12 LANDSCAPE AND VISUAL AMENITY

12.1 INTRODUCTION

12.1.1 Background and Objectives

This chapter of the EIAR assesses the likely significant effects of the Project on the landscape and visual amenity of the receiving environment. Although closely linked, landscape and visual impacts are assessed separately. Where significant effects are predicted, the chapter identifies appropriate mitigation strategies therein. The assessment considers the potential effects during the following phases of the Project:

- Construction of the Project
- Operation of the Project
- Decommissioning of the Project (final phase)

The Project refers to all elements of the application for the construction, operation and decommissioning of the Garrane Green Energy Project (**Chapter 2: Project Description**). Common acronyms used throughout this EIAR can be found in **Appendix 1.4**.

This chapter of the EIAR is supported by a portfolio of photomontages provided as a separate booklet, Figures contained within the Figures Volume and the following Appendix provided in Volume IV of this EIAR:

- **Appendix 12.1:** Visual Impact Assessments at VRPs

Landscape Impact Assessment (LIA) relates to changes in the physical landscape brought about by the Project, which may alter its character, and how this is experienced. This requires a detailed analysis of the individual elements and characteristics of a landscape that go together to make up the overall landscape character of that area. By understanding the aspects that contribute to landscape character, it is possible to make judgements in relation to its quality (integrity) and to identify key sensitivities. This, in turn, provides a measure of the ability of the landscape in question to accommodate the type and scale of change associated with the Project without causing unacceptable adverse changes to its character.

Visual Impact Assessment (VIA) relates to assessing effects on specific views and on the general visual amenity experienced by people. This deals with how the surroundings of individuals or groups of people may be specifically affected by changes in the content and character of views as a result of the change or loss of existing elements of the landscape and/or introduction of new elements. Visual impacts may occur from: visual obstruction

(blocking of a view, be it full, partial or intermittent) or Visual Intrusion (interruption of a view without blocking).

Cumulative landscape and visual impact assessment is concerned with additional changes to the landscape or visual amenity caused by the Project in conjunction with other developments (associated or separate to it), or actions that occurred in the past, present or are likely to occur in the foreseeable future.

12.1.2 Assessment Structure

In accordance with the Landscape Institute and the Institute of Environmental Management and Assessment publication entitled Guidelines for Landscape and Visual Impact Assessment – Third Edition (2013) (GLVIA3), the structure of this chapter will consist of separate considerations of landscape effects and visual effects in the following order:

- Assessment of landscape value and sensitivity
- Assessment of the magnitude of landscape effects within the Study Area; (comprised of the 'Central Study Area' (within c. 5km of the Site) and 'Wider Study Area' (5-20km from the Site)
- Assessment of the significance of landscape impacts
- Assessment of visual receptor sensitivity
- Assessment of visual impact magnitude at representative viewpoint locations (using photomontages)
- Assessment of visual impact significance
- Assessment of cumulative landscape and visual impacts

GLVIA3 outlines the differences between 'impact' and 'effect' in regard to undertaking LVIA as follows:

"The process is generally known as impact assessment, but the European Union Directive refers to the assessment of the effects, which are changes arising from the development that is being assessed. This guidance generally distinguishes between the 'impact', defined as the action being taken, and the 'effect', defined as the change resulting from that action"

This LVIA adopts the GLVIA3 terminology, arriving at a judgement regarding the level (significance) of a landscape or visual effect, before arriving at a conclusion as to whether it is deemed 'Significant'.[1]

[1] Landscape Institute and Institute of Environmental Management and Assessment, 2013. *Guidelines for Landscape and Visual Impact Assessment*. Landscape Institute and Institute of Environmental Management and Assessment.

12.1.3 Statement of Authority

This Landscape and Visual Assessment (LVIA) report was prepared by Bridget Macfarlane (BLA hons) of Macro Works Ltd.

Macro Works is a specialist LVIA consultancy with over 20 years of experience in the appraisal of effects from a variety of energy, infrastructure and commercial developments. Macro Works' relevant experience includes LVIA work on over 140 on-shore wind farm proposals throughout Ireland, including 6 Strategic Infrastructure Development (SID) wind farms. Macro Works and its senior staff members are affiliated with the Irish Landscape Institute.

The LVIA has been reviewed by Richard Barker, Divisional Director in Macro Works, and Landscape Architect affiliated with the Irish Landscape Institute. Richard has undertaken LVIA work for over 90 wind farms amongst numerous other development projects in Ireland and has considerable oral hearing training and expert witness experience.

12.1.4 Description of the Project

The Project is described in detail in **Chapter 2: Project Description**.

12.2 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

12.2.1 Assessment Methodology

Production of this LVIA involved baseline work in the form of desktop studies and fieldwork comprising professional evaluation by qualified and experienced Landscape Architects included at **Table 1.5**.

12.2.2 Definition of Study Area

The Wind Energy Development Guidelines published by the Department of the Environment, Heritage and Local Government (2006/2019 revision) specify different radii for examining the zone of theoretical visibility of proposed windfarm projects (ZTV) [2]. The extent of this search area is influenced by turbine height, as follows:

- 15km radius for blade tips up to 100m
- 20km radius for blade tips greater than 100m
- 25km radius where landscapes of national and international importance exist.

[2] Department of Environment, Heritage and Local Government (DoEHLG), 2006/2019. *Wind Energy Planning Guidelines* and *Preferred Draft Approach to Revising the 2006 Guidance*. DoEHLG, 2017.

In the case of this Project, the blade tips are 170m high and, thus, the minimum ZTV radius recommended is 20km from the outermost turbines of the scheme. This is considered to be appropriate in this instance on the basis that significant impacts are not predicted to occur beyond 20km. Furthermore, there are not considered to be any sites of national or international importance between 20 – 25km and thus, the radius of the Study Area will remain at 20km. Notwithstanding the full 20km extent of the LVIA Study Area, there will be a proportional emphasis on receptors and effects within the Central Study Area where there is higher potential for significant impacts to occur. When referenced within this assessment, the 'Central Study Area' is the landscape within 5km of the Site. Referencing of a Central Study Area is not required by guidance, but is based on best practice and professional experience and is primarily done to provide greater context.

12.2.2.1 Desktop Study

- Review of a Zone of Theoretical Visibility (ZTV) map, which indicates areas from which the Project is potentially visible in relation to terrain within the Study Area.
- Review of relevant County Development Plans (CDP), particularly with regard to sensitive landscape and scenic view/route designations.
- Selection of potential Viewshed Reference Points (VRPs) from key visual receptors to be investigated during fieldwork for actual visibility and sensitivity.

12.2.2.2 Fieldwork

Macro Works has a comprehensive understanding of the site context within the wider Study Area and has carried out numerous site visits to the locality over the last 10+ years. Site visits to potential VRP locations and the Wider Study Area were carried out in November 2023, to gain a baseline understanding of landscape context and to interrogate the ZTV. Site visits also included the capture of baseline photography and grid reference coordinates for each location for use in the production of photomontages.

12.2.2.3 Landscape and Visual Assessment

The process adopted in regard to the identification of landscape and visual effects (adopting the assessment criteria) is summarised as follows:

- Selection of a refined set of VRPs for assessment (based on guidance contained within GLVIA3 as well as best practice).
- Consideration of the receiving landscape with regard to overall landscape character as well as the salient features of the Study Area including landform, drainage, vegetation, land use and landscape designations.

- Consideration of the visual environment including receptor locations such as centres of population and houses, transport routes, public amenities and facilities and designated and recognised views of scenic value.
- Consideration of relevant design guidance and planning policies.
- Consideration of potentially significant construction, operational, and decommissioning phase effects and the mitigation measures that could be employed to reduce such effects.
- Assessment of the level (significance) of residual landscape effects.
- Assessment of the level (significance) of residual visual effects aided by photomontages prepared at all of the selected VRP locations.
- Assessment of cumulative landscape and visual effects in combination with other relevant surrounding developments that are either existing, permitted, or subject to a valid planning application.

12.2.3 Relevant Legislation and Guidance

This LVIA uses methodology as prescribed in the following guidance documents:

- Environmental Protection Agency (EPA) publication entitled: 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (2022) and the accompanying Advice Notes on Current Practice in the Preparation of Environmental Impact Assessment Reports[3];
- Landscape Institute and the Institute of Environmental Management and Assessment publication entitled: 'Guidelines for Landscape and Visual Impact Assessment – Third Edition' (2013) (Denoted GLVIA3);[4]
- Landscape Institute publication entitled: Technical Guidance Note (TGN) LITGN-2024-01, 'Notes and Clarifications on aspects of Guidelines for Landscape and Visual Impact Assessment Third Edition' (2024);[5]
- Department of the Environment, Heritage and Local Government publication entitled: 'Wind Energy Development Guidelines' (2006) and 'Draft Revised Wind Energy Development Guidelines' (2019);[6]
- NatureScot publication entitled: 'Assessing the cumulative landscape and visual impact of onshore wind energy developments' (2021);[7]

[3] Environmental Protection Agency (EPA), 2022. *Guidelines on the Information to be Contained in Environmental Impact Reports* and *Advice Notes on Current Practice in the Preparation of Environmental Impact Statements*. EPA, 2018
[4] Department of Environment, Heritage and Local Government (DoEHLG), 2006/2019. *Wind Energy Planning Guidelines* and *Preferred Draft Approach to Revising the 2006 Guidance*. DoEHLG, 2017
[5] Landscape Institute and Institute of Environmental Management and Assessment, 2013. *Guidelines for Landscape and Visual Impact Assessment*. Landscape Institute and Institute of Environmental Management and Assessment.
[6] Department of Environment, Heritage and Local Government (DoEHLG), 2006/2019. *Wind Energy Planning Guidelines* and *Preferred Draft Approach to Revising the 2006 Guidance*. DoEHLG, 2017.
[7] Scottish Natural Heritage (SNH), 2012. *Guidance Note: Assessing the Cumulative Impact of Onshore Wind Energy Developments*. SNH.

- Scottish Natural Heritage (SNH) publication entitled: 'Visual representation of wind farms: Best Practice Guidelines' (version 2.2 - 2017);[8] and
- Landscape Institute publication entitled: Technical Guidance Note (TGN) 06/19 'Visual Representation of development proposals' (2019) [9].

GLVIA3 is widely recognised and used by landscape professionals as the principal guidance in undertaking LVIA work in Ireland and the UK, and is considered to represent best practice in the absence of country-specific LVIA and visualisation guidance/standards. The other guidance outlined is also widely recognised and used by landscape professionals in informing and guiding LVIA work in Ireland.

12.2.3.1 Computer Generated Images, Photomontages and Wireframes

This LVIA is supported by a variety of computer-generated maps and graphics including ZTV maps and verifiable photomontages that depict the Project within the views from a range of represented visual receptor locations. Photomontages include existing views, wireframe views and proposed views.

12.2.4 Assessment Criteria for Landscape Effects

12.2.4.1 Landscape Sensitivity

When assessing the potential landscape effects of the Project, the value and sensitivity of the landscape receptor are weighed against the magnitude of change to determine the level of the landscape effect. The criteria outlined below are used to guide these judgements.

Landscape Value & Quality

To understand what is important in a landscape and why, it is necessary to first establish the value or importance of the landscape and whether this is at a local, regional, or national level.

As described within GLVIA3, the value of a landscape can apply to the landscape as a whole or to the individual elements, features and aesthetic dimensions which contribute to the character of that landscape. Several factors including, scenic beauty, wildness, tranquillity, and cultural associations, can inform the value of a landscape. Where a high value is accredited, this may be representative of a formal designation that recognises a

[8] Scottish Natural Heritage (SNH), 2017. *Siting and Designing Wind Farms in the Landscape Version 3*. SNH.
[9] Landscape Institute and Institute of Environmental Management and Assessment, 2013. *Guidelines for Landscape and Visual Impact Assessment*. Landscape Institute and Institute of Environmental Management and Assessment.

particular landscape or visual importance. Equally, landscapes considered to be of low value would generally be undesignated, degraded landscapes. The value attached to undesignated landscapes also requires further consideration in terms of any local value that may be placed upon it.

