuments) and over this settlement to the north west.

- Designated Landscapes: There are several areas of 'Heritage Landscape' in Co. Clare, within the study area. One of the closest is approximately 5.1km to the west of the nearest turbine, along the Owenogarney river, however the majority of this area will have no visibility of the proposed turbines. Where visibility occurs in a very small area south of Sixmilebridge there are no visual receptors. Another area of Heritage landscape is present along the Shannon estuary from where the Crompaun River enters the Shannon to west of Ballymorris, however this area is outside of any roads so receptors would be confined to those accessing private lands.

- In relation to the other more distant Heritage Landscape (Heritage Landscape 1- Slieve Bernagh), overlaying this area on the ZTV maps (**Figure 12-12** and **12-13 in Appendix 12D** and **12E**) indicates that there will be intermittent visibility from a very short stretch of local road/East Clare Way at Lackenbaun, however other views in this area include views towards the River Shannon and Slieve Felim hills to the south-east. In Co. Tipperary, two very small sections of Primary and Secondary Scenic Amenity are within the study area as shown in **Figure 12-3.** The section of Primary Scenic Amenity is east of Ballina and Lough Derg, and the area along the lakeshore is outside the ZTV. Some visibility is likely from the higher ground, but at this distance (over 17km) the proposed development is likely to be a distant feature.

- Cultural Heritage sites: On the site, the recorded monuments are not publicly accessible therefore receptors will be those who have access to these lands privately and will be very low in number. Viewers at some well-known and popular locations of cultural heritage significance (some of which are National Monuments as outlined in **Chapter 13 Cultural Heritage**) include a number of features in the Limerick City (St John's Castle, King's Island and riverfront area) and in the wider study area. Views will be largely screened from the historic town of Bunratty, however some potential for visibility remains from the castle itself (a National Monument). Similarly, intermittent theoretical visibility is shown in the vicinity of Cragaunnowen Castle, but the Crannogs and lakes are outside the theoretically visible area and visibility is likely to be further reduced by trees. The power station at Ardnacrusha is an element of cultural heritage however it is also a working power station. Views will be restricted to workers there apart from occasional open days where visitors are permitted, but its industrial heritage character in a landscape heavily modified by man would render viewers less sensitive than at other cultural heritage sites.

- Viewers in settlements close to the site where large groups of people may congregate (Limerick City, Meelick, and Parteen, in particular) should be represented by viewpoints. Cratloe village is outside the ZTV and therefore no visibility is possible from this location. The Tip Height ZTV shows there is visibility of blade tips only in the vicinity of Bunratty, Shannon airport and Shannon town and west to the Fergus estuary. Sixmilebridge also has theoretical visibility of blade tips only.

Less sensitive visual receptors

- High speed National Roads and Motorways – N18/M18, N20, M7. Viewers travelling at high speeds are generally considered of Low sensitivity since their focus is not on the landscape. Therefore, while views will be available from sections of these routes, and in particular where the M18 travels relatively close to the proposed development (approximately 4.5km from the nearest turbine) viewers are not considered of high sensitivity. This is also true for the more distant sections of the M7 in Co Tipperary.

- Other viewers of lower sensitivity include those at work (for example workers at Ardnacrusha power plant).

Seascape Areas and visual receptors

- The desk study identified one main area of Seascape Character in Co. Clare within the study area, as outlined in **Section 12.3.2** – the River Shannon SCA 11. This is the inner Shannon estuary from Limerick out to Shannon within the study area. While there will be receptors in this area, these are likely to be mainly those on shipping vessels coming to and from Limerick port, and the sensitivity of these receptors is likely to be less. The focus of the LVIA and the choice of photomontages remains on those locations where significant visual effects are likely. Furthermore, the southern coastal shore of the Shannon SCA is sparsely settled, and south of the N18/M18, there are few visual receptors. A similar sparse pattern of settlement is found on the southern shoreline of the estuary. A representative view across the estuary is provided by viewpoint 23.

12.4.10 Do-Nothing scenario

If the proposed development does not proceed, it is assumed that the lands would continue to be used for agriculture and forestry purposes and the site would remain a working landscape. Other activities identified in Chapter 6 Biodiversity include potentially further land reclamation for agriculture.

12.5 Construction Phase Effects

The construction phase is expected to last for 18 months.

12.5.1 Landscape Effects

Landscape Effects, as described in Section 12.2.5, are a combination of the Magnitude of Change and the Sensitivity of the resource. The landscape effects can include effects on the physical fabric of the landscape, on the landscape as a resource, and also on the character of the landscape. The effect on the character includes aesthetic and perceptual aspects.

Landscape Sensitivity relates to Landscape Value and Landscape Susceptibility. The sensitivity of the landscape receptor is related to the type of development proposed.

12.5.1.1 Landscape Sensitivity

Site and immediate surrounds

The Landscape Sensitivity of the site and immediate surroundings (the area approximately 3 kilometres around the site) are considered Low-Medium.

In the immediate vicinity of the site, there are elements of the landscape which are not considered highly valued, including the areas of coniferous forest and improved agricultural grassland which are the dominant landcover types on the site. However, there are smaller areas of other types of grassland (wet grassland, dry-humid acid grassland, wet heath) and a small area of blanket bog which are more sensitive. To the north of the site in the vicinity of the proposed substation and grid connection route, the character is more remote and tranquil, with dense forestry and narrow local roads with fewer dwellings. Within the immediate vicinity of the site, there are some elements which are regarded as of higher sensitivity, as they are valued elements which may have some susceptibility to the proposed construction works. These include the archaeological monuments to the north-west of the site, at Glennagross, as well as less important but valued elements such as small areas of scrub and hedgerows which contribute to the field pattern.

Wider Landscape

The wider landscape contains a variety of landscape character areas with the majority of the site located in the Sliabh Bernagh LCA. One of the turbines is located in LCA 9 Shannon Estuary Farmland which includes the lands sloping south towards Limerick and the Shannon Estuary. The Slieve Bernagh LCA is large and extends to Killaloe and the Slieve Bernagh hills, in the north-east of the study area and includes Seefin, with a more remote character of greater sensitivity to the north-east. A more settled landscape borders Limerick City, to the south.

The wider landscape includes a variety of character areas, as illustrated on Figure 12-4 and 12-5 which vary in sensitivity. North of the site, still in the Slieve Bernagh LCA, there are more rural, remote areas, with undulating topography and coniferous plantations, which is slightly less sensitive to developments of this type due to the possibility of screening and fewer expansive open views. Other Landscape Character areas are considered to have varying sensitivity and characteristics. Sensitive features include features of cultural heritage such as King John's

Castle in Limerick City, Bunratty historic village and Mungret monastic Complex. Other sensitive features include scenic routes and designated views, often including views to higher ground and mountains, as well as the River Shannon and Lough Derg.

12.5.1.2 Magnitude of Change

Site and immediate surrounds

The construction of the 12 no. turbines and associated elements, including the substation, cabling, meteorological mast, and access tracks is expected to take 18 months. Activities taking place at the construction phase include vegetation clearance, where necessary, followed by widening of an existing entrance to create a permanent site entrance to the north-east of the site. There is also a proposed temporary access to be used during the construction phase only which is located at an existing entrance. This entrance will be reinstated to its original condition once the construction phase is completed.

As shown in Figures 2-9, 2-10 and 2-11, contained in Chapter 2 Description of the Proposed Development, the permanent entrance will be from the south-east of the site from the L-7062. This will necessitate vegetation removal to create an entrance. This will be a permanent access point but will be scaled back, landscaped, and fenced and gated.

A total of 10.65 km of new internal tracks are proposed, with 1.8km of existing internal access tracks being upgraded and widened. 0.56km of this is for temporary access tracks. These access tracks will have a standard running width of circa 5m with surface water collection drains on either side. Some of the tracks are elevated in relation to the surrounding roads and houses and where visible, will be elements similar to farm tracks and farm construction works, albeit in a larger scale. Where possible the access tracks are located adjacent to hedgerows to screen the tracks and minimise vegetation removal.

The construction phase includes the construction of the turbine hardstands, turbines, substation and met mast. A proposed temporary construction compound will be located on the eastern section of the wind farm site near T10, close to the permanent site entrance. This phase involves vegetation removal and earthworks (existing hedgerows will need to be removed to facilitate the internal access tracks and the permanent site entrance), importing of stone and equipment to the site. The opening of a proposed on-site borrow pit location which has been identified to provide the majority of the required fill material for internal tracks, passing bays, hardstands, foundations and the temporary compound will also be undertaken during construction. The location of this proposed borrow pit is shown in Figure 2-14 in Chapter 2 Description of the Proposed Development and is within forestry.

This phase will involve machinery entering and exiting the site and working on the site for the duration of the construction phase, resulting in a change from an area with occasional machinery (during harvest times and other seasonal agricultural activities) to an area with a temporary increase in noise, dust and construction works. This will result in a temporary change to the character of the landscape of the site and immediate surrounds.

The magnitude of change associated with the on-site elements including the turbines and associated buildings (permanent and temporary) is considered to be varied. The more pronounced visual effects are considered to be Medium to High. The proposed works will affect both the landscape fabric of the site and its character. The works will be confined to the areas outlined in the planning application boundary which is an area of limited extent.

The proposed 110kV grid route is approximately 1.5km in length. A 110kV substation is proposed in forested lands north of T1, to the northwest of the site. From the proposed 110kV substation, an underground cable is routed in a north west direction where it connects to the existing 110 kV overhead line.1.0km of the 110kV grid route is proposed within existing forestry tracks which will have minimal landscape effects, with the remaining 0.5km routed through conifer forestry. It also crosses a 3m wide local public road (a narrow remote road). A new

unbound stone access track will be constructed over the 110kV grid route (within the existing forestry) to allow access for future maintenance. The proposed grid connection is considered of **Low** magnitude of change.

The project also includes additional components outside the boundaries of the Development Application Area, including temporary works along the turbine delivery route. There will be a requirement for tree felling and consequently replacement forestry land. However, these will be at a significant remove from the development site, therefore there will be no cumulative impact in conjunction on the proposed development. These lands will be subject to a separate independent technical and environmental assessment, and related consenting process. Further detail is included in **Chapter 2 Description of the Proposed Development**.

12.5.1.3 Significance of Effect

The significance of effect will range from Not Significant to Moderate. Not Significant effects relate to the proposed grid connection) and the construction phase of the on-site elements (turbines, hardstands and tracks, met mast, temporary compound and substation) will result in a **Moderate and adverse** landscape effect which is temporary in nature. These effects will largely be perceived in the vicinity of the site (within the south of the Slieve Bernagh LCA) and the northern part of the River Shannon Farmlands LCA, but not in any of the wider LCAs within the study area.

12.5.2 Visual Effects

12.5.2.1 Visual Receptor Sensitivity and Viewpoint Selection

While visual effects will occur during the construction phase, the main visual effects will arise during the operational phase, when all elements of the wind farm are in place. Therefore, this section deals with effects arising from the construction of the various elements of the wind farm. The viewpoint selection and the assessment of the montages are described fully in **Section 12.6.2** below with reference in each viewpoint to the likely visual effects during construction.

The viewers at viewpoints close to the site such as Viewpoints 2,3,4 as well as view 9, as shown in **Figure 12-14** (reproduced below in **Section 12.6.2** and contained in **Appendix 12F, Volume III**), which are described in the Operational Phase, are likely to experience visual effects during the construction stage due to their proximity to the site, as well as other viewers in close proximity to the site. These viewers are considered to be of Medium-High sensitivity. These visual effects are likely to be confined to the immediate vicinity of the site where works such as vegetation clearance, widening of site entrances, and earthworks as well as the construction of the structures are likely to be more evident, from the local roads close to the site.

12.5.2.2 Magnitude of change

Site and immediate vicinity

Construction Phase visual effects are likely to be localised and affect only the site and immediate vicinity, with some views from public roads and nearby residences given the sloping nature of the site topography. The construction phase will result in changes at a local level and will involve site works including vegetation removal on the site and at the entrances, with hedgerow removal necessary to construct the permanent site entrance, and to construct some of the internal access tracks. Other activities carried out at this stage which may be visible will be tree felling in the vicinity of two turbine bases, as well as the vicinity of proposed tracks, substation and borrow pit. One temporary construction compound will be constructed to the west of the permanent site

entrance in a field south of the access track and this may be visible from the surrounding roads, in particular the road east of the site at Ballycannon.

The borrow pit and deposition area are located within forestry and therefore should be largely screened. Some tree felling will occur to facilitate the substation construction but there are few visual receptors in this remote part of the study area. The tree felling and substation construction is likely to be visible from elevated views to the west such as Viewpoint 9 Woodcock Hill. It is noted that as part of the site is under commercial forestry, tree felling, and re-planting is an existing activity.

Machinery will be entering and exiting the site as well as working on site, and the associated noise and movement of machinery will be evident in the vicinity of the site especially along the Local Road L-7062 where both entrances are located. The magnitude of change is considered as localised, **Medium** magnitude in the immediate vicinity of the site.

Off- site elements include the grid connection. The grid connection is relatively short, at 1.5km beginning at the windfarm substation which is in the north of the site. Approximately 1km of the route is along existing forestry tracks.

Wider Landscape

The wider landscape will experience a **Negligible to Low** magnitude of change during the construction phase.

12.5.2.3 Significance of Effect

Site and immediate surrounds

The magnitude of change as a result of the site activities is considered as a localised and Medium to High magnitude of change. Receptors are considered as subject to a Medium to High magnitude of change in the immediate vicinity of the site. The visual effects are considered **Moderate, adverse** in the immediate vicinity of the site and site entrances, as well as the elevated lands to the west near Woodcock Hill, however these are temporary in nature during construction.