The nature or factors considered in reaching a judgement regarding Landscape Value will be described as Very High, High, Medium, Low, or Very Low. Guiding criteria are detailed as follows;

- Very High value - High Importance (or Quality) and Rarity. No or limited potential for substitution. Areas containing a strong, balanced structure with distinct features worthy of conservation. Generally International, National scale;
- High value – High Importance (or Quality) and Rarity. Limited potential for substitution. Areas containing a strong structure with noteworthy features or elements, exhibiting a sense of place. Generally National, Regional, Local scale;
- Medium value - Medium Importance (or Quality) and Rarity. Limited potential for substitution. Areas primarily of valued landscape components with low levels of visual detractors, exhibiting a recognisable landscape structure. Generally Regional, Local scale (Undesignated but value perhaps expresses through non-official publications or demonstrable use);
- Low value - Low Importance (or Quality) and Rarity. Areas containing some features of landscape value but lacking a coherent structure with frequent detracting visual elements, exhibiting a distinguishable structure often concealed by mixed land uses or development. Local scale (Areas identified as having some redeeming feature or features and possibly identified for improvement); and
- Very Low value – Low Importance (or Quality) and Rarity. Areas lacking valued landscape components with degraded, disturbed, or derelict features or with a dominance of visually detracting elements, exhibiting mixed land uses. Generally Local scale.

In a comparable way, the quality/condition of the landscape and visual resource also needs to be established and typical criteria for determining landscape quality will be described as Very High, High, Medium, Low, or Very Low. Guiding criteria are detailed as follows;

- Very High quality - Strong landscape structure, characteristics, patterns, balanced combination of landform and land cover; appropriate management of land use and land cover; all landscape elements remain intact and in good repair with distinct features worthy of conservation; sense of place;

- High quality – Strong landscape structure, characteristics, patterns, balanced combination of landform and land cover; appropriate management of land use and land cover; distinct features worthy of conservation; sense of place; occasional detracting features;
- Medium quality - Recognisable landscape structure, characteristic patterns and combinations of landform and land cover are still evident; scope to improve management for land use and land cover; some features worthy of conservation; sense of place; some detracting features;
- Low quality - Distinguishable landscape structure with some landscape elements intact, characteristic patterns of landform and landcover often masked by land use; scope to improve management of vegetation; some features worthy of conservation; some detracting features; and
- Very Low quality – Weak/ degraded landscape structure, characteristic patterns and combinations of landform and land cover are masked by land use; mixed land use evident; lack of management and intervention has resulted in degradation; frequent detracting features dominate.

The sensitivity of the landscape to change is the degree to which a particular landscape receptor (Landscape Character Area (LCA) or feature) can accommodate changes or new features without unacceptable detrimental effects on its essential characteristics. The judgement reflects such factors as its quality, value, contribution to landscape character and the degree to which the particular element or characteristic can be replaced or substituted. Landscape Sensitivity is classified using the criteria set out in Table 12.1.

Table 12.1: Landscape Value and Sensitivity

Sensitivity	Description
Very High	Areas where the landscape character exhibits a very low capacity for change in the form of development. Examples of which are high value landscapes, protected at an international or national level (World Heritage Site/National Park), where the principal management objectives are likely to be protection of the existing character.
High	Areas where the landscape character exhibits a low capacity for change in the form of development. Examples of which are high value landscapes, protected at a national or regional level (Area of Outstanding Natural Beauty), where the principal management objectives are likely to be considered conservation of the existing character.
Medium	Areas where the landscape character exhibits some capacity and scope for development. Examples of which are landscapes which have a designation of protection at a county level or at non-designated local level where there is evidence of local value and use.

Sensitivity	Description
Low	Areas where the landscape character exhibits a higher capacity for change from development. Typically, this would include lower value, non-designated landscapes that may also have some elements or features of recognisable quality, where landscape management objectives include, enhancement, repair and restoration.
Negligible	Areas of landscape character that include derelict, mining, industrial land or are part of the urban fringe where there would be a reasonable capacity to embrace change or the capacity to include the development proposals. Management objectives in such areas could be focused on change, creation of landscape improvements and/or restoration to realise a higher landscape value.

12.2.4.2 Magnitude of Change - Landscape

The magnitude of a predicted landscape impact is a product of the scale, extent or degree of change that is likely to be experienced as a result of the Project. The magnitude takes into account whether there is a direct physical impact resulting from the loss of landscape components and/or a change that extends beyond the Site that may have an effect on the landscape character of the area.

Table 12.2: Magnitude of Landscape Impacts

Sensitivity	Description
Very High	Change that would be large in extent and scale with the loss of critically important landscape elements and features, that may also involve the introduction of new uncharacteristic elements or features that contribute to an extensive change of the landscape in terms of character, value and quality.
High	Change that would be more limited in extent and scale with the loss of important landscape elements and features, that may also involve the introduction of new uncharacteristic elements or features that contribute to a considerable change of the landscape in terms of character, value and quality.
Medium	Changes that are modest in extent and scale involving the loss of landscape characteristics or elements that may also involve the introduction of new uncharacteristic elements or features that would lead to noticeable changes in landscape character, and quality.
Low	Changes affecting small areas of landscape character and quality, together with the loss of some less characteristic landscape elements or the addition of new features or elements that would lead to discernible changes in landscape character, and quality.
Negligible	Changes affecting small or very restricted areas of landscape character. This may include the limited loss of some elements or the addition of some new features or elements that are characteristic of the existing landscape or are hardly perceivable leading to no material change to landscape character, and quality.

12.2.5 Assessment Criteria for Visual Effect

As with the landscape impact, the visual impact of the Project will be assessed as a function of receptor sensitivity versus magnitude. In this instance, the sensitivity of visual receptors weighed against the magnitude of visual effects.

12.2.5.1 Visual Sensitivity

As with landscape sensitivity, the sensitivity of a visual receptor is categorised as Very High, High, Medium, Low, and Negligible. Unlike landscape sensitivity, however, the sensitivity of visual receptors has an anthropocentric (human) basis. It considers factors such as the perceived quality and values associated with the view, the landscape context of the viewer, the likely activity the viewer is engaged in and whether this heightens their awareness of the surrounding environment.

Visual sensitivity is a two-sided analysis of receptor susceptibility (people or groups of people) versus the value of the view on offer at a particular location.

To assess the susceptibility of viewers and the amenity value of views, the assessors use a range of criteria and provide a four-point weighting scale to indicate how strongly the viewer/view is associated with each of the criteria. Susceptibility criteria are extracted directly from the GLVIA3 [10], whilst the value criteria relate to various aspects of a view that might typically be related to high amenity including, but not limited to, scenic designations. These are set out below:

12.2.6 Assessment Criteria for Visual Effect

As with the landscape impact, the visual impact of the Project will be assessed as a function of receptor sensitivity versus magnitude. In this instance, the sensitivity of visual receptors, weighed against the magnitude of visual effects.

12.2.6.1 Visual Sensitivity

As with landscape sensitivity, the sensitivity of a visual receptor is categorised as Very High, High, Medium, Low, and Negligible. Unlike landscape sensitivity, however, the sensitivity of visual receptors has an anthropocentric (human) basis. It considers factors such as the perceived quality and values associated with the view, the landscape context of the viewer, the likely activity the viewer is engaged in and whether this heightens their awareness of the surrounding environment.

[10] Landscape Institute and Institute of Environmental Management and Assessment, 2013. *Guidelines for Landscape and Visual Impact Assessment*. Landscape Institute and Institute of Environmental Management and Assessment.

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Susceptibility of Visual Receptors to change

In accordance with GLVIA3 visual receptors most susceptible to changes in views and visual amenity are:

- *"Residents at home.*
- *People, whether residents or visitors, who are engaged in outdoor recreation, including use of public rights of way, whose attention or interest is likely to be focussed on the landscape and on particular views.*
- *Visitors to heritage assets, or to other attractions, where views of the surroundings are an important contributor to the experience.*
- *Communities where views contribute to the landscape setting enjoyed by residents in the area.*
- *Travellers on road rail or other transport routes where such travel involves recognised scenic routes and awareness of views is likely to be heightened".*

"Visual receptors that are less susceptible to changes in views and visual amenity include:

- *People engaged in outdoor sport or recreation, which does not involve or depend upon appreciation of views of the landscape*
- *People at their place of work whose attention may be focussed on their work or activity, not their surroundings and where the setting is not important to the quality of working life"* [12].

Values typically associated the visual amenity

[12] Landscape Institute and Institute of Environmental Management and Assessment, 2013. *Guidelines for Landscape and Visual Impact Assessment*. Landscape Institute and Institute of Environmental Management and Assessment.

- **Recognised scenic value of the view (**County Development Plan designations, guidebooks, touring maps, postcards etc). These represent a consensus in terms of which scenic views and routes within an area are strongly valued by the population because in the case of County Development Plans, at least, a public consultation process is required.
- **Views from within highly sensitive landscape areas.** Again, highly sensitive landscape designations are usually part of a county's Landscape Character Assessment, which is then incorporated with the County Development Plan and is therefore subject to the public consultation process. Viewers within such areas are likely to be highly attuned to the landscape around them.
- **Intensity of use, popularity.** Whilst not reflective of the amenity value of a view, this criterion relates to the number of viewers likely to experience a view on a regular basis and whether this is significant at county or regional scale.
- **Provision of elevated panoramic views.** This relates to the extent of the view on offer and the tendency for receptors to become more attuned to the surrounding landscape at locations that afford broad vistas.
- **Sense of remoteness and/or tranquillity.** Remote and tranquil viewing locations are more likely to heighten the amenity value of a view and have a lower intensity of development in comparison to dynamic viewing locations such as a busy street scene, for example:
- **Degree of perceived naturalness.** Where a view is valued for the sense of naturalness of the surrounding landscape it is likely to be highly sensitive to visual intrusion by obvious human interventions.
- **Presence of striking or noteworthy features**. A view might be strongly valued because it contains a distinctive and memorable landscape feature such as a promontory headland, lough or castle.
- **Historical, cultural or spiritual value.** Such attributes may be evident or sensed at certain viewing locations that attract visitors for the purposes of contemplation or reflection heightening the sense of their surroundings.
- **Rarity or uniqueness of the view.** This might include the noteworthy representativeness of a certain landscape type and considers whether other similar views might be afforded in the local or the national context.
- **Integrity of the landscape character in view.** This criterion considers the condition and intactness of the landscape in view and whether the landscape pattern is a regular one of few strongly related components or an irregular one containing a variety of disparate components.

- **Sense of place.** This criterion considers whether there is special sense of wholeness and harmony at the viewing location.
- **Sense of awe.** This criterion considers whether the view inspires an overwhelming sense of scale or the power of nature.

Those locations where highly susceptible receptors or receptor groups are present and which are deemed to satisfy many of the view value criteria above are likely to be judged to have a high visual sensitivity and vice versa.

It is recognised that a viewer's interpretation and experience of the landscape can have preferential and subjective components. Where relevant, judgements are made on those elements of the landscape that are considered to contribute more prominently and positively as well as those elements that contribute adversely. Overall sensitivity may be a result of a number of these factors or a strong association with one or two in particular.

12.2.6.2 Magnitude of Change - Visual

The magnitude of change is determined on the basis of two factors; the visual presence of the proposal and its effect on visual amenity.

Visual presence is a somewhat quantitative measure relating to how noticeable or visually dominant the proposal is within a particular view. This is based on a number of aspects beyond simply scale in relation to distance. Some of these include the extent of the view as well as its complexity and the degree of existing contextual movement experienced such as might occur where turbines are viewed as part of/beyond a busy street scene. The backdrop against which the Project is presented and its relationship with other focal points or prominent features within the view is also considered. Visual presence is essentially a measure of the relative visual dominance of the proposal within the available vista and is expressed as such i.e. minimal, sub-dominant, co-dominant, dominant, highly dominant.

For wind energy developments, a strong visual presence is not necessarily synonymous with adverse impact, specifically being 'noticed' by viewers and contributing memorably to the experience of that view or location – positive or adverse. Instead, the 2018 Fáilte Ireland survey entitled 'Report on Visitor Awareness and Perceptions of the Irish Landscape' summarised results as below:

- *"The majority of visitors appear not to notice the majority of development – even very large and visually prominent structures such as wind turbines and powerlines*
- *It appears that there are significant divergences between the what can be seen and what is noticed*

- *The majority of visitors expressed very limited desire to change developments that they do notice*
- *The visibility of developments of all types give rise to significantly less adverse effects on the impression of landscape than may often be assumed in the decision-making process*
- *The majority of visible development does not appear to have any adverse effects on the impression of the quality of the landscape"*

With specific regard to wind farms, the following is mentioned within the main report:

- *"Visibility at Locations - Windfarms or Wind Turbines were visible from four locations, they were mentioned by visitors at one location – Cobh. At this site 11% of visitors mentioned noticing wind energy projects*
- *Visibility en-route to locations - Wind Energy projects were mapped as being visible en-route to six sites, they were mentioned by less than 5% of all visitors."*

The purpose here is not to suggest that turbines are unlikely to be noticed, regardless of the visual presence, but rather to highlight that the assessment of visual magnitude for wind turbines is more complex than just the degree to which turbines occupy a view. Furthermore, a clear and comprehensive view of a wind farm might be preferable in many instances to a partial, cluttered view of turbine components that are not so noticeable within a view.
On the basis of these reasons, the visual amenity aspect of assessing magnitude is qualitative and considers such factors as the spatial arrangement of turbines both within the scheme and in relation to surrounding terrain and land cover. It also examines whether the project contributes positively to the existing qualities of the vista or results in distracting visual effects and disharmony.

It should be noted that as a result of this two-sided analysis, a high-order visual presence can be moderated by a low level of effect on visual amenity and vice versa. Given that wind turbines do not represent significant bulk; visual impacts result almost entirely from visual 'intrusion' rather than visual 'obstruction' (the blocking of a view). Table 12.3 outlines the magnitude of change criteria (derived from GLVIA3) [13] used to inform this judgement.

[13] Landscape Institute and Institute of Environmental Management and Assessment, 2013. *Guidelines for Landscape and Visual Impact Assessment*. Landscape Institute and Institute of Environmental Management and Assessment.

Table 12.3: Magnitude of Visual Impacts

Sensitivity	Description
Very High	The proposal obstructs or intrudes into a large proportion or critical part of the available vista and is without question the most noticeable element. An extensive degree of visual change will occur within the scene completely altering its character, composition and associated visual amenity
High	The proposal obstructs or intrudes into a significant proportion or important part of the available vista and is one of the most noticeable elements. A considerable degree of visual change will occur within the scene substantially altering its character, composition and associated visual amenity
Medium	The proposal represents a moderate intrusion into the available vista and is a readily noticeable element. A noticeable degree of visual change will occur within the scene perceptibly altering its character, composition and associated visual amenity
Low	The proposal intrudes to a minor extent into the available vista and may not be noticed by a casual observer and/or the proposal would not have a marked effect on the visual amenity of the scene
Negligible	The proposal would be barely discernible within the available vista and/or it would not influence the visual amenity of the scene

12.2.7 Level of Effects

The purpose of an LVIA when produced in the context of an EIA is to identify any 'significant' effects on landscape and visual amenity arising from the proposed development. Neither EC Directive 2014/52/EU14 nor domestic legislation defines a threshold at which an effect may be determined to be significant. In certain other environmental disciplines, there are regulatory thresholds or quantitative standards which help to determine the threshold of what constitutes a significant effect.

The EPA Guidelines (2022) defines 'Significant Effects' (within Table 3.4 of the guidelines), as "an effect which, by its character, magnitude, duration or intensity, alters a sensitive aspect of the environment." This definition is, however, provided as guidance alongside 7 other generalised definitions that may be used to describe the 'Significance' of effects, "in the absence of specific descriptions". 'Significance' is cited as "a concept that can have different meanings for different topics"[15], and a chart is included (at Figure 3.4 of the guidelines) to guide this process.

GLVIA3 defines 'significance' as "a measure of the importance or gravity of the environmental effect, defined by significance criteria specific to the environmental topic". It does not define what may constitute a 'significant' effect or provide thresholds that indicate where effects would become significant rather than not significant but states that "there are

[14] Directive 2014/52/EU (2014). The assessment of the effects of certain public and private projects on the environment. Official Journal of the European Union.
[15] Environmental Protection Agency (EPA), 2022. *Guidelines on the Information to be Contained in Environmental Impact Reports* and *Advice Notes on Current Practice in the Preparation of Environmental Impact Statements*. EPA, 2018.

no hard and fast rules about what effects should be deemed 'significant'" (paragraph 3.32 of GLVIA3) [16].

This is further expanded upon in paragraph 5.54 (concerning landscape effects), which states that "significance can only be defined in relation to each development and its specific location. It is for each assessment to determine how the judgements about the landscape receptors and landscape effects should be combined to arrive at significance and to explain how the conclusions have been derived."

GLVIA3 also states that the assessment of significance is "an evidence-based process combined with professional judgement" (paragraph 3.23). Professional judgement is (as acknowledged in GLVIA3) a very important aspect of LVIA, and it is important to remember that "even with qualified *and experienced professionals there can be differences in the judgements made. This may result from using different approaches or different criteria, or from a variation in judgements based on the same approach and criteria*" [17] (GLVIA3 paragraph 2.25). This LVIA has been undertaken by appropriately qualified and experienced LVIA practitioners, experienced in the production of LVIAs as previously outlined, using well-established and tested methodology.

The level of a landscape or visual effect (or relative significance) is based on a balance between the sensitivity of the receptor and the magnitude of change and is categorised as Profound, Substantial, Moderate, Slight, or Imperceptible. Intermediate judgements are also provided to enable an effect to be more accurately described where relevant. 'No Effect' may also be recorded as appropriate where the effect is so negligible it is not noteworthy.

The level category judgement is arrived at using the matrix in Table 12.4 as a guide which applies the principle of significance being a function of magnitude weighed against sensitivity but employs slightly different terminology (level of effect) that avoids the potentially confusing use of the term 'Significant' (as recommended by GLVIA3 Statement of Clarification 1/1318) [19].

[16] Landscape Institute and Institute of Environmental Management and Assessment, 2013. *Guidelines for Landscape and Visual Impact Assessment*. Landscape Institute and Institute of Environmental Management and Assessment.

[17] Landscape Institute and Institute of Environmental Management and Assessment, 2013. *Guidelines for Landscape and Visual Impact Assessment*. Landscape Institute and Institute of Environmental Management and Assessment.
[18] Landscape Institute GLVIA3 Statement of Clarification 1/13 – Significance. Landscape Institute 10-06-13
[19] Landscape Institute and Institute of Environmental Management and Assessment, 2013. *Guidelines for Landscape and Visual Impact Assessment*. Landscape Institute and Institute of Environmental Management and Assessment.

Table 0.4: Landscape Impact Significance Matrix

	Sensitivity of Receptor				
Scale/Magnitude	*Very High*	*High*	*Medium*	*Low*	*Negligible*
Very High	Profound	Profound-substantial	Substantial	Moderate	Slight
High	Profound-substantial	Substantial	Substantial-moderate	Moderate-slight	Slight-imperceptible
Medium	Substantial	Substantial-moderate	Moderate	Slight	Imperceptible
Low	Moderate	Moderate-slight	Slight	Slight-imperceptible	Imperceptible
Negligible	Slight	Slight-imperceptible	Imperceptible	Imperceptible	Imperceptible

Note: Judgements deemed 'substantial' and above are considered to be 'significant impacts' in EIA terms.

Whilst the matrix and criteria provide a useful guide, the level of an effect is ultimately determined by the landscape specialist using professional judgement, and also in the context of occasionally using hybrid judgements to account for nuance.

For the purposes of assessment, effects assessed as 'Substantial' or greater (in bold text / shaded cells) in Table 12.4, are considered to be the most notable in landscape and visual terms, and most material in the decision-making process, albeit not a reflection of their acceptability in planning terms.

12.2.7.1 Quality and Timescale of Effects

In addition to assessing the level (significance) of landscape and visual effects, EPA Guidance requires that the quality of the effects is also determined. This could be negative/adverse, neutral, or positive/beneficial.

- Positive Effects: A change which improves the quality of the environment;
- Neutral and/or balanced Effects: No effects, or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
- Negative/adverse Effects: A change that reduces the quality of the environment

The same EPA guidelines also set out categories of duration:

- Temporary – Lasting for 1 year or less;
- Short Term – Lasting 1 to 7 years;

- Medium Term – Lasting 7 to 15 years;
- Long Term – Lasting 15 years to 60 years; and
- Permanent – Lasting over 60 years.

In the case of commercial wind energy developments and the associated introduction of new moving structures within rural and upland areas, the quality of the landscape and visual effects will almost always be adverse, rather than positive, and unless otherwise stated is the default quality of any identified effect. Where effects are imperceptible or not possible as a result of distance, context, or views being screened by foreground elements, effects are considered Neutral as the proposals neither improve nor reduce the quality of the environment.

In terms of duration, the proposed turbines will have a Long-term impact as the permission is being sought for a 40-year period after which the turbines will be decommissioned. Some other elements of the proposed Project relating to Access Tracks and elements of the Substation and Grid Connection will likely remain in perpetuity and will therefore have Permanent effects [20].

12.2.8 Assessment Criteria for Cumulative Effects

The WEDG references the need to assess the cumulative effects of the scheme (at 4.7.4, P41 of the 2019 draft revision) as including the "wind energy development and the grid connection and any other works which are ancillary to the Project of the wind energy development" in order that the planning application addresses the cumulative impacts of the whole Project. Cumulative in this context relates to the Project as a whole and has been the approach adopted in the main assessment (as outlined in **Section 12.2.2**).

NatureScot's 'Guidance – Assessing the Cumulative Effects of Onshore Wind Farms' (2021) [21] is considered a key reference with regard to cumulative landscape and visual impacts. GLVIA3 provides comparable guidance in relation to cumulative issues, whilst recognising that it is an emerging area of study.

The principal focus of wind energy cumulative impact assessment guidance relates to other wind farms - as opposed to other forms of development. This will also be the main focus

[20] Environmental Protection Agency (EPA), 2022. Guidelines on the Information to be Contained in Environmental Impact Reports and Advice Notes on Current Practice in the Preparation of Environmental Impact Statements. EPA, 2018.
[21] Scottish Natural Heritage (SNH), 2012. *Guidance Note: Assessing the Cumulative Impact of Onshore Wind Energy Developments*. SNH.

herein, albeit with subsequent consideration of cumulative impacts with other forms of notable development (existing, permitted or subject to a valid planning application).

In relation to cumulative landscape impacts, the NatureScot guidance states:
"Cumulative landscape impacts can change either the physical fabric or character of the landscape, or any special values attached to it. For example:

- *Cumulative impacts on the physical fabric of the landscape arise when two or more developments affect landscape components such as woodland, dykes, rural roads or hedgerows. Although this may not significantly affect the landscape character, the cumulative effect on these components may be significant – for example, where the last remnants of former shelterbelts are completely removed by two or more developments.*
- *Cumulative impacts on landscape character arise when two or more developments introduce new features into the landscape. In this way, they can change the landscape character to such an extent that they create a different landscape character type, in a similar way to large scale afforestation. That change need not be adverse; some derelict or degraded landscapes may be enhanced as a result of such a change in landscape character, especially where opportunities for new woodland planting, or peatland restoration are maximised, for example.* [22]*"*

In relation to cumulative visual impacts, the NatureScot guidance states:
Cumulative impacts on visual amenity can be caused by 'combined visibility' and/or 'sequential impacts':

- *Combined visibility occurs where the observer is able to see two or more developments from one viewpoint. Assessments should consider the combined effect of all wind farms which are (or would be) visible from relevant viewpoints. Combined visibility may either be in combination (where several wind farms are within the observer's arc of vision at the same time) or in succession (where the observer has to turn to see the various wind farms).*
- *Sequential impacts occur when the observer has to move to another viewpoint to see different developments. Sequential impacts should be assessed for travel along regularly-used routes like major roads, railway lines, ferry routes, popular paths, etc. The magnitude of sequential effects will be affected by speed of travel and distance between viewpoints'*

[22] Scottish Natural Heritage (SNH), 2012. *Guidance Note: Assessing the Cumulative Impact of Onshore Wind Energy Developments*. SNH.

The WEDG [23] describes a cumulative effect as "*the perceived effect on the landscape of two or more wind energy developments visible from any one place*", and provides guidance as to the aesthetic effects of multiple turbine developments in various landscape contexts. It also requires that cumulative effects are represented using Zone of Theoretical Visibility maps that show other wind energy developments.

Based on both sets of guidance, cumulative impacts can be experienced in a variety of ways.

In terms of landscape character, additional wind energy developments might contribute to an increasing sense of proliferation. A new wind farm might also contribute to a sense of being surrounded by turbines with little relief from the view of them.

In terms of visual amenity, there is a range of ways in which an additional wind farm might generate visual conflict and disharmony with other wind energy developments. Some of the most common include visual tension caused by disparate extent, scale or layout of neighbouring developments. A sense of visual ambivalence might also be caused by adjacent developments traversing different landscape types. Turbines from a proposed wind farm that are seen stacked in perspective against the turbines of nearer or further developments tend to cause visual clutter and confusion. Such effects are exacerbated when, for example, the more distant turbines are larger than the nearer ones and the sense of distance is distorted.

Table 12.5 provides Macro Works' criteria for assessing the magnitude of cumulative impacts. The approach adopted is informed by the NatureScot Guidelines (2021),GLVIA3 and industry best practice.