The grid connection is likely to result in **Imperceptible/Not Significant temporary adverse** visual effects, as this is a very short route, with the majority of the works taking place in forestry and forestry access tracks. There is just one road crossing, which is visible from the immediate surroundings only at the construction stage.

Wider Landscape

The significance of the effect on the wider landscape is considered as **Not Significant, adverse** and **temporary**.

12.6 Operational Phase Effects

12.6.1 Landscape Effects

12.6.1.1 Landscape Sensitivity

Landscape sensitivity is discussed in **Section 12.5.1.1** above and is the same for both the construction and operational phases.

It is noted that there are no areas of Heritage Landscape in the vicinity of the site, and the site is considered 'Strategic' for wind energy in the current Clare WES.

12.6.1.2 Magnitude of Change

Change to the landscape can consist of changes to the fabric of the landscape, as well as to the character and perceptual aspects. Changes to the fabric of the site are limited to the immediate site area, consisting of changes to accommodate the footprint of the turbines and associated elements such as earthworks, access tracks and positioning of elements including the substation and cabling. Changes as a result of non-turbine elements to the landscape fabric and character, will be largely evident at the local level, and not the wider landscape. The majority of the proposed turbines are sited on improved grassland and conifer plantation, with some on other grassland types. Two turbines are located in forestry, along with the proposed substation. Tree felling will take place, the majority of which is coniferous forestry (approx. 15.97ha). It will be re-planted elsewhere and not within 10km of the site, to eliminate any potential for cumulative effects. Approximately 849 metres of hedgerow and 15 metres of treeline will be removed to facilitate the proposed development.

The works will not directly affect the archaeological monuments at Glennagross. There will be no structures, works, bunding or stockpiling of materials near these features, and though turbines are in close proximity to these structures, it is considered that works will not affect the fabric of the structures. There will be changes to their setting which is discussed further in Chapter 13 Archaeology and Cultural Heritage.

Other elements visible from some areas in the wider landscape include the proposed substation, while the turbines themselves will impart a larger degree of change to the local landscape. Visibility of the turbines from the immediate surrounds will be pronounced, as there are some open and expansive views.

Wind turbines have become a feature of the more distant landscape to the west and are likely to become an element of the landscape to the north-east of the study area (when/if the Carrownagowan turbines are constructed – approx. 12 kilometres). The Fahy Beg wind farm (refused but under appeal) is located approximately 8.7km to the north-east. The cumulative effects are assessed in Section 12.6.3 below. Although there are several existing single turbines visible closer to the site, the presence of 12 turbines of large scale will impart a Medium-High magnitude of change to the landscape character of the locality.

12.6.1.3 Significance of Effect

The proposed development is considered to result in a Medium-High magnitude of change to the landscape character of the locality.

The significance of the landscape effect is considered to be Moderate in the immediate vicinity of the site. The effects range from Neutral to Adverse. It is noted that though the turbines are considered to result in long term effects, the majority of these effects are reversible, due to the decommissioning of the wind farm.

Landscape effects on the site and immediate vicinity include both effects on the physical landscape and the visual presence of the turbines in the landscape. The more obvious changes to the landscape character include the turbines and the proposed substation. The landscape is a rural, working agricultural landscape with farms and a quarry visible from views to the north of the site. The topography is sloping in nature, with open views of the Shannon estuary and Limerick City to the south. There are no landscape designations or Heritage Landscapes in the vicinity of the site and the area is categorised as 'Strategic' for wind energy.

Turbines will become a more pronounced presence in the immediate vicinity of the site, along with the substation, located in the north-west of the site. The quality of the effect is considered adverse in terms of the changes to the physical fabric of the site which, though limited, include removal of some habitats, treelines and hedgerows.

The proposed cable route will not result in any visual effects at the operational stage as it is below ground.

Landscape Character and Viewpoints

The viewpoints are taken from various LCAs in the study area, though it is noted not all LCAs are represented, the focus being on the closest LCAs which are likely to undergo the most pronounced effects, and those with sensitive visual receptors. The viewpoint selection represents visibility, sensitive receptors, the nature and extent of the settlement pattern among other considerations, as outlined in Section 12.6.2.2.

- Viewpoints 2,9,10,11,12,16 and 19 represent LCA 8 Slieve Bernagh, where the majority of the proposed development is situated. The visual effect ranges from Slight to Significant, with one view with no effect.
- Viewpoints 1,3,4,8,13,14 are taken from LCA 9 River Shannon Farmland, which includes the southern portion of the site. These LCAs contain the viewpoints with the most pronounced visual effects, however considerable variation occurs in the vicinity of the site, compared with the western and north-eastern extremities of this LCA.
- Viewpoints 20 and 24 are taken from Shannon Coastal Zone LCA in Co. Limerick, with Viewpoints 17 and 22 on the boundary between these two LCAs on the Clare/Limerick border.
- Viewpoints 15 and 20 are taken from LCA 10 Sixmilebridge Farmland, with the visual effect of both considered Imperceptible. This reflects an overall pattern of little visibility from this LCA towards the proposed development.
- Viewpoint 23 represents the Agricultural Lowlands LCA in Co Limerick, while Viewpoint 18 represents the boundary of this LCA with LCA Slieve Feilim Uplands.
- Limerick City and surrounding LCAs (Southern Environs) are represented by Viewpoints 5,6,7,25,26 which again show varying visual effects as they range from urban to peri-urban contexts.

Effects on the large LCA of Slieve Bernagh vary, as can be seen from the varying viewpoints from this LCA. Viewpoints 2,9,10,11,12,16,19 are taken within this LCA and range from more pronounced visual effects from closer viewpoints such as 2 and 9, to less pronounced visual effects at viewpoints 11 and 12, and 19. Viewpoint 16 shows no visibility.

Effects on Landscape Character will be Moderate in the vicinity of the site. Effects range from Slight in the centre of the LCA, to no effect in the northern part of the LCA which includes the northern and eastern slopes of the Slieve Bernagh hills. There will be no effect to the shores of Lough Derg within this LCA and the adjacent Arra Mountains and the Lower Lough Derg LCA in Co. Tipperary.

LCA 9 River Shannon Farmland is also an extensive LCA, extending from Bunratty to the west, to Lough Derg in the north-east. The southernmost turbine of the proposed development is situated in this LCA. Due to the expansive nature of the LCA, the effects on the landscape character will vary. The proposed development will be clearly visible from this part of the LCA near the site, with more pronounced visual effects in Viewpoints 1,3 and 4 as discussed in Section 12.6.2 below. The visual presence of the proposed development will be significantly less in parts of the LCA to the west, at Bunratty and in the vicinity of Cratloe and also to the north-east at Killaloe. In these areas there will be places where viewers will have glimpses, or no views of the proposed development.

The LCAs of Limerick City and the Southern Environs are represented, and again the visibility, and the effect on landscape character will vary throughout the LCA.

12.6.2 Visual Effects

Visual effects of the turbines and some of the more obvious non-turbine elements are assessed using the montages. The montages include depiction of the access tracks, hardstands, met mast, and substation. The nature of the elevated/sloping site results in some of the hardstands and tracks being prominent. It is proposed to install

lighting on the turbines in a pattern that is acceptable to the Irish Aviation Authority/AirNav Ireland for aviation visibility purposes. As this is to be agreed, these cannot be depicted on any montages.

Tree felling will take place, the majority of which is coniferous forestry (approx. 15.97ha). It is noted that it will be re-planted elsewhere.

12.6.2.1 Visual Receptor Sensitivity and Viewpoint Selection

The ZTV, which illustrates the pattern and the extent of visibility, is used in viewpoint selection, and to rule out areas with no visibility. Landscape policies/designations such as scenic routes, and locations identified in Section 12.4.9 where sensitive visual receptors have potential views of the site, contributed to an initial list of viewpoints.

This list of locations which were visited to assess potential visibility of the proposed turbines, differs from the ZTV map as areas with theoretical visibility may be screened from the proposed development – mainly by built form and vegetation as established by the site visit. Other factors in selecting viewpoints include public accessibility, and the number of people which may visit the viewpoint.

As outlined in the SNH (2017) guidance (paragraph 76) on visual representation of windfarms, views at varying elevations, directions and distances and in varying contexts, and representing various types of visual receptor were visited. Following this, the list of potential viewpoints was further refined, with viewpoints where no open views occurred being removed from the list. However, for a selected number of viewpoints (Viewpoint 7 Limerick City Riverfront, Viewpoint 18 O' Briensbridge, Viewpoint 20 Bunratty and Viewpoint 22 Castleconnell) photomontages where the turbines depicted on the wireframe view are obscured by vegetation or built form are included, where the viewpoint is considered of importance.

The viewpoints chosen also reflect the pattern and extent of the theoretical visibility, and the sensitivity of visual receptors. In this case, the settlement pattern influences the viewpoint selection due to the proximity of Limerick City, so the number of viewpoints reflects the wider variety of settled areas which are represented by montages.

Consultation was carried out with An Bórd Pleanála at a meeting on September 1st, 2022, where photomontage locations from settlements in the wider area were discussed. Views from Sixmilebridge and Castleconnell are included and are represented by Viewpoints 15 and 22. Consultation with Clare County Council recommended the inclusion of a view from King John's Castle.

As indicated on the ZTV and in the baseline section, viewpoints representing sensitive receptors include locations at landscape and visual designations as well as waymarked trails (East Clare Way, 12 O'clock hills trails, Limerick's Riverside Walk and the Lough Derg Way) viewing points at Woodcock Hill and Knockanaurha and cultural heritage attractions including Bunratty village. Other viewpoints representing sensitive receptors include local residents and viewers at local community views in close proximity to the site.

Viewpoints also represent viewers on scenic routes, where visibility occurs, as well as representing views from the various Landscape Character Areas, both in Co. Limerick and in Co. Clare. This process is consistent with that outlined in SNH guidance on viewpoint selection as well as more general guidance in paragraph 6.20 of the GLVIA (2013). It should also be noted that the GLVIA notes (paragraph 6.21) there is no specific guidance on the number of viewpoints as this depends on the context, nature of the proposal and range and location of visual receptors.

Viewpoints 1-26 are described below and should be read in conjunction with the Photomontage Booklet in Volume IV. The viewpoints 1-26 include viewers in the immediate vicinity of the site and from the wider landscape. These are discussed below in Section 12.6.2.3.

The viewpoints (overlaid on the landscape designations) are illustrated in **Figure 12-14** (reproduced in A3 in **Appendix 12H, Volume III**). They are also illustrated on the ZTV Maps (**Figures 12-12, 12-13** and **12-15**).

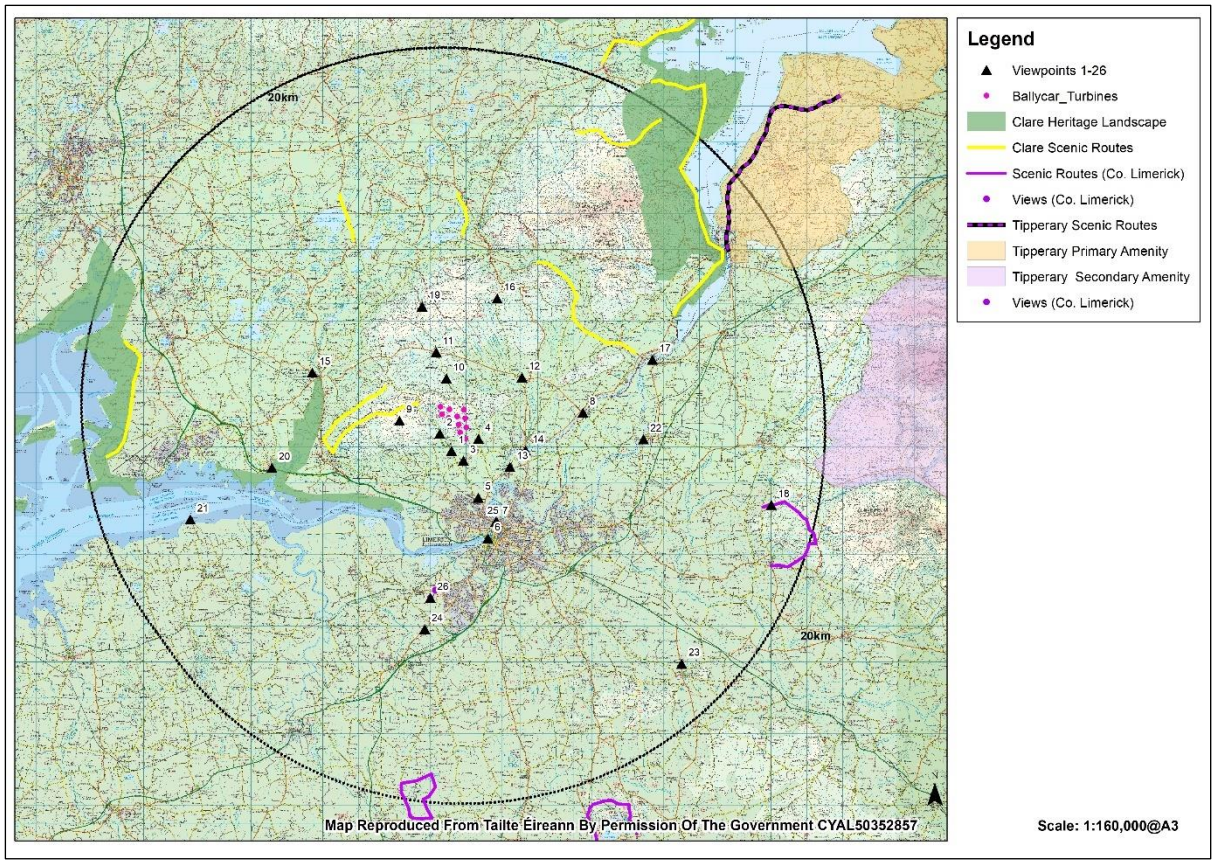


Figure 12-14: Viewpoint Map with designations

The visual effects are assessed using a combination of information from site visits to the study area, study of the development proposals, analysis of the several Zone of Theoretical Visibility (ZTV) maps, and the use of Photomontages. The limitations and uses of the ZTV and Photomontages and the method of production are described in **Section 12.2.5**. Further details are contained in the Photomontage Booklet.