Other wind energy developments are the most relevant type of development in a cumulative LVIA assessment given the comparable characteristics. In this regard, small and domestic-scale wind turbines are generally not considered relevant given their proportions and potential to generate notable cumulative effects. Given the potentially extensive scope of including all other types of development within a cumulative LVIA, a proportionate level of consideration is given to schemes that are considered to have the potential to significantly alter the cumulative landscape and visual baseline environment. Factors such as scale and

[23] Department of Environment, Heritage and Local Government (DoEHLG), 2006/2019. *Wind Energy Planning Guidelines* and *Preferred Draft Approach to Revising the 2006 Guidance*. DoEHLG, 2017.

proximity of a proposed development are important factors, in addition to the characteristics of the development in question.

Table 12.5: Magnitude of Cumulative Impacts

Criteria	Description
Very High	• The proposed wind farm will strongly contribute to wind energy development being the defining element of the surrounding landscape. • It will strongly contribute to a sense of wind farm proliferation and being surrounded by wind energy development. • Strongly adverse visual effects will be generated by the proposed turbines in relation to other turbines.
High	• The proposed wind farm will contribute significantly to wind energy development being a defining element of the surrounding landscape. • It will significantly contribute to a sense of wind farm proliferation and being surrounded by wind energy development. • Significant adverse visual effects will be generated by the proposed turbines in relation to other turbines.
Medium	• The proposed wind farm will contribute to wind energy development being a characteristic element of the surrounding landscape. • It will contribute to a sense of wind farm accumulation and dissemination within the surrounding landscape. • Adverse visual effects might be generated by the proposed turbines in relation to other turbines.
Low	• The proposed wind farm will be one of only a few wind farms in the surrounding area and will be viewed in isolation from most receptors. • It might contribute to wind farm development becoming a familiar feature within the surrounding landscape. • The design characteristics of the proposed wind farm accord with other schemes within the surrounding landscape and adverse visual effects are not likely to occur in relation to these.
Negligible	• The proposed wind farm will most often be viewed in isolation or occasionally in conjunction with other distant wind energy developments. • Wind energy development will remain an uncommon landscape feature in the surrounding landscape. • No adverse visual effects will be generated by the proposed turbines in relation to other turbines.

12.2.9 Visual Material and Photography

Photography has been undertaken in accordance with to Landscape Institute TGN 06/19, guidance which advocates proportionality regarding the production of technical LVIA visual material, and appropriate levels of accuracy. It refers to different 'types' of visualisations, based on the anticipated purpose and users of the visual material, the anticipated level of effect, and other relevant factors.

Given that the purpose of the visual material is to accompany a planning application, the production of visual material has followed a highly accurate and verifiable process to accurately communicate the scale, appearance, context, form, and extent of development. The photomontages can be likened to Type 3 and 4 in the guidance.

The photography was captured during good weather conditions with high levels of visibility. Photography has been taken to a very high standard, with a full-frame sensor camera and 50mm fixed lens mounted on a tripod with a panoramic head. The equipment used is as follows:

- Camera: Canon EOS 5D Mark II Full Frame Sensor
- Lens: Canon 50mm Lens
- Tripod and camera mount: Manfrotto MT190XPRO3 tripod with panoramic head and leveller
- Locational information was obtained via GPS equipment that affords a high degree of locational accuracy.

12.3 BASELINE DESCRIPTION

12.3.1 Landscape Baseline

The landscape Baseline represents the existing landscape context and is the scenario against which any changes to the landscape brought about by the Project will be assessed. This also includes reference to any relevant landscape character appraisals and the current landscape policy context (both are generally contained within County Development Plans).

A description of the landscape context of the Site and wider Study Area is provided below under the headings of landform and drainage, vegetation and land use, centres of population, transport routes and public amenities and facilities as well as the immediate site context. Additional descriptions of the landscape, as viewed from each of the selected viewpoints, are provided under the detailed assessments later using a similar structure. Although this description forms part of the landscape baseline, many of the landscape elements identified also relate to visual receptors i.e. places and transport routes from which viewers can potentially see the Project. The visual resource will be described in greater detail below.

12.3.2 Landform and Drainage

The Central Study Area is dominated by ostensibly flat, lowland plains. The Site itself comprises a series of pastoral plains located on the banks of the River Maigue and River Loobagh in which the site drains to. Gentle undulations are a prominent feature of the wider landscape with the foothills of the Ballyhoura mountain range emerging in the southeast portion of the study area. The mountains of Caroline (301m AOD), Carron (446.7m AOD), and Seefin Mountain (528m AOD) are the more prominent landforms in the wider south-

east periphery. The western part of the Study Area has a series of elevated landforms, these include; Knockfeerina Hill (288m AOD) and Corronoher Hill (272.1m AOD).

Multiple rivers and streams are dispersed across the immediate and wider Study Area, the River Maigue is the closest traversing centrally through the Site, 80m from the nearest turbine. The River Maigue emanates from the Ballyhoura Mountains in north County Cork and flows in a western direction through the Site then diverts north to join the Shannon Estuary west of Limerick City. In its course, it has three tributaries; the Loobagh, Morning Star and Camoge Rivers, which are all located within the Study Area. Lough Gur is another notable waterbody, located 15km north-east of the Project.

Plate 12.1: Oblique Aerial view (Google Earth) showing the landscape context of the site and its immediate surrounds (Blue stars represent turbine locations).

12.3.3 Vegetation and Land use

In terms of land use, agricultural farmland is the dominant feature of the Study Area with associated farm buildings and infrastructure woven into the landscape accordingly. The Site itself encompasses a series of various-sized pastoral fields used predominately for stock grazing, bound to the west by the N20 national road. A Wastewater treatment plant is located approximately 180m south of the nearest turbine, and is the most notable anthropogenic activity within the Central Study Area, made up of several treatment ponds with an assortment of complementary built infrastructure.

With regard to vegetation, the strong agricultural influence is reinforced by a comprehensive system of hedgerow vegetation. Agricultural pastures are knitted together by a network of geometric hedgerows to form a consistent patchwork of field boundaries. These hedgerows vary in condition and intactness, containing both mature trees in the line of hedgerows, lower scrubby hedgerows and stand-alone mature specimen trees. Riparian vegetation fringes the river corridors towards the northern aspect of the Site. Evidence of commercial forestry blocks can be seen, primarily to the west and wider south-east of the Study Area featuring on the lower slopes of the Ballyhoura Mountains. Moorland can be seen in the upland areas, towards the wider south-east periphery of the Study Area. With regard to urban landcover, modest sized towns and villages service this predominantly rural area and dispersed rural settlement are frequented throughout the lowlands. Although there is some evidence of natural and seminatural land cover along the river corridors and towards the Ballyhoura Mountains, the overarching character of the immediate and wider Study Area is a modified, managed and productive rural landscape.

12.3.4 Centres of Population and Houses

Charleville is the closest settlement located c. 2.5km south of the Project and linked by the N20. Charleville is a large town, well-serviced by local amenities and an extensive road network. Kilmallock, located 6.1km to the east is another settlement of a similar size renowned for its heritage features and medieval remnants. Outside of villages/towns, rural housing typically takes the form of dispersed farmsteads and ribbon development.

Other settlements within the Study Area include;

- Bruree (small village c. 2.5km northeast)
- Effin (v. small village c. 5km southeast of site)
- Ballyagran (village c. 7km west of site)
- Newtownshandrum (c. 8km southwest of site)
- Athlacca (c. 6.5km northeast of site)
- Bruff (c. 11.7km northeast of site)
- Granagh (c. 8.4km northwest of site)
- Ballingarry (c. 14.8km northwest of site)
- Kilmeedy (c. 15.5km west of site)
- Feenagh (c. 13km west of site)
- Dromcollogher (c. 15.3km southwest of site)
- Croom (c. 13.2km north of site)

12.3.5 Transport Routes

The major transport corridor in the study area is the N20 national road, located 300m to the west of the Site, which traverses the entire Study Area in a north-south direction. The N20 is intersected by a series of regional and local roads that service the settlements of the Study Area.

Other notable transport routes within the Study Area include;

- R515 is located c. 2.4km south of the site
- R518 is located 2.8km north running east-west servicing the settlement of Bruree
- The R578 diverts from Newtownshandrum c.7.8km southwest of the site
- The R512 passes through Kilmallock c.6.5km east of the site.
- The Dublin to Cork InterCity railway runs in a broad northeast-southwest direction through the Study Area, coming within approx. 3km south-west of the Project immediately southwest of Charleville.

12.3.6 Proposed M20 Corridor

It is noted that the future M20 major road corridor is proposed within 2km west of the proposed Project. The proposed M20 traverses the western portion of the Study Area in a general north to south direction. Although motorway receptors are considered to generally be of a Low receptor sensitivity, it is acknowledged that there will be a considerable increase in traffic within the Central Study Area and consequently a larger number of receptors.

12.3.7 Tourism, Heritage and Public Amenity

In terms of tourism, heritage and recreation, numerous features are dispersed throughout the Study Area. The most notable occur in the wider periphery of the Study Area, such as Lough Gur located c.15km north-east of the nearest turbine. Lough Gur is one of Ireland's foremost archaeological complexes and is popular for visitors, hosting a castle, visitors centre, cemetery, bird watch, series of ring forts as well as numerous other archaeological features. Adare Manor Golf Course and luxury resort is located in the wider north-west at approximately 18km from the Site. Adare Manor hosts a golf course (which is the host of the 2027 Ryder Cup), a luxury hotel, spa and numerous other amenities on the periphery of the heritage settlement of Adare.

Several notable recreational features are also located within the Study Area including the Kilmallock Cycle Hub which hosts a series of four routes of varying lengths are distributed alongside the quiet country roads. Kilmallock is considered to be the largest cycling hub in

Ireland. Route 3 comes within c. 3km to the north-east of the Site and Route 1 of the cycle route comes within 4.3km to the south-east.

Within 9km to the south-east of the Site is the nearest point of the Ballyhoura Way (National Waymarked Trail). Multiple walking and mountain bike trails are dispersed across the Ballyhoura Mountains which wind through existing wind turbines and take deliberate advantage of the expansive views afforded from these elevated trails. A map of these trails can be seen below in Plate 12.2.

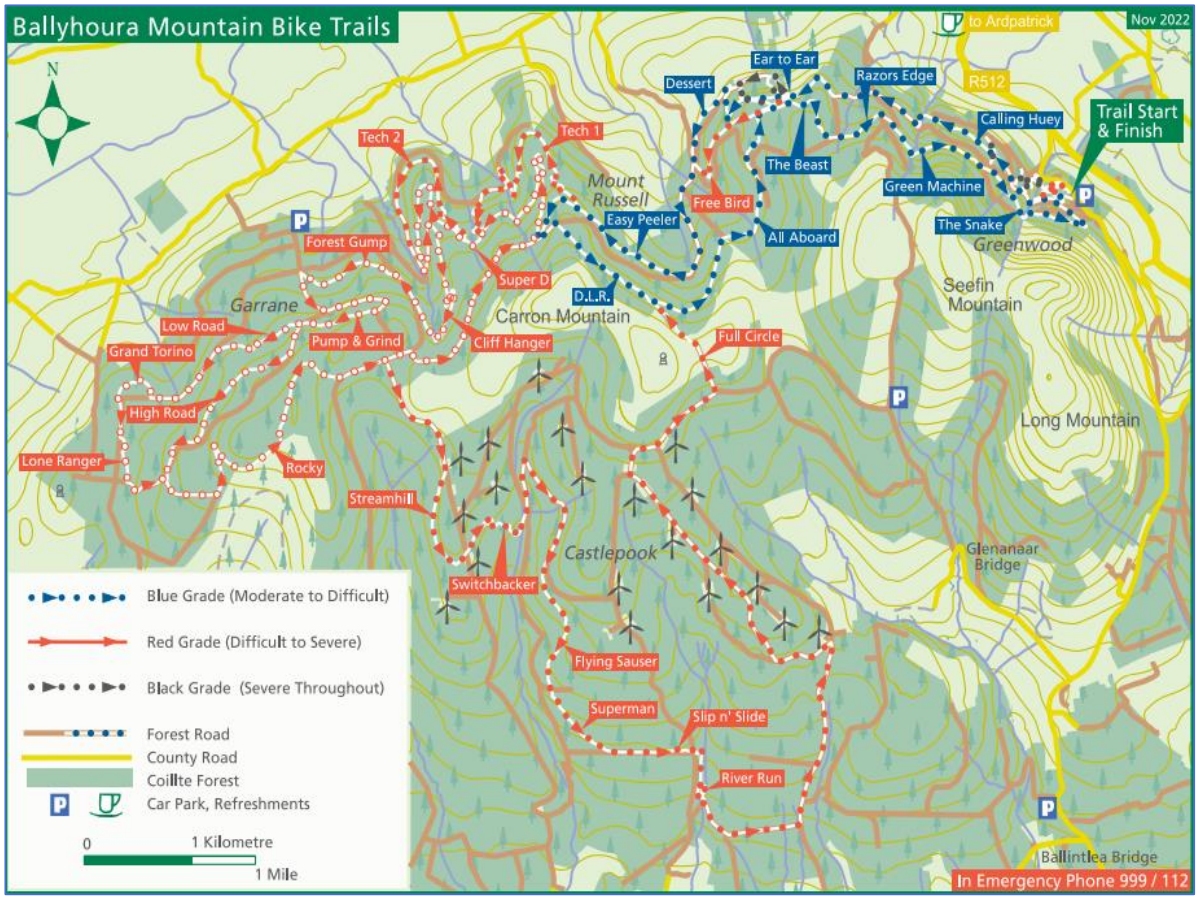


Plate 12.2: Excerpt from visitballyhoura.com showing the Ballyhoura Mountain Bike Trails that traverse through existing turbines

Other tourism, heritage and recreation features of local/ regional importance include:

- Kilmallock hosts several historic landmarks within 6km to the east including; 13th century Dominican Abbey, SS. Peter & Paul Catholic Church, Castlecourt and a museum.
- Charleville Golf Course (c. 6km south-west of Site)
- Bruree Mill (2.6km north-east)
- Effin GAA Club (c. 5.7km south-east)
- Kilmallock GAA Club (c. 6km)

12.3.8 Landscape Policy Context and Designations

12.3.8.1 The Department of Environment, Heritage and Local Government Wind Energy Development Guidelines (2006)

The Wind Energy Development Guidelines (2006/2019 revision) provide guidance on wind farm siting and design criteria for a number of different landscapes types. The Site of the Project is considered to be within the 'Hilly and Flat Farmland' type from the Wind Energy Development Guidelines. The most relevant recommendations for the 'Hilly and Flat Farmland' landscape type are outlined below:

Hilly and Flat Farmland Landscapes:

Location - *"Location on ridges and plateaux is preferred, not only to maximise exposure, but also to ensure a reasonable distance from dwellings. Sufficient distance should be maintained from farmsteads, houses and centres of population in order to ensure that wind energy developments do not visually dominate them. Elevated locations are also more likely to achieve optimum aesthetic effect. Turbines perceived as being in close proximity to, or overlapping other landscape elements, such as buildings, roads and power or telegraph poles and lines may result in visual clutter and confusion. While in practice this can be tolerated, in highly sensitive landscapes every attempt should be made to avoid it."*

Spatial extent - *"This can be expected to be quite limited in response to the scale of fields and such topographic features as hills and knolls. Sufficient distance from buildings, most likely to be critical at lower elevations, must be established in order to avoid dominance by the wind energy development."*

Spacing - *"The optimum spacing pattern is likely to be regular, responding to the underlying pattern field pattern. The fields comprising the site might provide the structure for spacing of turbines. However, this may not always be the case and a balance will have to be struck between adequate spacing to achieve operability and a correspondence to field pattern."*

Layout - *"The optimum layout is linear, and staggered linear on ridges (which are elongated) and hilltops (which are peaked), but a clustered layout would also be appropriate on a hilltop. Where a wind energy development is functionally possible on a flat landscape a grid layout would be aesthetically acceptable."*

Height - *Turbines should relate in terms of scale to landscape elements and will therefore tend not to be tall. However, an exception to this would be where they are on a high ridge or hilltop of relatively largescale. The more undulating*

the topography the greater the acceptability of an uneven profile, provided it does not result in significant visual confusion and conflict."

Cumulative *-"It is important that wind energy development is never perceived to visually dominate. However, given that these landscapes comprise hedgerows and often hills, and that views across the landscape will likely be intermittent and partially obscured, visibility of two or more wind energy developments is usually acceptable.[24]"*

This guidance has been considered in the iterative design of the Project, which has a staggered layout with a relatively even spacing to reflect the modified land cover of its setting, but an even profile that compliments the even terrain.

Siting in Relation to Individual Properties ('Setback')

Section 6.18 of the Draft Revised Wind Energy Development Guidelines (December 2019) refers to appropriate setback distances for visual amenity purposes. The guidelines outline a mandatory minimum setback distance of "500 metres" or the distance of "4 times the tip height" of the proposed turbines "between the nearest point of the curtilage of any residential property".

This is set out in SPPR2 which is included below:

SPPR 2*: "With the exception of applications where reduced setback requirements have been agreed with relevant owner(s) as outlined at 6.18.2 below, planning authorities and An Bord Pleanála (where relevant), shall, in undertaking their development planning and development management functions, ensure that a setback distance for visual amenity purposes of 4 times the tip height of the relevant wind turbine shall apply between each wind turbine and the nearest point of the curtilage of any residential property in the vicinity of the proposed development, subject to a mandatory minimum setback of 500 metres from that residential property. Some discretion applies to planning authorities when agreeing separation distances for small scale wind energy developments generating energy primarily for onsite usage. The planning authority or An Bord Pleanála (where relevant), shall not apply a setback distance that exceeds these requirements for visual amenity purposes.[25]"*

[24] Department of Environment, Heritage and Local Government (DoEHLG), 2006/2019. *Wind Energy Planning Guidelines* and *Preferred Draft Approach to Revising the 2006 Guidance*. DoEHLG, 2017.

[25] Department of Environment, Heritage and Local Government (DoEHLG), 2006/2019. *Wind Energy Planning Guidelines* and *Preferred Draft Approach to Revising the 2006 Guidance*. DoEHLG, 2017.

The Project has a turbine tip height of 170m thus a 680m setback distance has been applied giving due regard to the Draft Revised Wind Energy Development Guidelines (2019). There is one known dwelling (involved landowner) contained within the recommended setback distance (680m) as per the Draft Revised Wind Energy Development Guidelines (2019) for the tip height of the proposed turbines.

12.3.9 Limerick County Development Plan 2022-2028

12.3.9.1 Landscape Designations

The Limerick County Development Plan contains a Landscape Character Assessment in section 6.4 of the CDP which identifies 10 geographically specific landscape areas (refer **Figure 12.1**). The Project is contained within the 'Agricultural Lowlands' Landscape Character Area.

The 'LCA 01 Agricultural Lowlands' are described as;

"the largest of the Landscape 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 current Limerick CDP includes specific landscape objectives for the 'LCA 01Agricultural Lowlands'.

Relevant Policies are outlined below;

- *"Encourage retention of existing landscape features such as hedgerows and trees and their incorporation into landscaping for new developments."*
- *"Discourage development of locally prominent sites."*
- *"Encourage the regular arrangement of turbines with equal spacing in proposed wind farm developments, which take field boundaries into account."*

Several other Limerick LCA's are located within the study area, these are outlined below;

- 'LCA 02 Ballyhoura / Slieve Reagh' to c. 3km southeast of the proposed development.
- 'LCA 04 Knockfierna' is located approximately c.10km from the Site to the northwest.
- 'LCA 09 Tory Hill' is located c.13km to the north.
- 'LCA 05 Lough Gur' located 13.5km to the northeast occupies a small part of the study area.

12.3.9.2 Scenic Designations

The Limerick County Development Plan contains scenic view designations, several are located within the 20km Study Area (refer **Figure 12.2**). Only those which have the potential for views of the Project are deemed relevant to the Visual Impact Assessment and are subsequently screened in for further assessment by way of a representative viewpoint. Those scenic designations that fall within the Study Area are listed below:

- Some 13km north of the Project is a scenic designation which references Tory Hill View. Part of this scenic designation falls within visibility on the ZTV pattern and therefore will need to be investigated further.
- Approximately 14.8km north-east of the Project a scenic designation is located surrounding Lough Gur viewpoint. According to the ZTV pattern, this location has the potential for partial visibility of the Project and will therefore need to be investigated further.
- Towards the south-east periphery of the Study Area, at approximately 14.km from the Site, is a designated scenic route which refers to the Kilfinane Scenic Drive. This is not located within an area shown by the ZTV pattern to have potential visibility of the proposed turbines so no further investigation is required.
- Another scenic route is located over 10km southeast of the Project which references the 'Castleoliver Scenic Drive'. This is not within the ZTV pattern so will not be investigated further.

12.3.9.3 Wind Energy Strategy

A Wind Energy Strategy is included in subsection 9.4.4 of the current Limerick County Development Plan. Regarding wind energy in Limerick, the County Development Plan states;

"*The Council will continue to support and encourage the principle of wind energy development in accordance with Government policy and having regard to the Wind Energy Development Guidelines for Planning Authorities, or any update made thereto during the lifetime of the Plan, subject to the location and siting of such infrastructure and having regard to the extensive designations throughout Limerick in terms of Natura 2000 sites."*

Within the Wind Energy Strategy for Limerick, the CDP has taken the Landscape Character Assessment and used it to identify '*Preferred Areas,* '*Areas Open for Consideration'* and '*Areas Unsuitable'* for wind energy development (refer **Figure 12.3**). As can be seen below the Project is located within a '*Preferred Area',* with the neighbouring LCA 3km to the southeast designated an '*Area Open for Consideration'* for wind energy.

Relevant Policies from the Wind Energy Strategy:

- *"It is a policy of the Council to support renewable energy commitments outlined in national and regional policy, by facilitating the development and exploitation of a range of renewable energy sources at suitable locations throughout Limerick, where such development does not have a negative impact on the surrounding environment landscape, biodiversity, water quality or local amenities, to ensure the long-term sustainable growth of Limerick."*

12.3.9.4 Cork County Development Plan 2022 – 2028

Although the Project is located entirely within County Limerick, the County Cork border is less than 300m from the Site so the Cork County Development Plan needs to be considered to a similar degree as the host county. A Landscape Character Assessment was undertaken as part of the Draft Cork Landscape Strategy (2007), incorporated as Appendix F of the Cork County Development Plan (2022-2028) and divides the county into 16 No. Landscape Character Types (LCTs) – see **Figure 12.4**. The closest LCT for the Project is 'LCT 5 Fertile Plain with Moorland Ridge'. 'LCT 5 Fertile Plain with Moorland Ridge' is assigned a 'Very High' Landscape Value and a 'Very High' Landscape Sensitivity. However, with regards to 'Landscape Importance' it is only designated the median 'County' level. Landscapes regarded as having 'Very High' landscape sensitivity are described in the Draft Cork Landscape Strategy as; "*are extra vulnerable landscapes (e.g. seascape area with national importance) which are likely to be fragile and susceptible to change."*

The LCT 5 'Fertile Plain with Moorland Ridge' is described as:
"generally referred to as the "Golden Vale" and occupies a substantial proportion of northeast Cork. This is a low lying landscape, which comprises an extensive area of predominantly flat or gently undulating topography… The landscape is one of high fertility and, thus, productivity. It is a "working" landscape, manifesting the human bond with the land through agricultural activity...this even and vast extent can best be perceived from an elevated location, views are otherwise curtailed by the prevalent tall hedgerows when viewed on the plain…the latter include the southern slopes of the Ballyhoura and Galtee Mountains to the north, the northern slopes of the Nagles to the south and the western ridges of the Knockmealdown Mountains. The bedrock of the plain comprises mostly of limestone while sandstone typically forms the underlying geology of the peripheral ridges. Lower ground comprises brown earths and the occasional gley while brown podzols are located at slightly higher levels."

LCT's are broken down into smaller physical units with more detail in their description referred to as; 'Landscape Character Areas' (LCA's) – see **Figure 12.5**. The nearest Landscape Character Area to the Project is LCA 69 'Dromina / Charleville (Fertile Planar and Gently Undulating Mosaic farmland and Moorland Ridge)'.

LCA 69 is described as;
"While lands remain predominately fertile, there is more evidence of scrub on the plain than the Golden Vale. The main settlement is Charleville and the scattered villages in the vicinity, gravitate towards it."

Other LCAs within the study area include;

- LCA 62 The Golden Vale (Moorland Ridge and Broad Undulating Patchwork Middle Valley)' also occupies a small portion of the southeast periphery of the study area.

The Draft Cork Landscape Strategy (2007) identifies 'High Value' landscapes.
Section 14.8.8 states; *"Landscape Character Types which have a very high or high landscape value and high or very high landscape sensitivity and are of county or national importance are considered to be our most valuable landscapes and therefore are designated as High Value Landscapes (HVL), highlighted in green in the Table in Appendix F Landscape Character Assessment attached and shown in Figure 12.8."*

Regarding 'High Value Landscapes' the Draft Cork Landscape Strategy states; *"considerable care will be needed to successfully locate large scale developments without them becoming unduly obtrusive. Therefore, the location, siting and design of large-scale developments within these areas will need careful consideration and any such developments should generally be supported by an assessment including a visual impact assessment which would involve an evaluation of visibility and prominence of the proposed development in its immediate environs and in the wider landscape."*

As can be seen below in **Figure 12.6**, the land to the east of the N20 and closest to the Site is designated as a 'High Value Landscape' (HVL) whereas, without particular distinction or justification, that to the west of the N20 does not have the same HVL designation. In this regard, the N20 is considered the arbitrary boundary between two subtly diverging areas of landscape character. Such boundary threshold zones typically have attributes of both LCAs along with associated robustness and sensitivities.