The ZTV maps give an indication of the pattern and the extent of the visibility, while the photomontages indicate the nature of the visibility. The Tip and Hub height ZTVs are discussed in **Section 12.4.9** while the Cumulative ZTV is discussed in **Section 12.6.3**.

12.6.2.2 Viewpoint Description

For each viewpoint, a table is included which includes the following information:

- The existing view is described (this is the 'Baseline Photograph') with an angle of view of 90 degrees. For certain locations, there is a second Baseline Photograph, also at 90 degrees, to represent the landscape context where the viewpoint has panoramic views or where an additional image is necessary to depict the landscape setting more accurately. This second baseline photograph is included in Viewpoints 2 and 19.

- A wireframe or wireline view is also shown underneath with the Baseline Photograph, illustrating theoretical visibility of the turbines. This includes existing, permitted or consented turbines, as well as proposed turbines (those which have not yet been determined).
- The Proposed Photomontage - Magnitude of Change is then described which is the 'Photomontage' view. The Photomontage view is shown as 53.5 degrees, (as per SNH guidance) with some viewpoints requiring two or more 53.5 degree views. For some viewpoints (View 1, 2 and 4) there are two or more Photomontage views as the location is in close proximity to the proposed turbines.
- Other headings include Visual Receptor Sensitivity, Magnitude of Change, Significance of Effect. These describe these elements as per **Tables 12-1** to **12-4.** The Quality of the Effect is also described.
- In all cases, the Duration of the visual effect in all views will be long term, although it is important to note that the turbines can be decommissioned after 35 years. The change is considered to be reversible, as the removal of turbines, and other tall elements of the proposal will remove the visual effects associated with them.
- It should be noted that the montages also depict Cumulative visibility, and this heading describes visibility of other turbines. These are depicted in the baseline views (existing turbines) or in the wireframe view (turbines which are permitted or proposed, under appeal). These are referenced in the descriptions, however these are addressed separately in **Sections 12.6.3**.

The viewpoints are as listed in **Table 12-11** below.

Table 12-11: Viewpoint Locations

Viewpoint No	Description	Distance from nearest proposed turbine (km)
1	View from Knocknalisheen, south of Cappateemore Bridge	1.0
2	View from local road at Cappateemore West	0.7
3	View from local road and houses at Killavoher,Meelick	1.1
4	View from local road at Ballyfinneen	0.7
5	View from Knockalisheen Road at Moyross, Co. Limerick	3.3
6	View from Shannon Bridge plaza, Limerick City	5.7
7	View from Thomond Bridge, Limerick City	4.9
8	View from Lough Derg Way at Clonlara Bridge	6.5
9	View from Woodcock Hill (trig point)	2.4
10	View from local road at Derrynaveagh	1.6
11	View from Oatfield Cross	3.0
12	View from R471 west of Trough Cross	3.6
13	View from road at Ballykeenaun, Parteen	2.9

Viewpoint No	Description	Distance from nearest proposed turbine (km)
14	View from Blackwater Bridge at Rosmadda West	3.4
15	View from R470 at Sixmilebridge near school	7.5
16	View from Mid Clare Way and local rd (east of Seefin) at Kyle	6.5
17	View from old bridge at O' Briensbridge	10.8
18	View from Local road at Ashroe (north of Glenstal Abbey), Co. Limerick	17.3
19	View from Knockanuartha summit (12 o' clock hills walking)	5.7
20	View from local road at Bunratty	9.9
21	View from Ringmoylan/Ballymacdonnell Pier, Co. Limerick	16.0
22	View from the Ferry Playground, Castleconnell	9.8
23	View from R521 south of Caherconlish	17.6
24	View from R526 at Cloughkeating, Co. Limerick	10.8
25	View from King John's Castle, Co. Limerick	4.9
26	View from Mungret College	9.0

Viewpoint 1: View from Knocknalisheen, south of Cappateemore Bridge

Existing View

This view shows a row of dwellings along a minor road. In the foreground the road is visible, with various styles of stone wall delineating the individual properties, with trees, hedges, and shrubs inside the walls. Three dwellings of relatively low height (two single storey and one dormer) are visible to the right of the view, partly screened by vegetation. In the background, vegetation and distant coniferous forestry are visible.

Visual Receptor Sensitivity

This view represents a cluster of houses on the local road south-west of the site. Viewers would be those driving along the narrow local roads and those in the vicinity of the dwellings. Though the quality of the view is not particularly scenic, the viewers would be focussed on the view to the rear of the houses and the sensitivity is considered Medium – High.

Proposed Photomontage - Magnitude of Change (Represented by two montages, 1a and 1b).

In montage 1a, the turbines are visible in the background of the view, over a medium-large extent, almost the full width of the view. The turbines to the centre of the view take up an increased vertical extent than those to the left of the view. The scale of the turbines is considered large; but the proximity of the turbines varies. In addition, the turbine towers are partly screened by intervening vegetation, with some of the turbine blades also partly screened. The magnitude of change is considered High. **Montage 1b** shows the proposed turbines appearing to the rear of the dwellings, with one turbine to the right (visible on the wireframe) completely screened and considerable proportions of the two turbines visible to the right of the image also screened by the dwellings and by vegetation. This reduces the scale of the turbines somewhat. The magnitude of change is considered Medium-High, defined in **Table 12-4** as:

***Medium**: Partial intrusion of the development in the view… resulting in change to the composition but not necessarily the character of the view or the visual amenity.*

***High**: '… or introduction of elements that may be considered uncharacteristic in the context, to the extent that the development becomes co-dominant with other elements in the composition and affects the character of the view and the visual amenity*

Significance of Effect

The visual receptors sensitivity is considered Medium-High, and the magnitude of change is considered to be High, and Medium-High in the two montages, respectively. Overall, the visual effect it is considered to be **Moderate-Significant**. The quality of the effect is considered **adverse**. As the turbines appear at a scale larger than the surrounding landscape elements, they combine to create an element of visual clutter in this view.

Cumulative Visibility

No other turbines are visible in the wireframe view or montage view.

Viewpoint 2: View from local road at Cappateemore West

Existing View

There are two existing views, Baseline A and B. Baseline A shows a roadside view with a dwelling to the left of the view and a shed to the right. A glimpse of grassland to the rear of the roadside hedgerow is visible in the foreground, while a dense hedgerow and vegetation in the middleground. In the background, the topography rises to show elevated grassy fields with some hedgerows and a shed visible. In the background, some heath/grassland and coniferous forestry is visible. Baseline B shows a row of dwellings in the foreground, lining the roadside. The dwellings are two storey and in between, trees restrict views to the wider landscape beyond.

Visual Receptor Sensitivity

This view represents a smaller cluster of houses where open views are found, on the local road west of the site. Viewers would be those driving along the narrow local roads (with the turbines off to the side of the view) and those in the vicinity of the dwellings. Though the quality of the view is pleasant it is not particularly scenic and is similar to the view from nearby residences (focussed on the view to the rear of the houses and in particular upper storeys) and the sensitivity is considered Medium-High.

Proposed Photomontage - Magnitude of Change (Represented by 3 montages, 2a,2b,2c)

Montage 2a shows turbines visible over more than half of the view, with the met mast a less prominent element in the view. **Montage 2b** shows that the turbines are large in scale, and are visible over a large extent, over the full width of the view. **Montage 2c** shows turbines visible to the left of the view, occupying a smaller horizontal extent, and that three turbines are not visible as they are behind the dwelling to the right of the view. Overall, nine turbines are visible, with the towers of two mainly hidden, and these appear less prominent. Seven of the turbines are clearly visible, with close proximity turbines appearing of considerable size. As per the definitions in **Table 12-4**, the magnitude of change is considered High:

Extensive intrusion of the development in the view… or introduction of elements that may be considered uncharacteristic in the context, to the extent that the development becomes co-dominant with other elements in the composition and affects the character of the view and the visual amenity.

Significance of Effect

The medium-high receptor sensitivity and the High magnitude of change results in a **Significant** visual effect. The visual effect is considered adverse, as while the turbines do appear staggered in response to the undulating landscape, their scale in addition to the wide visual extent result in a level of visual dominance.

Cumulative Visibility

No other turbines are visible in the wireframe view or montage view.

Viewpoint 3: View from local road and houses at Killavoher, Meelick

Existing View

This view is taken from a main location at Meelick where open views to the north are found, with many views from the east of the village screened by topography or by built form. This view shows a road and footpath in the foreground, with dense evergreen vegetation adjacent to this in the foreground of the view. To the right of the view, an entrance to a building is visible, with the building itself partly screened by the vegetation. Some trees are also visible to the right of the view, to the rear of the building. In the centre of the view, in the background, higher ground, mainly covered with coniferous plantation, is visible.

Visual Receptor Sensitivity

This view represents one of the few open views close to houses at Meelick, the closest settlement to the site. The building in the view faces south. A row of houses on the southern side of the road may have similar views to this, with some screening as a result of buildings and vegetation along the roadside. Though the quality of the view is not particularly scenic, the viewers would be focussed on the view from the houses and the sensitivity is considered Medium–High.

Proposed Photomontage - Magnitude of Change

The turbines are visible over a large extent, but not the full width of the view, clustered towards the centre of the view. Two turbines are partly hidden by vegetation and the building. The turbines are staggered in elevation down the sloping hillside and therefore while the lower turbines appear closer, they are slightly lower in height. As per the definitions in **Table 12-4**, the magnitude of change is considered Medium-High:

High: *'… or introduction of elements that may be considered uncharacteristic in the context, to the extent that the development becomes co-dominant with other elements in the composition and affects the character of the view and the visual amenity*

Medium: *Partial intrusion of the development in the view… resulting in change to the composition but not necessarily the character of the view or the visual amenity.*

Significance of Effect

The medium-high receptor sensitivity and the medium-high magnitude of change results in a Moderate - Significant visual effect. The visual effect is considered neutral, as the turbines, though tall structures and of large scale, are viewed over a more limited part of the view and not its full extent. They are seen against a backdrop of higher ground covered with coniferous plantation, and appear close, but not dominant in the view.

Cumulative Visibility

No other turbines are visible in the wireframe view or montage view.

Viewpoint 4: View from local road at Ballyfinneen

Existing View

This view shows a road with roadside vegetation, and a single storey house in the foreground. Behind the house, the topography rises, with agricultural fields and coniferous forestry evident on the lower levels, with extensive areas of coniferous forestry on the higher ground. Electricity and telephone wires are visible in the foreground of the view, adding an element of visual clutter.

Visual Receptor Sensitivity

This view represents viewers on the road east of the site, opposite a residence. Road users would be of low-medium sensitivity, with residential viewers of medium-high sensitivity. The view is a pleasant rural view without any particular scenic qualities. Though the quality of the view is not particularly scenic, the viewers would be focussed on the view to the rear of the houses and the sensitivity is considered Medium.

Proposed Photomontage - Magnitude of Change

The turbines are visible over a large extent, almost the full width of the view, with one turbine completely screened by a tree to the left of the view, and another almost in the centre of the view. However, these may be visible in the winter, when the leaves are off the trees. The magnitude of change is considered High:

***High**: '… or introduction of elements that may be considered uncharacteristic in the context, to the extent that the development becomes co-dominant with other elements in the composition and affects the character of the view and the visual amenity*

Significance of Effect

The medium-high receptor sensitivity and the high magnitude of change results in a **Significant** visual effect. The visual effect is considered adverse, as while the turbines do appear staggered in response to the undulating landscape, they are prominent elements in the landscape. Their height in addition to the wide visual extent result in a level of visual co-dominance, and along with the power lines in the view, add to the existing sense of visual clutter.

Cumulative Visibility

No other turbines are visible in the wireframe view or montage view.

Viewpoint 5: View from Knockalisheen Road at Moyross, Co. Limerick

Existing View

This view shows a road in a rural edge context, with dwellings, a grass open space and a housing estate visible to the left of the view. To the centre of the view beyond the road, fields and tree clumps are visible, and as the ground rises higher in the distance, a patchwork of agricultural fields and coniferous forestry are evident on the hillside and the top of the ridge.

Visual Receptor Sensitivity

This view represents a local road on the edge of Limerick City and is taken opposite the entrance to a residential development and would therefore be similar to the views from the open space and the outside of some of the dwellings. These are considered of Medium-High sensitivity, as they would be focused on their surroundings and the view is pleasant but not highly scenic.