Relevant Landscape Policies:

- *"Protect the visual and scenic amenities of County Cork's built and natural environment."*
- *"Landscape issues will be an important factor in all land-use proposals, ensuring that a pro-active view of development is undertaken while protecting the environment and heritage generally in line with the principle of sustainability."*
- *"Ensure that new development meets high standards of siting and design."*
- *"Protect skylines and ridgelines from development."*
- *"Discourage proposals necessitating the removal of extensive amounts of trees, hedgerows and historic walls or other distinctive boundary treatments."*

Scenic Designations:

The Cork County Development Plan also contains scenic view designations. Based on a review of the Cork County Development Plan, there is one scenic designation located within the 20km Study Area.

- S13 'Kilfinnane - Shanballymore Road' is located within the southeast periphery of the Study Area, described as *'Local Road from Craig Cross Roads to County Boundary Views of the Ballyhoura Mountains & the Awbeg Valley'.* This scenic route is completely out of ZTV and therefore not deemed relevant to the Project.

Wind Energy Strategy

Section 13.6 of the Cork County Development Plan 2022-2028 covers Onshore Wind Energy within County Cork. Figure 13.3 of the CDP, identifies areas within County Cork, where wind energy developments are 'Acceptable in Principle', 'Open to Consideration' and 'Normally Discouraged' (**Figure 12.7** refers). The closest area to the proposed Project (less than 300m) is situated within an area identified as 'Normally Discouraged' however, it is immediately adjacent to an area where wind energy development is 'Open to Consideration'.

'Normally Discouraged' areas are described as: "*These areas (coastal areas, some areas in North Cork, Cork Harbour, and the Lee Valley) are normally not suitable for commercial wind farm developments due to their overall sensitivity arising from ecological, landscape, amenity, recreational and settlement, considerations."*

Relevant Wind Energy Policies:

- ***Objective ET 13-4: Wind Energy -*** *In order to facilitate increased levels of renewable energy production consistent with national targets on renewable energy and climate*

change mitigation as set out in the National Energy and Climate Plan 2021-2030, the Climate Action Plan 2021, and any updates to these targets, and in accordance with Ministerial Guidelines on Wind Energy Development, the Council will support further development of on-shore wind energy projects including the upgrading, repowering or expansion of existing infrastructure, at appropriate locations within the county in line with the Wind Energy Strategy and objectives detailed in this chapter and other objectives of this plan in relation to climate change, biodiversity, landscape, heritage, water management and environment etc.

- ***Objective ET 13-12: Small Scale Wind Energy Development*** *- Consider proposals relating to the potential for relatively small-scale wind energy developments within urban and industrial areas, and for small community-based proposals outside the key areas that are identified as being appropriate for wind energy development. Community ownership of wind energy projects enables local communities to benefit directly from local wind energy resources being developed in their local areas, ensuring long-term income for rural communities.*
- ***Objective ET 13-13: Other Wind Energy Development*** *- Consider proposals where it can be shown that significant impacts on the following can be avoided:*
  - *Residential amenity particularly in respect of noise, shadow flicker and visual impact;*
  - *Urban areas and Metropolitan/Town Green Belts;*
  - *Sites designated for nature conservation, protected species, and habitats of conservation value;*
  - *Architectural and archaeological heritage: and;*
  - *Visual quality of the landscape and the degree to which impacts are highly visible over wider areas.*

12.3.10 Visual Baseline

Only those parts of the Study Area that potentially afford views of the Project are of interest to this part of the assessment. Therefore, the first part of the visual baseline is establishing a 'Zone of Theoretical Visibility' and subsequently, identifying important visual receptors from which to base the visual impact assessment.

12.3.10.1 Zone of Theoretical Visibility (ZTV)

A computer generated Zone of Theoretical Visibility (ZTV) map has been prepared to illustrate where the Project is potentially visible from. The ZTV map is based solely on terrain data (bare ground visibility), and ignores features such as trees, hedges or buildings, which may screen views. Given the complex vegetation patterns within this landscape, the main

value of this form of ZTV mapping is to determine those parts of the landscape from which the Project will definitely not be visible, due to terrain screening within the 20km Study Area.

The following key points are illustrated by the 'bare-ground' ZTV map (**Figure 12.9** refers):

- As a result of the flat, low-lying landscape that occupies the vicinity of the Project, the majority of the Study Area within 10km, will have comprehensive theoretical visibility of the proposed turbines.
- Towards the south-east quadrant of the Study Area, the Ballyhoura Mountain range screens nearly all views beyond 10km to the south-east. A similar pattern is reflected in the north-west quadrant of the Study Area where the landforms of Knockfeerina Hill (341m AOD) and Corronoher Hill (272m AOD), mitigate nearly all views apart from where low points in the hill range allow views through.
- Towards the wider north-east and south-west of the Study Area beyond approximately 8km, the visibility pattern becomes sporadic/ patchy this is due to a combination of undulating terrain along with the relative height reduction of turbines over distance.
- As a general pattern, visibility tends to be concentrated towards the north-east and south-west periphery of the Study Area. Elevated landforms are typically afforded a greater degree of visibility of the Project. However, these upland areas tend to provide a demarcation between full visibility and no visibility as exhibited in the south-east periphery of the Study Area. Overall, despite the areas in the wider south-east and north-west of the Study Area that are screened by intervening landform, visibility is relatively consistent throughout the Study Area, with comprehensive visibility in all directions for the initial 10km and intermittent visibility in the wider north-east and south-west.
- It is imperative to note that this 'bare-ground' ZTV map is theoretical. The proposed wind turbines become considerably screened at increasing distances by intervening vegetation, resulting in a much lesser degree of actual visibility.

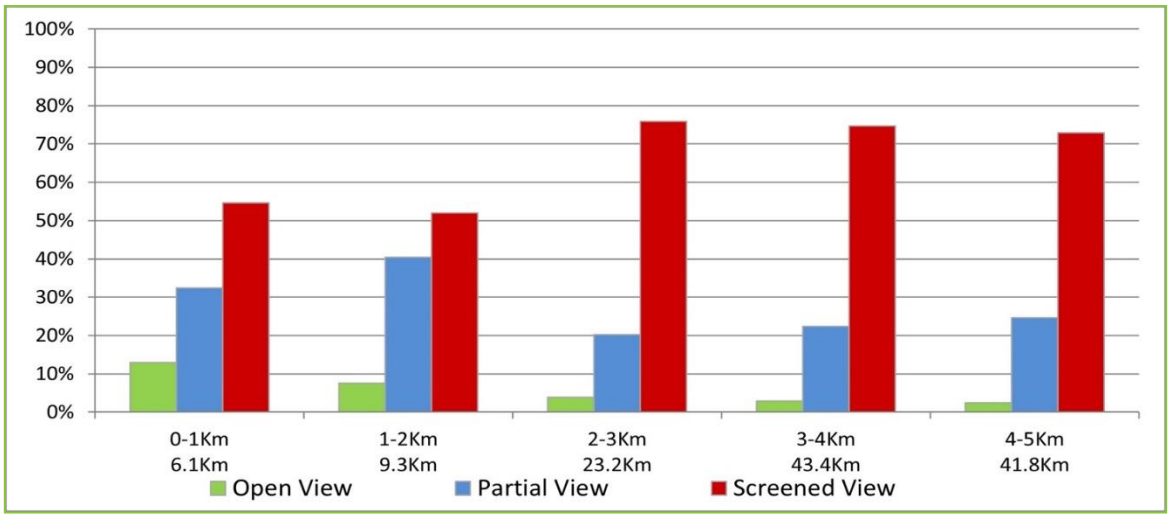
12.3.10.2 Route Screening Analysis

Whilst the standard ZTV map outlines baseline theoretical visibility within the Study Area, it grossly overestimates the actual degree of visibility and does not take existing hedgerows, woodland and large areas of forestry into account, which, in this case will offer a notable degree of screening in the direction of the Project.

Route Screening Analysis (RSA), as its name suggests, considers actual visibility of the proposed wind farm from surrounding roads using current imagery captured in the field, then subsequently reviewed in the context of a digital model of the project. Route Screening

Analysis bridges the gap for the assessor between the computer generated, theoretical visibility modelling (e.g. ZTV maps) and the actual nature of visibility in a given area. In order to get a clearer understanding of visibility within the Central Study Area, , RSA was undertaken for every road within a 5km radius of the proposed turbines using a Digital Surface Model (DSM) and sample points every 25m along each road/waymarked route..

The RSA consists of three visibility scenarios: open visibility; partial visibility; and fully screened. In this instance, 'open visibility' is conservatively judged to occur if the view of a full blade rotation of any one single turbine is afforded. 'Partial visibility' occurs when there is view of less than a full blade rotation of any particular turbine/s occurs.



Graph 12.1: Graph illustrating results of Route Screening Analysis

The RSA map (Error! Reference source not found.) and associated graph (**Graph 12.1**) illustrates a moderate to strong degree of wind farm screening from the N20 national road and local road network within 5km of the Site. The 'Fully Screened' category dominates all of the distance bands including within 1km and 1-2km which is particularly rare for this form of analysis even for lowland agricultural areas. This indicates that immediately beyond the Site, intervening vegetation (predominantly hedgerows and tree lines) serves to restrict views of the turbines and the level of screening increases with distance.

Fully Screened Views

In terms of fully screened views, these fluctuate from 55% to 76% across the distance bands with a notable increase from the 1-2km band to the 2-3km band and then a minor decrease of 2% in the 4-5km band. Screened views are most prevalent in the north-eastern and southernmost areas of the 2-3km radius RSA Study Area. This is narrowly followed by the 3-4km and 4-5km bands. Most notably, the south-western section of the RSA Study Area,

which includes the settlement of Charleville serviced by an array of local and regional roads will be screened nearly entirely from the Project apart from partial visibility experienced along the N20 and glimpse views elsewhere. Similarly, for the settlement of Bruree located to the north in the 2-3km band, the Project will be screened near entirely as a result of the dense intervening vegetation.

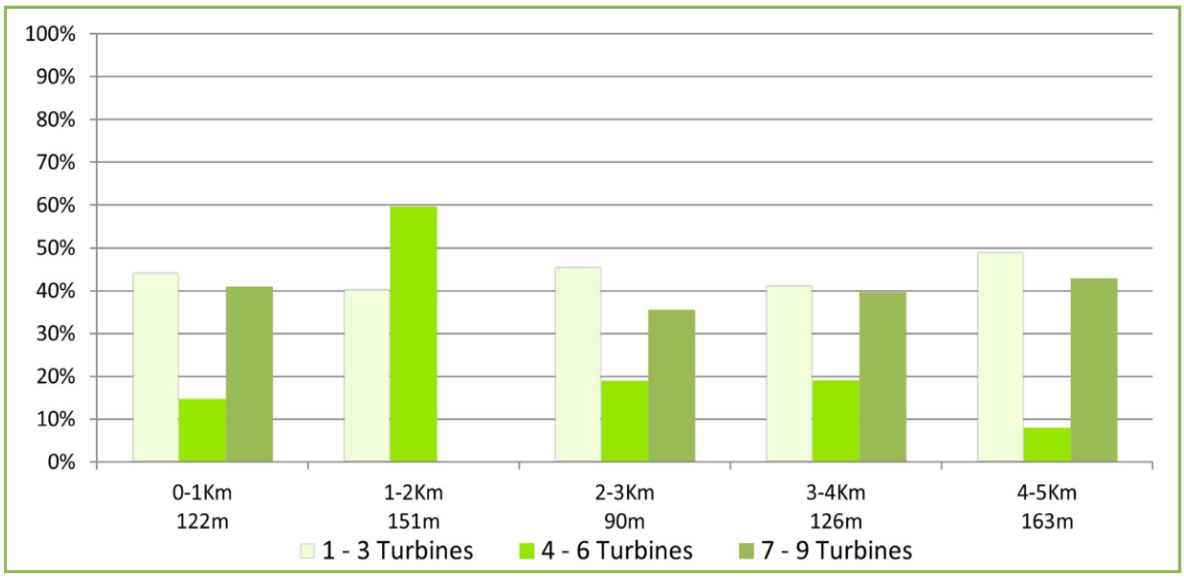
Typically for RSA in Ireland, screened views begin to appear in the outer bands (e.g. 3-4km and 4-5km), however in this instance, due to the dense hedgerows in the immediate surrounds of the Site, screened views notably surpass both 'open views' and 'partial views' from the 0-1km band. This is reflective of the dense vegetation that lines the roadside and hedgerows that contain the field boundaries.