Proposed Photomontage - Magnitude of Change

The turbines are visible over a limited extent, taking up a medium horizontal extent. The eye is drawn to the higher ground in the view, and the turbines are viewed in a loose cluster in the centre of the view, with some seen on the skyline and some against a backdrop of lower ground. Though clearly visible, they are not dominant. As per the definitions in **Table 12-4**, the magnitude of change is considered Medium:

***Medium**: Partial intrusion of the development in the view… resulting in change to the composition but not necessarily the character of the view or the visual amenity*

Significance of Effect

The Medium-High receptor sensitivity and the Medium magnitude of change results in a Moderate visual effect. The visual effect is considered neutral. While the turbines are clearly visible, they are not dominant, and are concentrated in the central part of the view on the higher and sloping ground.

Cumulative Visibility

A blade tip of the permitted Carrownagowan turbine is visible in the baseline wireframe view, but not in the montage view.

Viewpoint 6: View from Shannon Bridge Plaza, Limerick City

Existing View

This shows a view taken from the plaza and seating area on the River Shannon bank, just north of the Shannon Bridge. The River Shannon is one of the key elements in the view, occupying a considerable proportion of the foreground. The view includes several slipways on the opposite bank, with the stone quay walls evident, the railing of the riverside walkway and some trees. The stone arches of Sarsfield Bridge are visible to the right of the view. A single turbine is visible to the right of the view, to the rear of buildings seen beyond Sarsfield Bridge. In the background on the opposite bank of the river, there are a variety of buildings, with some lower and some taller buildings including the brick chimney and a large stone building. More recent buildings are also visible. The existing Limerick Blow Moulding turbine at Parteen is visible in the right of the view.

Visual Receptor Sensitivity

This view represents a pedestrian plaza along Limerick's Riverside Walk, and one of the 'Waterfront Panoramas away from the city' as illustrated **Figure 12-7**. Viewers would be focussed on the views of the river and the city which has scenic qualities and would be considered of Medium-High sensitivity.

Proposed Photomontage - Magnitude of Change

The wireframe view shows the turbines are theoretically visible, but turbines are not visible in the photomontage. They are screened by the intervening buildings on the opposite side of the river. Therefore, the magnitude of change is None.

Significance of Effect

The turbines are not visible and there is No effect.

Cumulative Visibility

The baseline photograph and wireframe view shows the permitted Carrownagowan turbines will be screened from view, and the refused (under appeal) Fahy Beg turbines would be partly visible, to the right of the view along with the existing Limerick Blow Moulding single turbine. They are not visible in the montage, so the viewer would have to turn their head slightly to see the Fahy beg turbines.

Viewpoint 7: View from Thomond Bridge, Limerick City

Existing View

This shows a view taken from Thomond Bridge looking north towards the site. The River Shannon is one of the key features of the view, occupying a considerable proportion of the foreground and middle ground. The Parteen railway bridge is also visible, with the east and west banks of the river visible at the edges of the view. Both the riverbanks show a mixture of buildings – many houses – as well as trees and vegetation, and the surrounds are generally flat. This contrasts with the higher ground in the centre of the view, which also extends to the right and left in the background of the view. The higher ground is covered by a patchwork of agricultural fields and coniferous forestry. On the left of the view the radar dome on Woodcock Hill is a recognisable landmark.

Visual Receptor Sensitivity

This view represents one the most open views towards the site from Limerick City centre, and is also the location of one of the *River Prospects* (which refer to the ability to see landmark building(s) from bridges) and is also mapped as a Waterfront Panorama towards the city centre (in the opposite direction to this view – though it is noted in the Plan these are part of the Building Height strategy. However, the location of the view on the bridge and the scenic qualities of the river view, along with the juxtaposition of rural and urban elements would result in a High visual receptor sensitivity.

Proposed Photomontage - Magnitude of Change

The photomontage shows that all 12 turbines are visible and appear in a compact cluster of limited horizontal extent in the centre of the view, which is comparable to the span of the railway bridge. The turbines are located mainly on the higher ground, with some turbines on the sloping ground at lower elevations, echoing the sloping topography. As per the definitions in **Table 12-4,** The magnitude of change is considered Medium:

Partial intrusion of the development in the view….resulting in change to the composition but not necessarily the character of the view or the visual amenity.

Significance of Effect

The visual receptor sensitivity is considered High and the magnitude of change Medium. The visual effect is considered **Moderate**. The quality of the effect is considered **neutral** – the scale and layout of the turbines fit in well with the backdrop of higher ground. They are clearly visible but without being in any way overbearing. There is no sense of visual clutter as there is a simplicity to the backdrop of fields and forest.

Cumulative Visibility

The existing photograph shows that five of the permitted Carrownagowan turbines would be visible in the wider baseline view, as distant objects. However, the Fahy Beg turbines would be screened. Neither are visible in the montage.

Viewpoint 8: View from Lough Derg Way at Clonolara Bridge

Existing View

This shows a view taken from the bridge at Cloonlara, looking from the bridge towards the Shannon Headrace canal and also towards the higher ground at Ballycar. The view shows the bridge and the canal to the foreground and left of the view, while beyond this, the canal banks, green fields and a small building are visible. In the background, low-lying land covered with trees is visible, with the higher ground at Ballycar appearing in the background. A single turbine (Limerick Blow Moulding) is visible to the left of this view.

Visual Receptor Sensitivity

This view represents a view from those drivers and pedestrians on the bridge as well as those walking the Lough Derg Way. It has some scenic qualities. The sensitivity is considered Medium-High.

Proposed Photomontage - Magnitude of Change

The photomontage shows the proposed Ballycar turbines appear in a relatively compact cluster on the higher ground to the rear of the view, with some on the lower ground to the left of the view. The seven turbines on the higher ground are clearly visible, while the remaining 5 turbines on the lower ground are partly screened by intervening trees and are less prominent. Overall, the turbines take up a limited horizontal extent of the view, and a lesser vertical extent. The turbines are seen as background elements and are comparable with the scale of the landscape. The magnitude of change is considered Low-Medium:

Low: *Minor intrusion of the development into the view….resulting in minor alteration to the composition and character of the view but no change to visual amenity.*

Medium: Partial intrusion of the development in the view….resulting in change to the composition but not necessarily the character of the view or the visual amenity.

Significance of Effect

The Medium-High receptor sensitivity and Low-Medium magnitude of change result in a **Slight-Moderate** visual effect. The quality of the effect is considered **neutral** as the turbine layout does not detract from the scale, landform, and pattern of the landscape.

Cumulative Visibility

A single turbine (Limerick Blow Moulding) is visible to the left of the baseline image, quite apart from the proposed turbines. This is not visible in the montage however.

Viewpoint 9: View from Woodcock Hill (trig point)

Existing View

This view shows a simple, wide expanse of bog or heath in the foreground on the top of Woodcock Hill. Beyond this, in the middleground, some undulating ground in a mosaic of coniferous plantations and open fields is visible with part of a telecommunications mast visible to the right of the centre, and wooden poles to the left of the view. In the distance, a wide and expansive view of ridges of higher ground are visible, with more dramatic landforms visible to the left and centre of the view. To the right, the land slopes gently to a lower level. Distant wind turbines are visible to the right of the view, along the ridge of higher ground (these are outside the Landscape and Visual study area). The overall characteristics are simplicity, and openness, with few buildings or structures evident at close range. The blocks of coniferous forestry are the only element that appears discordant in an otherwise simple view. It should be noted that from near to this location, extensive views to the south over the Shannon estuary are also visible. A single wind turbine (Vistakon) is visible to the right of the view, in the distance.

Visual Receptor Sensitivity

This view represents a number of visual receptors – being at the location of a local landmark and viewing point, and adjacent to a scenic route (23) but with more open and elevated views than from the road. The scenic and panoramic quality of the views to the south and east in particular is notable and the receptors here would be of High sensitivity.

Proposed Photomontage - Magnitude of Change

Al of the 12 proposed turbines are visible in the photomontage, however three turbines to the right of the view are partly screened with the blades only visible. The turbines appear as a relatively compact cluster in the view, and occupy a medium extent of the view, appearing against a backdrop of higher ground. The proposed substation is visible on lower ground to the left of the view, set among trees, with some forestry clearing evident. As per the definitions in **Table 12-4**, the magnitude of change is considered Medium:

Partial intrusion of the development in the view….resulting in change to the composition but not necessarily the character of the view or the visual amenity.

Significance of Effect

The High sensitivity and Medium magnitude of change results in a **Moderate -Significant** visual effect. The quality of the effect is considered **neutral**. Though large in scale, the proposed turbines are set in a landscape of open, expansive character with a simple composition, and apart from the existing mast, are the only large scale structures. The simplicity of the proposed turbines complements the scale of the landscape. Though the turbines are clearly visible, the views to the landscape beyond are not obstructed.

Cumulative Visibility

The existing photograph and wireframe show a single turbine (Vistakon) in the distance to the right of the view, as well as another nearby single turbine (Limerick Blow Moulding) which is hidden by topography. The proposed Fahy Beg turbines are in the left of the wireframe view. The proposed photomontage shows that 5 of the Fahy Beg turbines will be visible to the left of the view, in a cluster, seen against a backdrop of distant hills.

Viewpoint 10: View from local road at Derrynaveagh

Existing View

This shows a view taken from a narrow local road north of the site, which is just visible to the left and in the foreground of the view. This narrow road is bordered by relatively high hedgerows, which screen much of the landscape immediately adjacent to the road. The road descends onto slightly lower ground, and glimpses of some small fields bounded by hedgerows are available to the left of the view. In the background, the ground rises towards a ridge of higher ground, which is mainly covered by coniferous forestry.

Visual Receptor Sensitivity

This view represents viewers travelling along this narrow local road in a relatively remote area north of the proposed development, which would typically be at slow speeds, or those walking, in a tranquil location. The sensitivity is considered Medium.

Proposed Photomontage - Magnitude of Change

The view shows that 4 of the 12 turbines are visible behind the ridge, (with two further blade tips appearing) and appear roughly equidistant. The turbines occupy a medium horizontal extent of the view, and the towers are partly hidden by the topography, which reduces the horizontal extent also. The magnitude of change is considered Medium:

Partial intrusion of the development in the view….resulting in change to the composition but not necessarily the character of the view or the visual amenity.

Significance of Effect

The Medium magnitude of change and Medium visual receptors sensitivity results in a **Moderate effect**. The quality of the effect is considered **neutral**, as the regular spacing in a row reflects the ridge in the background. The turbines appear tall however they are in proportion of the height of the ridge.

Cumulative Visibility

No other turbines are visible.

Viewpoint 11: View from Oatfield Cross

Existing View

This view shows a gently sloping valley in the foreground, with mature hedgerows and fields sloping to the centre of the view. Tree clumps and a farm shed are also seen towards the centre of the view. In the background, a ridge of higher ground is

visible, with some fields, but mainly coniferous forestry along the top of the ridge, and some semi-natural scrubby vegetation visible on the lower slopes. A cloud of dust seen along the shoulder of the ridge denotes a quarry which is largely hidden.

Visual Receptor Sensitivity

This view represents viewers at Oatfield Cross and in the vicinity of Oatfield Church where the community would gather on a regular basis. The view has some scenic qualities, and the receptor sensitivity is considered Medium.

Proposed Photomontage - Magnitude of Change

There are 7 of the 12 turbines visible, with 2 blade tips visible in the wireframe but screened by vegetation. Four of the turbines appear at regular spacing, in a row behind the ridge, with some of the towers hidden, while another three turbines are partly visible with the towers screened. The turbines, though clearly visible, occupy a Low-medium horizontal proportion of the view, The magnitude of change is considered Low-Medium.

Low: *Minor intrusion of the development into the view….resulting in minor alteration to the composition and character of the view but no change to visual amenity.*

Medium: Partial intrusion of the development in the view….resulting in change to the composition but not necessarily the character of the view or the visual amenity.

Significance of Effect

A Medium receptor sensitivity and Low-Medium magnitude of change results in a **Slight-Moderate** visual effect. The quality of the effect is considered **neutral** as the regular spacing in a row reflects the ridge in the background, the turbines appear tall however they are in proportion of the height of the ridge.

Cumulative Visibility

No other turbines visible. Visibility of turbines in combination with existing quarry is noted.

Viewpoint 12: View from R471 west of Trough Cross

Existing View

This shows a roadside view taken at a gap in the roadside vegetation, showing a glimpse into a field over the gate. In the middleground, a hill with open fields and hedgerows is visible to the left, while in the distance a ridge of high ground is evident. In the centre of the view, a quarry is visible just below the top of the ridge, with areas of bare ground which contrast with the backdrop of coniferous forestry.

Visual Receptor Sensitivity

This view represents a view from the Regional Road R471 and close to a residence which would have a similar view. The sensitivity is considered Low-Medium. The viewers would have some susceptibility, but are at some distance, and the view is considered not to have highly scenic qualities.

Proposed Photomontage - Magnitude of Change

The wireframe view shows 9 of the 12 turbines are theoretically visible, however the photomontage shows 3 of the turbine blades are screened by vegetation, with a further to the right of the wireframe view, completely screened. The turbines therefore occupy a limited extent and are relatively distant elements in the view. The magnitude of change is considered Low:

Low: *Minor intrusion of the development into the view….resulting in minor alteration to the composition and character of the view but no change to visual amenity.*

Significance of Effect

The Low-Medium sensitivity and Low magnitude of change is considered **Slight and neutral.**

Cumulative Visibility

No other turbines are visible.

Viewpoint 13: View from road at Ballykeenaun, Parteen

Existing View

This shows a view from the local road opposite a row of houses with views towards the site. The view shows the local road and dwellings on the left and right of the view, and some low-lying fields in the foreground. In the middleground, dense clumps of trees are visible, while in the background, a ridge of higher ground is visible, which gently undulates and is a mixture of open fields and coniferous plantations. On this ridge to the left of the view, the radar dome on Woodcock Hill is visible.

Visual Receptor Sensitivity

This view represents viewers along the road but also from the row of houses, which are slightly elevated compared to this view, and which face in the same direction. Residential viewers would be focussed on their views to the front of the houses, on a view that has some scenic qualities, and would be of Medium-High sensitivity.

Proposed Photomontage - Magnitude of Change

All 12 turbines are visible along the sloping ground and on the higher ground in the centre of the view. They range from locations on the top of the ridge to the lower ground further to the left, but are seen as a loose cluster, and occupy a limited proportion of the view. The magnitude of change is considered Medium:

Partial intrusion of the development in the view….resulting in change to the composition but not necessarily the character of the view or the visual amenity.

Significance of Effect

The Medum-High receptors sensitivity and the Medium magnitude of change result in a **Moderate** visual effect. The quality is considered **neutral**. While the turbines are clearly visible, they are not dominant, and are concentrated in the central part of the view and on the higher and sloping ground.

Cumulative Visibility

No other turbines are visible.

Viewpoint 14: View from Blackwater Bridge at Rosmadda West

Existing View

This shows a view from the bridge over the Shannon Headrace canal which feeds into the Ardnacrusha power station. In the foreground, the headrace canal and engineered banks are the main feature, with the eye lead to the Ardnacrusha power station to the left of the view. To the left of the canal, the ground slopes down and away, with open fields, tree clumps and

scattered dwellings visible. To the right of the canal, tree clumps are seen on the flatter lands in the middleground, while the ground rises to a ridge of higher ground on the centre of the view. The higher ground is a mixture of coniferous forestry and open fields. The appearance of the Ardnacrusha power station and headrace canal are characteristics of a heavily modified landscape relating to electricity generation, with steel pylons and electricity poles visible on the far bank of the canal.

Visual Receptor Sensitivity

This view represents motorists and some pedestrians crossing the bridge, and as the view is somewhat dramatic in quality would be considered Medium sensitivity.

Proposed Photomontage - Magnitude of Change

All 12 turbines are visible in this view, sited on both the higher ground and along the hillside to the lower elevations. The turbines are seen to occupy a limited proportion of the view and the magnitude of the change is considered Medium:

Partial intrusion of the development in the view….resulting in change to the composition but not necessarily the character of the view or the visual amenity.

Significance of Effect

The Medium magnitude of change and Medium receptor sensitivity would result in a **Moderate** visual effects, The effect is considered **neutral** as the turbines are visible but not dominant and are sited to emphasise the sloping topography.

Cumulative Visibility

No other turbines are visible.

Viewpoint 15: View from R470 at Sixmilebridge near school

Existing View

This view is an urban one, with a road with parking at either side, and the enclosing wall of a GAA pitch to the left of the view. This restricts views to the wider landscape. To the right of the view, a row of houses (both single storey and two storey) are located along the road. Some scattered trees and shrubs as well as road signage are located in the centre of the view. In the distance, a ridge of higher ground with a considerable amount of coniferous forestry is evident, along with some open fields. Some structures (e.g. masts) are visible to the rear of the ridge while to the right of the view, scattered dwellings are visible on the higher ground.

Visual Receptor Sensitivity

This view represents one of the few open views towards the site in the town of Sixmilebridge, one of the closer settlements to the west of the site. Viewers would be those driving on the road and entering/existing the school and GAA grounds. Visual receptor sensitivity is considered to be Low as receptors are more likely to be focused on the immediate urban environs than the surroundings, and the view does not have high scenic qualities.

Proposed Photomontage - Magnitude of Change

The wireframe view shows three turbine blades are theoretically visible, and two blades are glimpsed behind the ridge to the left of the view. This may be visible, should the forestry be felled, but the magnitude of change with either two to three blade tips appearing behind the ridge is considered Negligible, defined in Table 12-4: as

Barely discernible intrusion of the development into the view, or introduction of elements that are characteristic in the context, resulting in slight change to the composition of the view and no change in visual amenity.

Significance of Effect

The Negligible magnitude of change and Low receptors sensitivity results in an **Imperceptible** visual effect, **neutral** in quality.

Cumulative Visibility

No other turbines are visible.

Viewpoint 16: View from East Clare Way and local road (east of Seefin) at Kyle

Existing View

This view is from the junction of the Mid-Clare Way with the local road at Kyle. The view shows a narrow local road to the left of the view, with dense shrubby trees lining the road which are also visible in the centre of the view along the road edge. To the right, a farm track (the East Clare Way) is visible in a gap in the vegetation, with some fields and forestry visible beyond.

Visual Receptor Sensitivity

This view represents viewers along the local road and also joining the East Clare Way which is a long distance walking trail. Viewers would be focussed on their surroundings in this remote and relatively tranquil location and therefore considered of Medium-High sensitivity.

Proposed Photomontage - Magnitude of Change

The turbines are visible on the wireframe to the left of the view behind the shrubby vegetation. The wireframe view shows 6 turbines would be theoretically visible, with one blade tip showing, partly screened by a ridge of higher ground. These occupy a very small proportion of the overall view. The magnitude of change is None, as none are visible. Should glimpses be available during the winter months these would be considered Negligible.

Significance of Effect

None. However, were turbines to become visible through the vegetation in the winter, the visual effect would be considered Not Significant.

Cumulative Visibility

No other turbines are visible.

Viewpoint 17: View from old bridge at O' Briensbridge

Existing View

This view is taken from the old stone bridge which is a key element of the character of this town, with open views from the bridge (and protected structure). The theoretical visibility from the bridge ranges from all 10-12 turbines (blue) to 4-6 turbines (orange). This view shows an expanse of water in the foreground, with fields and hedgerows sloping down to the river on the left. The right (opposite) bank is built up on the right of the view, with the main street and a cluster of buildings evident. The riverbank becomes wooded further to the left of the view. In the background, a relatively low wooded hill is evident.

Visual Receptor Sensitivity

This view represents viewers walking and driving on the bridge which has scenic qualities, and the sensitivity is considered Medium-High.

Proposed Photomontage - Magnitude of Change

The magnitude of change is None. The wireframe shows three turbines partly visible to the rear of the hillside, with the majority of the turbines screened by the topography. These are obscured by the vegetation, and none are visible. Due to the density of vegetation these are unlikely to be visible, even in the winter.

Significance of Effect

None. No effect.

Cumulative Visibility

No other turbines are visible.

Viewpoint 18: View from Local Road at Ashroe (north of Glenstal Abbey), Co. Limerick

Existing View

This view shows a narrow rural road with mature hedgerows, especially to the left of the view. The hedgerows screen the majority of the middleground from view, but there are glimpses of a mainly flat rural landscape of fields, trees and scattered buildings. In the background, a ridge of higher ground is visible. One single turbine (Limerick Blow Moulding) is visible to the left of the montage.

Visual Receptor Sensitivity

This view represents views from a Scenic Route and is a narrow local road in a tranquil rural area. Visual receptors would be of High sensitivity.

Proposed Photomontage - Magnitude of Change

The proposed turbines occupy a limited horizontal extent of the view and appear as distant features in the landscape. The magnitude of change is considered Low*:*

Minor intrusion of the development into the view….resulting in minor alteration to the composition and character of the view but no change to visual amenity.

Significance of Effect

The Low magnitude of change and High receptors sensitivity results in **Slight-Moderate** visual effects as per the Significance of Effects graph illustrated in **Table 12-5**, however the application of professional judgement results in a **Slight** visual effect. The quality of the effect is considered **neutral**.

Cumulative Visibility

One single turbine (Limerick Blow Moulding) is visible to the left of the montage. The Fahy Beg and Carrownagowan turbines will be screened even when viewers turn their heads, due to foreground vegetation.

Viewpoint 19: View from Knockanuartha summit (12 O' Clock Hills)

Existing View (Baseline A and Baseline B).

This view shows an open, expansive, elevated view, from Knockanaurha, the summit of the 12 O' Clock Hills walking route. It should be noted that in this location, panoramic views are available in all directions and include the Cappaghwhite turbines, which are outside the Landscape and Visual study area, the Slieve Bernagh hills to the northeast and to Slieve Callan in the west.

Baseline view A shows some coniferous trees in the foreground. Beyond this is an elevated and expansive summit view, with a mosaic of heath and coniferous forestry in the middleground, to the right, and open heath/grassland to the left. A backdrop of hills lies in the distance (the Slieve Bernagh Hills to the centre of the view) with the ground sloping to the left of the view. **Baseline B:** In the foreground the landscape is flat, and areas of heath are visible, interspersed with some coniferous trees – both lower trees to the left of the view and taller trees to the centre and right of the view. In the middleground, an expanse of heath/bogland is visible to the left, while to the right young coniferous plantations are evident. The ground slopes away in the left of the view, to a flat area of farmland (with the Vistakon turbine visible), while scrub and trees slope to a ridge in the centre of the view. In the distance, a striking backdrop of higher ground is visible, with Keeper Hill and the Slieve Feilim mountains visible to the left of the view, with other higher ground visible in the centre of the view.

Visual Receptor Sensitivity

This view represents viewers on the 12 O' Clock Hills walking route at the summit of Knockanaurha, where viewers are walkers and hikers. These would be highly sensitive to their surroundings and of High sensitivity.

Proposed Photomontage - Magnitude of Change

The view shows 9 of the 12 turbines are visible, and two other turbines appears as a blade tip. Four of these turbines are partly hidden by the topography with just the hub visible. The turbines occupy a very limited extent of the view. The four turbines which are most visible, are in a regular layout and they emphasise the landform of the ridge. The magnitude of change is considered Low-Medium:

Low: *Minor intrusion of the development into the view….resulting in minor alteration to the composition and character of the view but no change to visual amenity*

Medium: *Partial intrusion of the development in the view….resulting in change to the composition but not necessarily the character of the view or the visual amenity*.

Significance of Effect

The Low-Medium magnitude of change and High receptor sensitivity results in a **Slight–Moderate** visual effect, **neutral** in quality. The regular spacing of the turbines and the compact layout, along with the trees evident in the foreground provide a reference point to the scale of the turbines. The turbines therefore complement the scale of the landscape and do not obstruct any of the scenic views.

Cumulative Visibility

Baseline A shows the permitted Carrownagowan turbines to the left of the view, appearing as a distinct cluster on the northern slopes of the Slieve Bernagh Hills. Further to the right, the Fahy Beg turbines are visible in the wireframe, also as a distinct cluster. These however would be screened by the intervening vegetation. Baseline B shows the existing single Vistakon turbine is visible to the left of the montage image.

Viewpoint 20: View from local road at Bunratty

Existing View

This view shows the local road and historic bridge at Bunratty in the foreground of the view, with the local road meeting the N18 to the extreme right of the view. The stone bridge is the setting for restaurant tables, in the centre of the view, with the Durty Nelly's pub and restaurant visible to the left of the view. To the right of the bridge, another lower level building is visible. In the background, there are glimpses of agricultural fields, with the ground rising to a low hill in the background which has scattered building, fields and patches of coniferous forestry,

Visual Receptor Sensitivity

This view represents viewers on the local road in the historic village, those travelling away from the castle and those viewing the historic (and protected structure) stone bridge. To the left if one turned, Bunratty castle would be visible. The strong historic character of the view and the village, combined with a high proportion of visitors to the cultural heritage site of the neighbouring Bunratty Castle, would result in a High sensitivity.

Proposed Photomontage Magnitude of Change

The wireframe view shows the tips of 2 turbines in the centre of the view, the rest of the turbines are screened by the topography. The magnitude of change is considered Negligible:

Barely discernible intrusion of the development into the view, or introduction of elements that are characteristic in the context, resulting in slight change to the composition of the view and no change in visual amenity.

Significance of Effect

The Negligible magnitude of change and High visual receptor sensitivity results in an **Imperceptible** visual effect, **neutral** in quality.

Cumulative Visibility

None.

Viewpoint 21: View from Ringmoylan/Ballymacdonnell Pier, Co. Limerick

Existing View

This shows a view from the end of the pier at Ringmoylan. The view shows an expansive view of the Shannon estuary coastline, with water and sand in the foreground, and indeed the water forms a key characteristic of this view. To the right, fields slope down to the shore. On the opposite shore, the landscape consists of low-lying, partially wooded ground to the right, with higher ground visible to the centre of the view. The open moorland and coniferous forestry on Woodcock Hill are visible, as is the radar dome, a local landmark.

Visual Receptor Sensitivity

This view represents viewers on the pier and the surrounding shoreline, and this is an area popular with walkers. Sensitivity would be considered High as the view has scenic qualities and receptors are likely to be focussed on the views and surrounding landscape.

Magnitude of Change

The proposed turbines appear partly screened by the topography, to the right of Woodcock Hill. The turbines close to the centre of the view are partly screened, with the turbines at lower elevation more screened by the sloping topography. The turbines are clustered and occupy a limited extent of the overall view. They are visible but rather as an element of the distant view. The views of the water and the backdrop of high ground which are the key elements in the view, are unaffected. The magnitude of change is considered Low:

Low: *Minor intrusion of the development into the view….resulting in minor alteration to the composition and character of the view but no change to visual amenity*

Significance of Effect

The Low magnitude of change and High receptors sensitivity results in a **Slight** visual effect, **neutral** in quality. Referring to the Significance matrix in **Table 12-5**, professional judgement has been applied.

Cumulative Visibility

Two existing single turbines (Limerick Blow Mooulding and Vistakon) are in the wireframe but not discernible at this distance.