Partial Views

Overall, partial views (less than one full blades set) range from 40% to 20% of road sections, with the outer three distance bands registering similar figures between 20-24%. Partial visibility is at its highest in the second band and equates to 40%. This reflects areas where a higher population of residential dwellings reside and there are subsequently gaps in vegetation allowing partial views of the proposed turbines.

Open Views

As can be seen from **Graph 12.1**, 'open views' have an inverse relationship to screened views, but with slightly less dramatic fluctuation. This ranges from just under 13% of road viewing scenarios within 1km and consistently decreases to 2% out to the 4-5km band. In all instances the amount of open visibility is considerably lower than the partial or screened views. As the methodology used for the RSA requires only a view of the full blade set of one turbine to record an 'open view' of the Project, it is useful to analyse the 'open view' set in more detail to establish how many turbines are actually visible in each instance (see **Figure 12.11** and accompanying graph at Error! Reference source not found.).



Graph 12.2: Graph illustrating RSA results for 'Open Views'

The results shown in Error! Reference source not found. and **Graph 12.2** indicate that most commonly when an 'open view' of the project is afforded, it relates to the blade sets of less than 3 turbines. Indeed, this is the case between 40% and 49% of the time across the five distance bands, with the view of 4-6 turbines occurring between c. 8% and 59% of the time. Within the 1-2km range 'Open views' of 4-6 turbines occur 59% of the time which is a notable increase to the rest of the pattern displayed. However, within the 1-2km range, there is no possibility for visibility of 7-9 turbines i.e. all of the turbines. 'Open views' of 7-9 turbines occurs from between 36% and 42% of the road sections across the various distance bands.

12.3.10.3 Identification of Viewshed Reference Points as a Basis for Assessment

The results of the ZTV analysis provide a basis for the selection of Viewshed Reference Points (VRP's), which are the locations used to study the landscape and visual impact of the proposed wind farm in detail. It is not warranted to include each and every location that provides a view of this Project as this would result in an unwieldy report and make it extremely difficult to draw out the key impacts arising from the project. Instead, a variety of receptor locations was selected that are likely to provide views of the proposed wind farm from different distances, different angles and different contexts. This approach accords with the guidance contained in GLVIA3 and industry best practice.

The visual impact of a proposed Project is assessed using up to 6 categories of receptor type as listed below:

- Key Views (from features of national or international importance);
- Designated Scenic Routes and Views;
- Local Community views;

- Centres of Population;
- Major Routes; and
- Amenity and heritage features.

Where a VRP might have been initially selected for more than one reason it will be assessed according to the primary criterion for which it was chosen. The characteristics of each receptor type vary as does the way in which the view is experienced. These are described below.

Key Views

These VRPs are at features or locations that are significant at the national or even international level, typically in terms of heritage, recreation or tourism. They are locations that attract a significant number of viewers who are likely to be in a reflective or recreational frame of mind, possibly increasing their appreciation of the landscape around them. The location of this receptor type is usually quite specific.

Designated Scenic Routes and Views

Due to their identification in the County Development Plan this type of VRP location represents a general policy consensus on locations of high scenic value within the Study Area. These are commonly elevated, long distance, panoramic views and may or may not be mapped from precise locations. They are more likely to be experienced by static viewers who seek out or stop to take in such vistas.

Local Community Views

This type of VRP represents those people who live and/or work in the locality of the Project, usually within a 5km radius of the Site. Although the VRPs are generally located on local level roads, they also represent similar views that may be available from adjacent houses. The precise location of this VRP type is not critical; however, clear elevated views are preferred, particularly when closely associated with a cluster of houses and representing their primary views. Coverage of a range of viewing angles using several VRPs is necessary in order to sample the spectrum of views that would be available from surrounding dwellings.

Centres of Population

VRPs are selected at centres of population primarily due to the number of viewers that are likely to experience that view. The relevance of the settlement is based on the significance of its size in terms of the Study Area or its proximity to the site. The VRP may be selected

from any location within the public domain that provides a clear view either within the settlement or in close proximity to it.

Major Routes

These include national and regional level roads and rail lines and are relevant VRP locations due to the number of viewers potentially impacted by the Project. The precise location of this category of VRP is not critical and might be chosen anywhere along the route that provides clear views towards the Site, but with a preference towards close and/or elevated views. Major routes typically provide views experienced whilst in motion and these may be fleeting and intermittent depending on screening by intervening vegetation or buildings.

Tourism, Recreational and Heritage Features

These views are often one and the same given that heritage locations can be important tourist and visitor destinations and amenity areas or walking routes are commonly designed to incorporate heritage features. Such locations or routes tend to be sensitive to development within the landscape as viewers are likely to be in a receptive frame of mind with respect to the landscape around them. The sensitivity of this type of visual receptor is strongly related to the number of visitors they might attract and, in the case of heritage features, whether these are discerning experts or lay tourists. Sensitivity is also heavily influenced by the experience of the viewer at a heritage site as distinct from simply the view of it. This is a complex phenomenon that is likely to be different for every site. Experiential considerations might relate to the sequential approach to a castle from the car park or the view from a hilltop monument reached after a demanding climb. It might also relate to the influence of contemporary features within a key view and whether these detract from a sense of past times. It must also be noted that the sensitivity rating attributed to a heritage feature for the purposes of a landscape and visual assessment is not synonymous with its importance to the Archaeological or Architectural Heritage record.

The Viewshed Reference Points selected in this instance are set out in **Table 12.7** below and shown on the VP selection Map in the Photomontage Booklet.

Table 12.7: Outline description of selected Viewshed Reference Points

VRP No.	Location	Distance to Nearest Turbine(km)	Representative of	Direction of view
VP1	Northern outskirts of Charleville	2.7km	Local Community Views, Centre of Population	N

VRP No.	Location	Distance to Nearest Turbine(km)	Representative of	Direction of view
VP2	Residential elevated local road by Ballyclough Upper	3.3km	Local Community Views, Centre of Population	SE
VP3	Bruree	3km	Centre of Population, Local Community Views	SW
VP4	N20 immediately west of site	0.7km	Major Route, Local Community Views	E
VP5	Local road at Ballynagoul (north)	0.6km	Local Community Views	W
VP6	Local road at Ballynagoul (south)	0.8km	Local Community Views	W
VP7	N20 southwest of centre of site	1km	Major Route, Local Community Views	NE
VP8	Cemetery on southern outskirts of Charleville	3.7km	Heritage/ Amenity Feature, Local Community Views, Centre of Population	N
VP9	Effin	4.8km	Centre of Population, Local Community Views,	NW
VP10	Local road west of site	4.3km	Local community views, Centre of Population	E
VP11	Kilmallock GAA Club	6.7km	Centre of Population,	W
VP12	Newtownshandrum	8km	Centre of Population	NE
VP13	Ballyagran	7.2km	Centre of Population,	W
VP14	Charleville Golf Course	5.4km	Centre of Population	NE
VP15	Ballyhoura Mountains	9.2km	Recreational Feature,	NW
VP16	Athlacca	6.6km	Centre of population, Heritage Feature	SW
VP17	N20 at O'Rourke's Crossing	3.2km	Major route, Local Community Views	S
VP18	Residences at Knockfeerina	11.7km	Local community views, Centre of Population	SE

VRP No.	Location	Distance to Nearest Turbine(km)	Representative of	Direction of view
VP19	Co. Limerick designated scenic view	13.5km	Centre of Population, Designated Scenic route	S
VP20	Adare Manor and Golf Course	19km	Centre of Population, Heritage and Amenity Feature	SE
VP21	Lough Gur viewpoint	17km	Designated Scenic route, Heritage and Amenity Feature	SW
VP22	Bruff	12.5km	Centre of Population,	SW
VP23	Hospital	18km	Centre of Population	SW
VP24	Slievereagh Hill at cycle hub and loop walk route	15km	Recreational Feature	W
VP25	Churchtown	13.3km	Centre of Population	NE
VP26	Dromcollogher	16km	Centre of Population	NE
VP27	R515 west of Garrynderk North	2.4km	Centre of Population, Local Community Views	N
VP28	R515 at Bresheen South	4.28km	Centre of Population, Local Community Views	NW

12.4 ASSESSMENT OF POTENTIAL EFFECTS

12.4.1 Do Nothing Effects

In this instance the do-nothing effect would be that the receiving landscape stays in the same or similar condition as it currently is, managed as pastoral farmland.

12.4.2 Landscape Impacts

Landscape impacts are assessed on the basis landscape sensitivity weighed against the magnitude of physical landscape effects within the Site and effects on landscape character within the wider landscape setting. This wider setting is considered in respect of the immediately surrounding landscape (<5 km) as well as the broader scale of the Study Area (5-20km).

12.4.2.1 Landscape Character, Value and Sensitivity

Central Study Area (<5km)

Landscape value and sensitivity are considered in relation to a number of factors highlighted in the Guidelines for Landscape and Visual Impact Assessment 2013, which are set out below and discussed relative to the Site and wider Study Area.

The Site in question forms a small part of a low-lying, ostensibly flat landscape used primarily for agricultural farmland. It is characterised by a series of broad pastoral fields screened by a varied network of mature vegetation. With regard to the landscape values associated with the Site, the presence of several rivers in the immediate vicinity contributes to the naturalistic values of the central Study Area. However, these river corridors are heavily enclosed by riparian and hedgerow planting and subsequently not readily visible to the casual observer. Water and road infrastructure is a feature of the immediate Study Area, including the wastewater treatment plant to the south and the N20 national road directly west of the Site. These activities all illustrate a working landscape with a high degree of human modification. Thus, the Site in question and its immediate surroundings represents a typical rural landscape principally valued more for productive and subsistence reasons rather than susceptible scenic values.

In the wider landscape context, a low to gently rolling terrain occupies the majority of the Study Area. Towards the south-east of the Study Area, the landform is more undulating as it encounters the foothills of the Ballyhoura Mountains. The Ballyhoura Mountains host an array of walking and mountain trails as well as heritage sites, creating a popular destination

for visitors and recreationalists. Other distinctive features within the wider Study Area include Lough Gur in the north-east periphery of the Study Area celebrated for its scenic and archaeological values, Tory Hill to the north and the Adare Manor Golf Course and luxury resort to the north-west. However, these are all located a notable distance from the Project and exert little influence on the landscape character of the Site or central Study Area. The majority of the central Study Area represents a relatively unremarkable lowland farming area.

In terms of scenic amenity, a number of designated scenic routes are included within the Limerick County Development Plan, particularly towards the northern part of the Study Area oriented around Tory Hill and Lough Gur. Views from these designated routes tend to focus on the landscape of the immediate setting, as opposed to offering expansive views in the direction of the Site. Similarly, there is a locally signposted viewing point from an elevated location at the northeast of Lough Gur which is predominately focussed on the lough and its near surrounds.

In terms of landscape designations, an extensive area of north Cork beginning 300m south-east of the Site is designated a 'High Value' landscape (HVL) as per the Cork County Development Plan. This is a function of the 'LCT5 – Fertile Plain with Moorland Ridge' being designated both a 'Very High' landscape value and 'Very High' landscape sensitivity. However, this LCT is only designated the median 'County' level 'Landscape Significance' as per the same guidelines indicating that other LCT's of greater significance occur within County Cork. Only the eastern half of 'LCT5' is designated as a 'High Value' landscape with the western half not having any designation despite being part of the same LCT with similar appearance and values. Indeed, it is likely the influence of the Ballyhoura range further to the south-east, that has seen the eastern portion of LCT5 assigned a HVL zoning and the western portion not. It should also be noted in this context that the Ballyhoura range already hosts an extensive wind farm, which contributes to its salient landscape character and has not prevented this landscape from being designated as a HVL. Furthermore, the 'High Value Landscape' designation encompasses a large portion of northeast Cork. Whilst some aspects of this area encompass degrees of sensitivity, such as part of the 'Golden Vale' fertile pastures, and the southern slopes of the Ballyhoura and Galtee Mountains, the vast majority of the Study Area reflects typical working rural land uses with notable levels of anthropogenic activity present. The landscape values that represent this designated, 'High Value Landscape' do not resonate with the immediate Study Area, which depicts a working rural landscape.

On balance of the reasons outlined above, the landscape sensitivity of the central Study Area is deemed to be **Medium** due to the presence of rivers adding a degree of natural amenity and in recognition of the proximity to 'High Value Landscape' zoning a short distance to the south, balanced against its more typical, productive rural qualities. The farmed and settled lowland landscape that occupies much of the wider Study Area is considered to be of a slightly lesser sensitivity – Medium-low, whilst the Ballyhoura mountains to the south-east and Lough Gur and Tory Hill to the north of the Study Area are deemed to be of a higher sensitivity - High-medium.