Viewpoint 22: View from the Ferry playground, Castleconnell

Existing View

This view is taken from the park and playground along the river in Castleconnell and shows the river as the key element of the view. On both sides, the ground slopes gently to the river, with grass and mature trees on both sides. On the right, a park is visible, while the lands to the right are grazing lands. In the background, open fields and a dwelling surrounded by trees are visible on slightly higher ground. The dense tree cover limits views to the wider landscape.

Visual Receptor Sensitivity

This view represents viewers at the park, playground and on the bridge. The viewers would be focussed on their surrounds, and the view has scenic qualities. Therefore, the sensitivity is considered High.

Proposed Photomontage - Magnitude of Change

The proposed photomontage shows that the two blade tips visible in the wireframe are hidden by the intervening trees. There is no change to the view.

Significance of Effect

None.

Cumulative Visibility

None.

Viewpoint 23: View from R5213 north of Caherconlish

Existing View

This view shows a regional road, the R513, north of Caherconlish. The road and a dwelling entrance are visible to the right of the view, while a hedgerow with some mature trees lines the opposite side of the road. Beyond this, a mainly flat landscape of open fields and a dense belt of trees are visible, while in the distance a gently undulating ridge of higher ground is visible. A single turbine (vistakon) is visible in the middleground, to the right of the view.

Visual Receptor Sensitivity

This view represents those travelling along this road, where motorists would be traveling at moderate speeds, and visual receptors nearby the dwelling to the right of the view. The lack of a hard shoulder may reduce the number of pedestrians. The view is a pleasant rural scene but not particularly scenic and receptors are considered Medium sensitivity.

Proposed Photomontage - Magnitude of Change

The photomontage shows the proposed turbines are visible in a compact cluster of very limited spatial extent, to the centre of the view, on the higher ground in the distance. The turbines take up a small proportion of the overall view and at this distance, are not elements of large size in the view. The magnitude of change is considered Low:

Minor intrusion of the development into the view….resulting in minor alteration to the composition and character of the view but no change to visual amenity.

Significance of Effect

The Low magnitude of change and Medium receptor sensitivity results in a **Slight** visual effect. The turbines are in keeping with the scale, landform and pattern of the landscape and of the other single turbine. The visual effects are considered **neutral** in quality.

Cumulative Visibility

The existing Vistakon turbine is visible to the right of the view. The Carrownagowan and Fahybeg turbines are not visible in the montage due to screening by dense vegetation.

Viewpoint 24: View from R526 at Cloughkeating near Red Hill School

Existing View

This view shows a (Regional) road in the foreground with a low hedgerow in the foregound. A flat or gently undulating landscape of fields with some houses is seen to the rear of the hedgerow, while dense vegetation in the middleground allows glimpses of houses, sheds, and other buildings. In the background, the silhouette of the Irish Cement plant in Mungret is visible, and a backdrop is of the ridge of higher ground, including Woodcock Hill and Ballycar.

Visual Receptor Sensitivity

This view represents those travelling along the Regional road, which would be at moderate speed, both in vehicles and pedestrians (a narrow verge suggests this may be used by walkers). The view is pleasant but not highly scenic and the sensitivity is considered Medium.

Proposed Photomontage - Magnitude of Change

The photomontage shows the proposed Ballycar turbines are located in a compact cluster, occupying a limited spatial extent, and located on the higher ground in the background of the view. They occupy a limited spatial extent, and the size and scale is considered in proportion to the hill. The turbines will be noticeable but not dominant in any way in this view. The magnitude of change is considered Low-Medium:

Low: *Minor intrusion of the development into the view….resulting in minor alteration to the composition and character of the view but no change to visual amenity*

Medium: *Partial intrusion of the development in the view….resulting in change to the composition but not necessarily the character of the view or the visual amenity*.

Significance of Effect

The Low-Medium magnitude of change and Medium receptor sensitivity results in a **Slight** visual effect, **neutral** in quality.

Cumulative Visibility

The baseline photograph shows that an existing single turbine (Limerick Blow Moulding) should be visible to the right of the view, however it is screened by vegetation. The proposed Fahy Beg turbines are visible to the right of the wireframe view and would likely be partly visible and partly screened, as they are seen at a lower elevation.

Viewpoint 25: View from King John's Castle, Co. Limerick

Existing View

This view shows the expansive, panoramic view as seen from the parapet of King John's Castle. This is an elevated view of the River Shannon, the adjacent Church, and the northern outskirts of Limerick City in the foreground. The railway bridge across the Shannon is evident in the middleground. Beyond the buildings of the city, the landscape is composed of grasslands and tree clumps, with the topography rising in elevation towards the background of the view. Woodcock Hill with the large expanse of moorland, the radar dome and mast are visible behind the left bank of the river. The higher ground at Ballycar is visible in the centre of the view, with its patchwork of conifer plantations and grasslands.

Visual Receptor Sensitivity

This view represents viewers on the viewing parapet to the western side of the castle (close to the River Shannon). Visual receptors would be those visiting the castle and courtyard and would be focussed on both the castle and its historical and heritage qualities. Also from the parapet, there are panoramic views of Limerick City, the River Shannon and the surrounding landscape. The sensitivity is considered High.

Proposed Photomontage - Magnitude of Change

The photomontage shows the proposed turbines are visible on the higher ground in the centre of the view, to the right of Woodcock Hill. The turbines are seen in a cluster, some on higher ground and some on the lower and sloping grounds. All the turbines are visible. They occupy a low-medium extent of the view, and the scale, though larger than the Woodcock Hill mast, is not overbearing. The turbines are clearly visible but not dominant in the view. Again, it is noted the 360 degree nature of the views means that by turning one's head there are panoramic views of the lower River Shannon and Limerick City centre and this view is not the only elevated view of the river, city and countryside. The magnitude of change is considered Medium:

Medium: *Partial intrusion of the development in the view….resulting in change to the composition but not necessarily the character of the view or the visual amenity*.

Significance of Effect

The Medium magnitude of change and High receptors sensitivity results in a **Moderate** visual effect, **neutral** in quality. The quality of the effect is considered neutral as the scale and layout of the turbines fit in well with the backdrop of higher ground, and they are clearly visible but without being in any way overbearing. There is no sense of visual clutter as there is a simplicity to the backdrop of fields and forest.

Cumulative Visibility

The wireframe view shows that the existing Limerick Blow Moulding single turbine is visible to the right of the baseline view but is not in the proposed photomontage. The proposed Fahy Beg turbines would be visible to the rear of this turbine as shown on the wider wireframe view, but not in the photomontage view. They would however be visible if one was to turn their head to the right (sequential visibility). Four of the Carrownagowan turbines would be partly visible in the distance to the right of the photomontage view.

Viewpoint 26: View from Mungret College (Protected View)

Existing View

This view is taken from the front of Mungret College and is a Protected View as outlined in **Section 12.4.4**. It is noted that the protected view is from this location but towards the Mungret Monastic Complex, seen here to the extreme right of the baseline view. The view shows a timber fence in the foreground, with a large open field beyond, lined with mature trees, extending to the left and centre of the view. Clumps of trees to the right of the view partly screen the stone buildings of the Mungret Monastic Complex. Gaps in the vegetation to the centre of the view allow glimpses of the ridge of higher ground in the background.

Visual Receptor Sensitivity

This view represents viewers entering and leaving the school grounds and is the location of a protected view which looks towards the Mungret Monastic Complex. There are also pleasant views to the rolling fields, mature trees, and higher ground. Receptors are considered of High sensitivity.

Proposed Photomontage - Magnitude of Change

The proposed Ballycar turbines will be visible in the centre of the view, clustered on the higher ground, with some also further down on the hillside. Six of the turbines are clearly visible with the remaining turbines partly screened by the intervening trees. The turbines occupy a small proportion of the view and are seen as elements in the distance, of a scale comparable to the mature trees in the view. The turbines are located away from the view towards the monastic complex and do not interfere in any way with the protected view. The magnitude of change is considered Low:

Minor intrusion of the development into the view

Significance of Effect

The Low magnitude of change and High receptors sensitivity results in a **Slight** visual effect. The visual effect is **neutral** in quality as the proposed turbines do not detract from the scale, landform and pattern of the landscape.

Cumulative Visibility

The existing Limerick Blow Moulding turbine is visible to the right of the baseline view, while the wireframe shows the proposed Fahy Beg turbines would be visible against a backdrop of higher ground to the right of the photomontage. These appear as a distinct cluster, at some distance from the proposed Ballycar turbines. Both clusters are separated by foreground vegetation. The Carrownagowan turbines would be visible as two blade tips only.

12.6.2.3 Summary of Visual Effects

Table 12-12 summarises the visual effects for the viewpoints 1-26.

Table 12-12: Summary of visual effects – Photomontages 1-26

No	Viewpoint Visual Receptor Sensitivity	Magnitude of Change	Significance of Effect
1	Medium- High	Medium-High	Moderate-Significant, adverse
2	Medium-High	High	Significant, adverse
3	Medium-High	Medium-High	Moderate – Significant, neutral
4	Medium	High	Significant, adverse
5	Medium	Medium	Moderate, neutral
6	Medium-High	None	None
7	High	Medium	Moderate, neutral
8	Medium-High	Low-Medium	Slight-Moderate, neutral
9	High	Medium	Moderate-Significant, neutral
10	Medium	Medium	Moderate, neutral
11	Medium	Low-Medium	Slight-Moderate, neutral
12	Low-Medium	Low	Slight, neutral
13	Medium-High	Medium	Moderate, neutral
14	Medium	Medium	Moderate, neutral
15	Low	Negligible	Imperceptible, neutral
16	Medium-High	None	None
17	Medium-High	None	None
18	High	Low	Slight, neutral

No	Viewpoint Visual Receptor Sensitivity	Magnitude of Change	Significance of Effect
19	High	Low-Medium	Slight-Moderate, neutral
20	High	Negligible	Imperceptible, neutral.
21	High	Low	Slight, neutral.
22	High	Negligible	None.
23	Medium	Low	Slight, neutral
24	Medium	Low- Medium	Slight, neutral
25	High	Medium	Moderate, neutral
26	High	Low	Slight

Table 12-12 above indicates visual receptor sensitivity, magnitude of change and the significance of effect of the 26 viewpoint locations.

The visual effects are summarised as follows;

- Two views (2,4) were judged to be Significant and adverse;
- Three views (1,3,9) were considered Moderate-Significant. Two of these (1,9) were considered neutral and one adverse (3) in quality;
- Visual effects at six views (5,7,10,13,14,25) are categorised as Moderate and neutral;
- Three views (8,11,19) are categorised as Slight-Moderate and neutral;
- Visual effects at six views were considered Slight (Viewpoints 12,18,21,23,24,26) and neutral;

Four viewpoints showed no visibility (Viewpoints 6,16,17,22).

Local viewpoints – local roads, settlements and residences (site and immediate vicinity within 3km)

A considerable number of viewpoints represent the immediate surrounds of the wind farm (Viewpoints 1,2,3,4,9,10,11), with the closest views representing clusters of houses. These show varying visual effects. The more pronounced visual effects (Significant and adverse) are illustrated in viewpoints 2 and 4 which are viewpoints in close proximity (less than 1 kilometre) east and west, of the nearest turbines. These are slightly lower in elevation. Viewpoints 1 and 3 show slightly less pronounced visual effects as the turbines are partly screened by intervening vegetation and are slightly further away (more than 1 kilometre) from the turbines. Similar visual effects to Viewpoints 1-4 are likely to be experienced in other locations at similar distances in the immediate vicinity to the south, east and west of the turbines, where open views occur, such as at the Ballycannon graveyard. It should be noted that the visual effects will be lessened where screening by vegetation or buildings occurs, as in parts of the main road through the settlement of Meelick where open views are restricted by buildings and vegetation. Viewpoints 10 and 11 represent the more sparsely settled area to the north, with more undulating topography and dense conifer plantations. The topography greatly reduces the number of turbines visible. The visual effects from the viewpoints in this area are Slight-Moderate, Moderate and neutral.

The other close view is that from Woodcock Hill, a local landmark, which lies west of the proposed turbines. This is just off a scenic route and would have a similar but more open view than the scenic route. It is a location for

recreation as well as the location of a mast and radar dome. This viewpoint is considered Moderate-Significant, however neutral in quality.

Scenic Routes and Views

As noted above, Viewpoint 9 is at the Trig point of Woodcock Hill but represents the closest stretch of Scenic Route to the site. It is a location where views would be more open and slightly more elevated than the scenic route and would therefore represent this location. Other scenic routes/views or otherwise designated views are represented by viewpoints 18 (Scenic Route at Ashroe, Co. Limerick) and 28, the view from Mungret College to the Monastic Complex. These views are considered to be Slight and neutral in terms of visual effect. It is noted that the Limerick Development Plan includes considerable detail on river views, and though not considered as Designated views, they are also represented by Viewpoints 6 and 7. Viewpoint 7 looks in the direction of the proposed development as opposed to opposite direction of the intended view in the development plan.

Settlements

The viewpoint selection represents the settled landscape of the wider surrounds. Several viewpoints represent settlements in Co. Clare (within approximately 10km) to the site, which include Sixmilebridge (Viewpoint 15), Parteen (Viewpoint 13), O' Briensbridge (17), the outskirts of Clonlara (Viewpoint 8) and Castleconnell in Co. Limerick (Viewpoint 22). Visual effects in these locations are not pronounced, with Imperceptible visual effect from Sixmilebridge and no visual effect from the viewpoints at O' Briensbridge and Castleconnell. These are included to reflect the actual visibility from these settlements. More pronounced visual effects include the view from Parteen, which is expected as it is much closer to the site, and at Clonlara. These however are considered Slight-Moderate, Moderate and neutral in quality.

The settlement of Limerick City is well represented in viewpoints due to its proximity to the site, and also to the topography, as the turbines are located on elevated and sloping lands. Viewpoints 5,6,7, and 25 represent varying viewers in Limerick City – Viewpoints 6 and 7 are taken from the riverfront representing 'Waterfront Panoramas' in the Development Plan, though no views will be available from View 6. View 7 from Thomond Bridge will have open views (visual effect here is judged as Moderate and neutral) though it is noted the view in the Development Plan is to the south in the opposite direction to the proposed development. A similar view to Viewpoint 7 is View 25 from the parapet on King John's Castle, where there are open views to the site and a 360 degree panorama of the city views. These views from the city centre however will be experienced by viewers who are in the centre of an urban area, and though the turbines will be visible from these areas, the viewers are in a somewhat busy urban context with many different views in various directions. Therefore, the focus of the view towards the turbines may be less than a different setting. It is also noted that glimpses of the proposed development are likely to be available from the river walk from the city centre to the University of Limerick, where gaps in vegetation allow views.

Cultural Heritage

Viewpoints 20,25,26 represent cultural heritage locations which are also National Monuments, at Bunratty, King John's Castle and the view to Mungret Monastic complex. The visual effects are most pronounced in the view from King John's castle which is expected as it is the closest (approximately 5km) from the site and provides expansive and elevated views towards the proposed development. Views are considered Moderate and neutral in quality, being set well into the landscape in a tight cluster and a feature of the landscape that does not interfere with the panoramic views from the castle. The castle parapet and access walkway is the only location in the castle where such views exist. Other views from the courtyard are restricted by the walls (views as referenced in Section

12.4.4 above). The turbines are largely screened from ground level in the vicinity of Bunratty castle, while Viewpoint 28, a protected view towards the Mungret churches, shows that the proposed Ballycar turbines are visible in a different direction, off to the left, and their presence does not interfere with the protected view.

Recreation and amenity

The Riverside walkway begins in Limerick City at the Shannon banks and continues to the University of Limerick and beyond. It is known as the Lough Dery Way, a long distance walking trail from Limerick City to Lough Derg. View 6 represents the beginning of this trail and Viewpoint 8 represents the trail viewers at the Cloonlara bridge. As noted above, glimpses of the turbines are likely from the trail between Limerick City riverfront and the University, however more open views such as Viewpoint 6 illustrate that the turbines will appear as a feature of the surrounding landscape and will not change the overall character of the view from the trail. Other nearby trails represented include the popular 12 O' Clock Hills routes, which are accessed near Kilkishen (Snaty) in Co. Clare, and which involve several looped walks which begin in densely wooded areas. The summit of Knockanaurtha is open moorland and extensive views are available in all directions. Viewpoint 19 represents the summit area, with four turbines fully visible and a visual effect considered Slight-Moderate and neutral. However, it is noted that much of the trails will be screened and out of the theoretical visibility as shown in the ZTV (see Figure 12-12 and Figure 12-13 in Appendices 12F and 12G). The East Clare way lies to the east of the 12 O' Clock Hills trails and some visibility is likely from here. However, given that this trail it is not as elevated as Viewpoint 19, increased screening is likely in certain sections resulting in similar or lesser visual effects.

As noted in Section 12.6.1, there are a high number of LCAs in the study area. The viewpoints are taken from various LCAs and illustrate varying effects, even from within one LCA.

- Viewpoints 2,9,10,11,12,16 and 19 represent LCA 8 Slieve Bernagh where the majority of the proposed development is situated. The visual effects range from Slight to Significant, with one view with no effect.
- Viewpoints 1,3,4,8,13,14 are taken from LCA 9 River Shannon Farmland, which includes the southern portion of the site. These LCAs contain the viewpoints with the most pronounced visual effects, however considerable variation occurs in the vicinity of the site, compared with the western and north-eastern extremities of this LCA.
- Viewpoints 20 and 24 are taken from Shannon Coastal Zone LCA in Co. Limerick, with Viewpoints 17 and 22 on the boundary between these two LCAs on the Clare/Limerick border.
- Viewpoints 15 and 20 are taken from LCA 10 Sixmilebridge Farmland, which are both Imperceptible. This reflects an overall pattern of little visibility from this LCA to the west.
- Viewpoint 23 represents the Agricultural Lowlands LCA in Co Limerick, (but is also on the southern coast of the River Shannon Seascape Area 11), while Viewpoint 18 represents the boundary of this LCA with LCA Slieve Feilim Uplands.
- Limerick City and surrounding LCAs (Southern Environs) are represented by Viewpoints 5,6,7,25,26 which again show varying visual effects as they range from urban to peri-urban contexts.

12.6.3 Cumulative Effects

Cumulative effects can be defined as the additional changes caused by a proposed development in conjunction with other similar developments or as the combined effect of a set of developments, taken together, as noted by SNH (*Assessing the Cumulative Impact of Onshore Wind Energy Development 2012*).

The GLVIA refers to the SNH (2012) guidelines as specialist advice, and also notes the evolving nature of cumulative effects assessment in general. It notes that in most cases, the focus of the cumulative assessment will be on the additional effects of the project *in conjunction with other developments of the same type*.

The SNH guidance focuses on the effect of the proposed wind farm with other existing, permitted, and proposed wind farms. It notes that proposals within the planning system where the information is in the public domain should be considered. This therefore takes into account the existing and permitted wind energy developments in the vicinity.

No references are made by the SNH guidance to other types of development, and the focus of the cumulative effects assessment in the SNH guidance, (and also in the DOEHLG/DEHPLG guidance) is on other wind energy developments. The SNH guidance states:

> *"At every stage in the process the focus should be on the key cumulative effects which are likely to influence decision making, rather than an assessment of every potential cumulative effect."*

However, to ensure that all relevant projects are captured in the Cumulative Assessment, several non-wind farm projects are also considered and are listed below. Further information is contained in Chapter 2.

The DoEHLG (2006 and draft 2019) Guidelines outline the following in relation to Mountain Moorland, which characterises the majority of the site as well as the landscape type of the other permitted wind farms (Carrownagowan and Fahy Beg). As outlined in the Clare WES, both of these wind farms (one permitted, one refused but under appeal) are located in the Slieve Bernagh LCA, which is characterised as Mountain Moorland. The lower parts of the site would possibly be another landscape type as noted in Section 12.3.4. The DoEHLG (2006) guidelines on Cumulative Effects for this landscape type as follows:

- *Cumulative Effect: The open expanse of such landscapes can absorb a number of wind energy developments, depending on their proximity. The cumulative impact will also depend on the actual visual complexity of landform, whether steeply rolling, undulating or gently sweeping. The more varied and undulating an area is topographically, the greater its ability to absorb and screen wind energy developments. The aesthetic effect of wind energy developments in these landscapes is acceptable where each one is discrete, standing in relative isolation*.

On review of the montages, it is evident that where other wind energy developments are visible in the photomontage, they do appear as discrete elements which are at some distance from each other.

Wind turbines identified within 20km of the proposed Ballycar development are listed below and illustrated in Figure 12-15 Cumulative ZTV below.

- Limerick Blow Moulding turbine at Parteen (single turbine) (existing);
- Vistakon (single turbine) (existing);
- Carrownagowan (Permitted but not constructed, under judicial review);
- Fahy Beg (Refused, Appealed to An Bord Pleanala).

For the purpose of Cumulative Assessment of Landscape and Visual, all existing and approved wind farms and wind farms pending a decision from the planning authority and An Bord Pleanála within 20km from the outermost turbines of the proposed Ballycar Wind Farm were identified for Cumulative Visual Assessment. Other projects potentially relevant to the Cumulative Assessment include:

- Solar farm at Castlebank/Drummin (permitted) approximately 2km east of site, not visible from the local road at Drummin which is east of Ballycannon road (east of turbines and location of Viewpoint 4).
- Solar farm at Ballyglass/Coolderry (permitted but under appeal) – approximately 4 km east of site.

12.6.3.1 Cumulative Landscape Effects

A Cumulative ZTV map (Figure 12-15) was produced, and these indicate theoretical visibility of all wind farms in the vicinity. This is included in reduced format below and included in Appendix 12G at full size (A3). This informs both cumulative assessment of landscape and visual effects.

Other than the existing single wind turbines at Parteen (Limerick Blow Moulding) and at Castletroy (Vistakon), and some distant glimpses of turbines to the east, this is a landscape without noticeable wind energy developments, as seen in the baseline photography as well as the Photomontage booklet in Volume IV. Wind turbines are not currently recognisable elements of the present landscape character. The Cumulative ZTV shows the pattern of visibility of the proposed Ballycar turbines with the Fahybeg and Carrownagowan turbines. These wind farms, if built, would increase the visibility and presence of wind turbines in the study area.

Magnitude of Change

Cumulative landscape effects include the effects as a result of the proposed development along with other wind farm developments, on the landscape character. The Cumulative ZTV Map Hub Height (see Figure 12-15 below) shows that the area shaded green which is mainly in the vicinity of the site and the area to the south of the study area, is the area over which the proposed turbines will be visible along with the Carrownagowan and Fahybeg turbines, as well as the two existing single turbines. The single turbines are of a scale which will not result in cumulative effects on the landscape character. However, the greatest potential for visual effects lies with the combined visibility of the proposed Ballycar turbines with the larger Fahybeg and Carrownagowan wind farms.

The Cumulative ZTV map shows that:

- The proposed Ballycar turbines will only very slightly increase the extent of the theoretical visibility (areas shaded blue), as the Carrownagowan and Fahy Beg wind farms combine to create a considerable extent of theoretical visibility within the study area.
- The main area of the ZTV where cumulative visibility is shown (shaded green) is to the centre and south of the study area.
- The area shaded pink shows the area to the north of the study area where there is no cumulative theoretical visibility arising from the proposed development – visibility here is a result of the other existing/permitted/proposed developments.

The magnitude of change varies throughout the study area, with no cumulative visibility to the north of the study area. The effect on the landscape character of the Slieve Bernagh LCA would vary, as the visibility will vary throughout the LCA. The magnitude of change in the southern part of the Slieve Bernagh LCA is considered Medium where cumulative visibility will occur, in the areas which are shaded green around the site. However, parts of this LCA to the north which are shaded pink on the ZTV will have no cumulative visibility with the proposed development and therefore there is no change. Some sequential visibility in the parts of the LCA which lie between the proposed development and the (refused but under appeal) Fahy Beg wind farm is likely to impart a Medium-High magnitude of change.

The magnitude of change in the LCA to the south-east, Shannon Estuary Farmland, varies also but is considered to range from Low to Medium.

Significance of Effect

This is considered to be a Slight to Moderate cumulative effect on certain parts of the landscape character of the Slieve Bernagh LCA and parts of the Shannon Estuary Farmland.

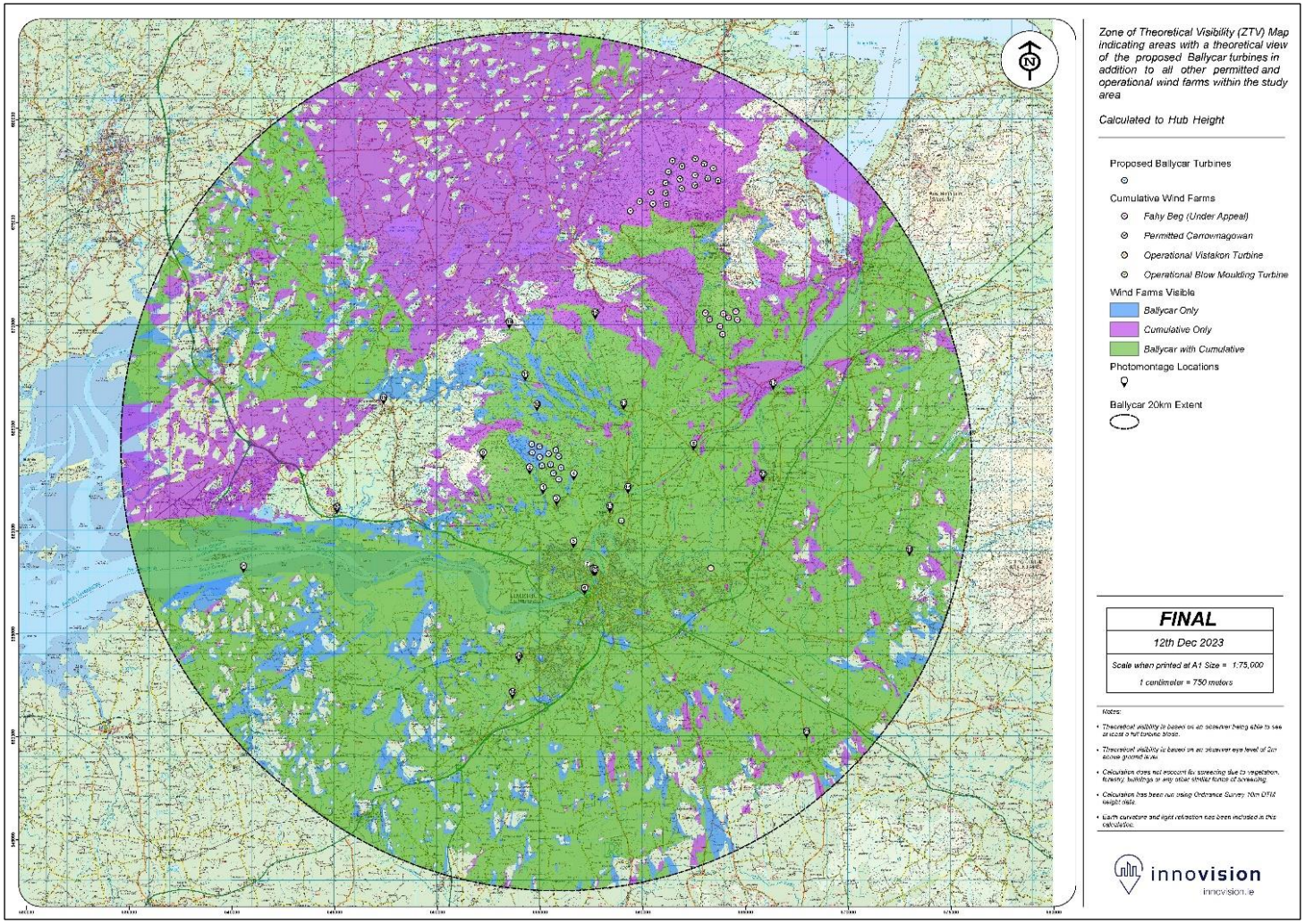


Figure 12-15: Cumulative ZTV (Hub Height)

12.6.3.2 Cumulative Visual Effects

The GLVIA and topic-specific guidance in relation to windfarms SNH (2010, 2012) both refer to combined visibility. Combined cumulative visual effects are defined in the GLVIA as one of two types:

- Combined - in combination - where two or more developments are/would be visible in the viewer's arc of vision at the same time without moving their head;
- Combined – in succession – where the viewer has to turn their head to see the various developments – actual and realised. This often includes views in the opposite direction.

While sequential visual effects are also referred to in the guidance, the most relevant in this case is combined (in combination) effects. The photomontages 1-26 allow for the assessment of combined (in combination) visual effects, resulting from other turbines being visible in the montage, as well as views where other turbines are visible in the wider baseline view but not in the 53.5 degree montage view.

Combined Cumulative visibility was identified in a number of viewpoints, as noted in the viewpoint tables above and summarised below.

Table 12-13: Combined Cumulative visual effects

VP No.	Visual Receptor Sensitivity	Magnitude of change	Significance of effect
5	Medium	Negligible. A blade tip of the permitted Carrownagowan turbine is visible in the baseline wireframe view, but not in the montage view.	Imperceptible.
6	Medium-High	Low. The baseline photograph and wireframe view shows the Carrownagowan turbines will be screened from view, and the Fahy Beg turbines would be partly visible, to the right of the view along with the existing Limerick Blow Moulding single turbine. They are not visible in the montage, so the viewer may have to turn their head slightly to see the Fahy beg turbines.	Not Significant
7	High.	Low. The existing photograph shows that 5 of the Carrownagowan turbines would be visible in the wider baseline view, as distant objects. However, the Fahy Beg turbines would be screened. Neither are visible in the montage.	Not Significant.
8	Medium-High	Negligible. A single turbine is visible to the left of the baseline image, quite apart from the proposed turbines. This is not visible in the montage however.	Not Significant.
9	High	Medium. The existing photograph and wireframe show a single turbine in the distance to the right of the view, as well as another nearby single turbines which are hidden by topography. The Fahy Beg turbines would be visible in the left of the wireframe view. The proposed photomontages shows that 5 of the Fahy Beg turbines will	Moderate

VP No.	Visual Receptor Sensitivity	Magnitude of change	Significance of effect
		be visible to the left of the view, in a cluster, seen against a backdrop of distant hills.	
18	High	Low. One single turbine is visible to the left of the montage. The Fahy Beg and Carrownagowan turbines will be screened due to foreground vegetation.	Slight, neutral
19	High.	Low. The existing single Vistakon turbine is visible to the left of the montage image. Baseline A shows the Carrownagowan turbines to the left of the view, appearing as a distinct cluster in the distance on the northern slopes of the Slieve Bernagh Hills. Further to the right, the Fahy Beg turbines are visible in the wireframe, also as a distinct cluster, however, would be screened by the intervening vegetation.	Slight
21	High	Negligible. Two existing single turbines are in the wireframe but not discernible at this distance.	Imperceptible
23	Medium	Negligible. The existing Vistakon turbine is visible to the right of the view, however the Carrownagowan and Fahybeg turbines are not visible in the montage due to screening by dense vegetation.	Not Significant.
24	Medium	Low-Medium. The baseline photograph shows that an existing single turbine should be visible to the right of the view but is screened by vegetation. The proposed Fahy Beg turbines are visible to the right of the wireframe view and would likely be partly visible and partly screened.	Slight
25	High	Medium. The wireframe view shows that the existing Limerick Blow Moulding single turbine is visible to the right of the baseline view but is not in the proposed photomontage. The proposed Fahy Beg turbines would be visible to the rear of this turbine as shown on the wider wireframe view, but not in the photomontage view. They would however be visible if one was to turn their head to the right (sequential visibility). Four of the Carrownagowan turbines would be partly visible in the distance to the right of the photomontage view.	Moderate, neutral
26	High	Low. The existing Limerick Blow Moulding turbine is visible to the right of the baseline view, while the wireframe shows the proposed Fahy Beg turbines would be visible against a backdrop of higher ground to the right of the photomontage. These appear as a distinct cluster, at some distance from the proposed Ballycar turbines, and both clusters are separated by dense vegetation. The Carrownagowan turbines would be visible as two blade tips only.	Slight, neutral

While other existing or permitted/proposed turbines are visible in a number of the viewpoints (Viewpoints,18,21,23,24,25,26) these other turbines are mainly visible as distant elements in the views. However, in the views where other permitted/proposed turbines are visible, in particular Viewpoints 6,9,24,25,26, the Fahy Beg turbines tend to be more visible as they are closer and also less screened by topography, on the southern flanks of Lackareagh mountain. The Carrownagowan turbines are in general more distant, fewer are visible and are largely screened by the Slieve Bernagh hills to the south of the permitted turbines.

The views where the cumulative turbines are most evident in combination with the proposed turbines are Viewpoint 9 and Viewpoints 4,25,26,27 and 28, where the proposed and existing turbines are visible in the same view (in-combination). In these views, as would be expected, the proposed turbines are generally more prominent and, in all cases, there is a considerable separation distance between the proposed Ballycar turbines and the other turbine clusters. Each appear as a distinct cluster, consistent with the DoEHLG guidance outlined above and in Section 12.3.5. The cumulative effect varies depending on the viewpoint from No effect to Moderate.

In general the presence of other (Cumulative) turbines in the wider views makes little change, with the other turbines tending to be only visible to a small extent (see Viewpoints 5,8,9). More pronounced cumulative effects are likely to be sequential views at locations which are between the proposed Ballycar turbines and the two permitted/proposed wind farms to the north-east, as one looks in different directions, as shown in Viewpoint 19. Viewpoint 7 will show visibility of the Fahy Beg turbines however, the proposed Ballycar turbines are not visible. Certain views such as View 18 O' Briensbridge will have a view looking south-west to Ballycar and form a different part of the settlement, a view towards Fahy Beg in the opposite direction. These are experienced from different locations in the same settlement.

In summary, it is considered that the montages indicate that in the majority of the views where other turbines are visible (in combination), these appear as distant and distinct wind farms, and do not result in a proliferation of turbines in any one view, or any cases where one wind farm is seen behind the other and in close proximity. Cumulative visibility is considered to vary throughout the study area, ranging from Slight to Moderate.

One of the more obvious views where this is likely to occur is at the location of Viewpoint 19 at Knockanurtha, where there are panoramic views, with existing distant turbines visible to the east. There will also be views towards permitted/proposed turbines where there are open views and visibility is indicated on the ZTV. An additional Baseline view (Baseline A) was produced for Viewpoint 19, and illustrates though the Carrownagowan turbines would be visible, they are seen as a distinct and distant cluster, from the same viewpoint but in a different direction. There is considerable separation between these and the Ballycar turbines.

12.6.3.3 Extent of Theoretical Cumulative Visibility

The Cumulative ZTV map above shows that the areas of additional cumulative theoretical visibility as a result of the proposed Ballycar turbines are relatively limited areas (areas shaded blue in the Figure 12-15 above). The areas shaded green represent areas with theoretical visibility of both Ballycar and the other turbines, while pink shaded areas represent areas where Ballycar turbines are not visible. On review of the topography and of the montages, the proposed Ballycar turbines are likely to be less visible to the north of the study area, and this is confirmed by the ZTV. However, receptors to the north-east of Ballycar and the south-west of Fahy Beg would possibly experience views of both wind farms but in different directions, or views at different locations for example along a journey when the road changes direction (sequential views).

12.6.3.4 Other (non-wind) projects

Two solar farms are permitted in the vicinity of Ardnacrusha, at Drummin, which is within 2km east of the site, and at Coolderry, further east of Ardnacrusha, approximately 4.3 kilometres from the proposed development.

Review of these applications indicates that the closest solar array at Drummin will be largely screened from the local road to the west of the solar array, and visibility is therefore unlikely from locations further west on a similar level. However, a viewpoint taken from the local road at Ballycannon indicates some visibility of the proposed panels and it is possible that sequential visibility will arise, and one may see the wind farm to the west and turning to the south-east may see glimpses of both solar farms. The nature of the solar farms is that they are more likely to be visible at close range unless open views from elevated locations are available such as those near Ballycannon. Cumulative visual effects are considered to be Not Significant to Slight in some localised areas.

An existing quarry lies to the north-east of the site and is visible, along with the turbines in Viewpoints 11 and 12. A proposed extension of 10 hectares has been granted as per the details in **Chapter 2 Description of the Proposed Development.** The proposed extension is located to the west and south of the existing quarry, and from these viewpoints, and the vicinity of Derrynaveagh and Oatfield to the north, the visual effect of the quarry extension along with the proposed turbines are likely to be Not Significant to Slight and adverse, with the closer view being Viewpoint 10. The felling of the conifer plantation, as part of the forestry life cycle, is likely to be visible as this is seen against the skyline, and thus slightly more of the turbine towers may be revealed particularly in Viewpoint 10. Where the existing rockface is visible, the extension of the quarry will result in this remaining visible.

12.7 Mitigation and Avoidance

12.7.1 Landscape Mitigation Measures – Construction Phase

Tree protection and fencing will be carried out where necessary during the construction phase, in the vicinity of the substation and where other areas of trees/woodland are in close proximity to construction.

- Mitigation measures include the re-instatement of the areas following the construction phase, including replanting of the hedgerow with native species similar to what is to be removed at the temporary entrance. The borrow pit and deposition areas will be allowed to re-vegetate.
- Areas of cut and fill will be minimised, and any bare areas will be left to naturally re-vegetate (or as otherwise advised by ecologist).
- There will be no bunding or stockpiling of materials near the archaeological features in the north-west of the site.

12.7.2 Avoidance, Mitigation and Enhancement - Operational Phase

Turbines are large structures in the landscape and not easily screened, except where possible with siting. Mitigation by design is carried out where possible, with regard to the guidance in the DoEHLG (2006) and the Draft (2019).

- Mitigation measures by design which were applied include a choice of appropriate grey or off white turbine colour, sensitive siting and design of the turbines and associated elements, minimising

vegetation removal such as hedgerows and trees, and avoiding sensitive elements on the site such as the archaeological monuments to the north-west of the site.

Enhancement measures are set out in the BEMP (see Appendix 6E) and referred to in Chapter 6 Biodiversity. Those aiding in landscape and visual effects include:

- Existing internal treelines and hedgerows will be enhanced within the site, where possible. This includes planting up any large gaps with appropriate native shrubs and trees.
- Approximately 967 metres of native hedgerow planting is proposed.
- Linear sections adjacent to the proposed internal access tracks, and reinstated areas around turbines will be allowed to be colonised with local plants through natural dispersion and germination.

12.8 Decommissioning

At the end of the estimated 35 year lifespan of the proposed development, the Developer will make the decision whether to repower or decommission the turbines. Any further proposals for development at the site during or after this time will be subject to a new planning permission application. If planning permission is not sought after the end of life of the turbines, the site will be decommissioned and reinstated with all 12 No. wind turbines and towers removed. Removal of infrastructure will be undertaken in line with landowner and regulatory requirements and best practice applicable at the time. Access tracks will be left for use by the landowners.

Overall, the impacts of decommissioning a wind farm are potentially similar to construction impacts and will comprise temporary visual disturbance such as cranes and on-site machinery. Once decommissioned, however, the visual effects of the turbines will be reversed, and while viewers at close proximity may still see the access tracks, the hardstands will gradually re-vegetate.

As stated in Chapter 6 Biodiversity, prior to the decommissioning work, a comprehensive reinstatement proposal, including the implementation of a programme that details the removal of structures and landscaping, will be submitted to the Planning Authority.

12.9 Residual Effects

Residual Effects are as per the Effects identified in Section 12.5 and 12.6.

12.10 References

Clare County Development Plan 2023-2029 (Clare County Council).

*Definition and Classification of Ireland's Seascapes (*The Marine Institute. 2020). Minogue, R, Foley, K, Collins, T, Hennessy, R, Doherty, P, Vaughan, E and Black, D.

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Wind Energy Development Guidelines (Department of the Environment, Heritage and Local Government 2006).

Landscape Character Assessment of Co. Clare. (ERM, 2004).

Limerick County Development Plan 2022-2028 (Limerick City and County Council).

Tipperary County Development Plan 2022-2028 (Tipperary County Council).