12.4.2.2 Magnitude of Landscape Effect

The physical landscape as well as the character of the Project and its central Study Area (<5km) is affected by the proposed wind turbines as well as ancillary development such as Access Tracks, areas of hard standing for the turbines, borrow pits, grid connection and the substation compounds. By contrast, for the wider landscape of the Study Area, landscape impacts relate exclusively to the influence of the proposed turbines on landscape character. The aspects of the Project that are likely to have an impact on the physical landscape and landscape character are described in **Chapter 2: Project Description** with construction processes described in the Construction and Environmental Management Plan (CEMP) at **Appendix 2.1**.

Construction Stage

It is considered that the Project will have a modest physical impact on the landscape within the Site as none of the Project features have a large 'footprint' and land disturbance/vegetation clearing will be relatively limited. The topography and land cover of the Site will remain largely unaltered with construction being limited to Access Tracks, turbine hardstands, the Substation, temporary construction compounds and Met Mast. Excavations will tie into existing ground levels and will be the minimum required for efficient working. Any temporary excavations or stockpiles of material will be re-graded to marry into existing Site levels and reseeded appropriately in conjunction with advice from the project ecologist.

The finalised internal Access Track layout has been designed to avoid environmental constraints, and every effort has been made to minimise the length of necessary roadway by utilising and upgrading the existing site Access Track. Furthermore, the road layout has been designed to follow the natural contours of the land wherever possible reducing potential for areas of excessive 'cut and fill'. There will be an intensity of construction stage activity associated with the Access Tracks and turbine hardstands consisting of the

movement of heavy machinery and materials, but this will be temporary/short term in duration and transient in location. The construction stage effects on landscape character from these activities will be minor.

There will be one 110kV on-site Substation constructed to collect the generated power from the Project before connecting to the existing overhead 110kV line between Charleville and Killonan substations via a 'loop in' Grid Connection on-site.

All internal site cabling will be underground and will follow site Access Tracks without the need for trenching through open ground. The land cover of the Site will only be interrupted as necessary to build the structures of the proposed wind farm and to provide access. Impacts from land disturbance and vegetation loss at the Site are considered to be modest in the context of this agricultural farmland landscape setting where rural tracking is commonplace.

The Grid Connection cabling will run from the Substation to the existing 110kV OHL that passes through the Site. No overhead lines are required for the connection, however two towers are proposed to make the loop in connection to the Site. All connection works will be contained within the Site. Connection works will involve the installation of ducting, joint bays, drainage and ancillary infrastructure. This will require delivery of plant and construction materials, followed by ground excavation laying of cables and subsequent reinstatement of trenches, and will result in minor and very localised construction stage landscape effects akin to typical road works.

Site activity will be at its greatest during the construction phase due to the operation of machinery on site and movement of heavy vehicles to and from Site. This phase will have a more significant impact on the character of the Site than the operational phase, but it is a 'short-term' impact that will cease as soon as the Project is constructed and becomes operational approximately 18 months from the commencement of construction).

There will be some long term/permanent effects on the physical landscape in the form of turbine foundations and hardstands, Access Tracks and a Substation, but only the Substation will remain in perpetuity as part of the national grid network. It is likely, that with the exception of some residually useful Access Tracks and underground foundations, all other visible development features will be removed from the Site and it will be reinstated / restored to the prevailing land cover. Thus, the construction stage landscape effects of the Project are largely reversible.

There will be some construction stage effects on landscape character generated by the intensity of construction activities (workers and heavy machinery) as well as areas of bare-ground and stockpiling of materials as identified in the Construction and Environmental Management Plan (CEMP). Such effects will be temporary/short term in duration. Overall, construction stage landscape effects are considered to be no greater than **High-medium** magnitude within and around the Site (i.e. within 1km) reducing to Medium for the remainder of the central Study Area and diminishing further with distance thereafter and only once the turbines rise into view.

Operational Stage Effects on Landscape Character

For most commercial wind energy developments, the greatest potential for landscape impacts to occur is as a result of the change in character of the immediate area due to the introduction of tall structures with moving components. Thus, wind turbines that may not have previously been a characteristic feature of the area introduce a new defining element of that landscape character. In this instance, the central study area currently reflects a productive lowland rural landscape. The proposed wind farm introduces a new utilitarian activity into what is a predominately rural area thereby substantially increasing the scale and intensity of built development within the immediate context of the Site. However, in this instance, numerous wind farms are located within the wider Study Area in the Ballyhoura Mountains and a few smaller wind farms and single turbines located in the wider western and eastern periphery. Consequently, wind energy development can be considered a characteristic feature of the wider Study Area, but the Project represents its introduction as a new activity within the local landscape.

In terms of scale and function, the Project is well assimilated within the context of the central Study Area. This is due to the broad low-lying scale of the landform, landscape elements and land use patterns. These attributes prevent the height and extent of the proposed wind farm causing the type of scale conflict that can occur in more intricate landscape areas. Although the Project represents a stronger human presence and level of built development than currently exists on the Site, it will not detract significantly from the productive rural character of this lowland landscape.

It is important to note that in terms of duration, the Turbines represent a long term, but not permanent impact on the landscape and is predominantly reversible. The lifespan of the wind farm is 35 years, after which time it will be dismantled and the landscape reinstated to prevailing conditions. Within 2-3 years of decommissioning there will be little evidence that a wind farm ever existed on the Site.

The decommissioning phase will have similar temporary impacts as the construction phase with the movement of large turbine components away from the Site. There may be a minor loss of roadside and trackside vegetation that has grown during the operational phase of the Project, but this can be reinstated upon completion of decommissioning. Areas of hard standing that are of no further use will be reinstated and reseeded to blend with the prevailing surrounding land cover of the time. It is expected that the decommissioning phase would be completed within a period of approximately 3-6 months.

In summary, there will be physical impacts on the land cover of the Site as result of the Project during the operational phase, but these will be relatively minor in the context of this working rural landscape that comprises examples of existing wind energy development and areas of commercial conifer forest. The scale of the Project will be well assimilated within its landscape context without undue conflicts of scale with underlying landform and land use patterns. For these reasons, the magnitude of the landscape impact is deemed to be **High-medium** within the Site and its immediate environs (c.1km) reducing to **Medium** for the remainder of the Central Study Area. The quality of the landscape effects is deemed **Adverse**. Beyond 5km from the Site, the magnitude of landscape impact is deemed to reduce to **Low** and **Negligible** at increasing distances as the wind farm becomes a proportionately smaller and integrated component of the overall landscape fabric.

12.4.2.3 Significance of Potential Landscape Effects

The significance of landscape impacts is a function of landscape sensitivity weighed against the magnitude of landscape impact. This is derived from the significance matrix (**Table 0.4**) used in combination with professional judgement.

Based on a Medium sensitivity judgement and a High-medium magnitude of construction stage landscape impact, the significance of impact is considered to be **Substantial-moderate / Adverse / Short-term** within and immediately around the Site during construction, but reducing quickly with distance and broader context.

Based on a Medium sensitivity judgement and a High-medium / Medium magnitude of operational stage landscape impact, the localised significance of impact is considered to be **Substantial-moderate / Adverse / Long-term** (permanent for substation) within and immediately around the Site. Thereafter, significance will reduce to Moderate and Slight at increasing distances as the Project becomes a progressively smaller component of the wider landscape fabric even in the context of higher sensitivity landscape units/features such as Lough Gur and Ballyhoura Mountains in the wider periphery of the Study Area.

For clarity, none of the effects outlined above represents a significant effect in EIA terms.

12.4.3 Residual Visual Effects

A proportional emphasis for the assessment of visual effects is placed on the long-term operational phase effects of the Project rather than the temporary/short term construction phase effects. Both phases are assessed in sequence below.

12.4.3.1 Construction Stage Visual Effects

During construction, the main visual impacts will arise from frequent heavy vehicle movements and worker vehicles travelling to and from the Site and using the Site entrances. There will be construction machinery on Site, which may rise above intervening vegetation and buildings. Some of the most notable construction stage visual impacts will result from the erection of the proposed turbines using tower cranes. There will be stockpiles of stripped topsoil as well as construction materials awaiting use. However, a large part of this short-term activity within the Site will remain screened from view by the hedgerows and mature woodland patches that surround the Site and its immediate landscape context. Furthermore, construction-related activity is short-term in nature and will cease once the Project becomes fully operational.

For these reasons, the magnitude of visual impact at the construction stage is deemed to be no greater than High-medium at the nearest surrounding receptors, however, this reduces swiftly at greater distances from the Site, especially within the wider Study Area, where the magnitude of visual impact is considered to be no greater than Low. Combined with the predominantly Medium-low sensitivity for receptors within the immediate Study Area (<1-2km from the Site), the significance of visual effect will be not greater than **Moderate** and of an **Adverse** quality. Thereafter, the significance of effect will reduce to Moderate-Slight throughout the central Study Area and Slight and Imperceptible at increasing distances within the wider Study Area as the Project becomes a progressively smaller component in the afforded view. Thus, it is not considered that the Project will generate significant visual effects at the construction stage.

12.4.3.2 Operational Stage Visual Effects

In the interests of brevity and so that this chapter remains focussed on the outcome of the visual assessment (rather than a full documentation of it), the visual impact assessment at each of the 28 selected representative viewpoint locations has been placed into **Appendix 12.1**. This section should be read in conjunction with both **Appendix 12.1** and the associated photomontage set contained in a separate booklet accompanying the EIAR. A

summary table is provided below, which collates the assessment of visual impacts (**Table 12.** below). A discussion of the results is provided thereafter.

Table 12.8: Summary of Visual Impact Assessment at Representative Viewpoint Locations (Appendix 12.1 and **Figure 12.14)**

Visual Impact				
VP No.	**Distance to nearest turbine (km)**	**Visual Receptor Sensitivity**	**Magnitude of Visual Impact**	**Visual Impact Significance**
VP1	2.7	Medium	Medium-low	**Moderate / Adverse/ Long Term**
VP2	3.3	Medium-low	Medium	**Moderate-Slight / Adverse/ Long Term**
VP3	3.0	Medium-low	Medium	**Moderate-slight / Adverse/ Long Term**
VP4	0.8	Medium-low	Medium-low	**Moderate-slight/ Adverse/ Long Term**
VP5	0.6	Medium-low	High	**Substantial-moderate/ Adverse / Long Term**
VP6	0.8	Medium-low	High-medium	**Moderate/ Adverse / Long Term**
VP7	1	Medium-low	High	**Substantial-moderate/ Adverse / Long Term**
VP8	3.8	Medium	Medium-low	**Moderate-slight / Adverse/ Long Term**
VP9	4.9	Medium-low	Negligible	**Imperceptible/ Neutral/ Long Term**
VP10	4.2	Medium-low	Low-negligible	**Slight / Adverse / Long Term**
VP11	6.6	Medium-low	Low-negligible	**Slight / Adverse / Long Term**
VP12	8.1	Medium-low	Negligible	**Imperceptible / Neutral / Long Term**
VP13	7.2	Medium-low	Negligible	**Imperceptible / Neutral / Long Term**
VP14	5.5	Medium-low	Negligible	**Imperceptible / Neutral / Long Term**
VP15	9.3	Medium	Low	**Slight / Adverse /**

Visual Impact				
				Long Term
VP16	6.6	Medium-low	Negligible	**Imperceptible/ Neutral/ Long Term**
VP17	3.2	Medium-low	Low	**Slight/ Adverse/ Long Term**
VP18	11.8	Medium	Low-negligible	**Slight / Adverse-Neutral/ Long Term**
VP19	13.5	Medium	Negligible	**Imperceptible/ Neutral/ Long Term**
VP20	19.2	Medium	Negligible	**Imperceptible/ Neutral/ Long Term**
VP21	17.4	High	Low-negligible	**Slight / Adverse / Long Term**
VP22	12.4	Medium-low	Negligible	**Imperceptible/ Neutral/ Long Term**
VP23	18.2	Medium-low	Negligible	**Imperceptible/ Neutral/ Long Term**
VP24	15.4	High-medium	Low-negligible	**Slight / Adverse / Long Term**
VP25	13.4	Medium-low	Negligible	**Imperceptible/ Neutral/ Long Term**
VP26	16.1	Medium-low	Negligible	**Imperceptible/ Neutral/ Long Term**
VP27	2.4	Medium-low	Low	**Slight / Adverse / Long Term**
VP28	4.3	Medium-low	Low	**Slight / Adverse / Long Term**

12.4.3.3 Visual Impacts on Designated Views

As identified in section 12.3.9.2, there are two distant designated scenic routes (around Tory Hill and Lough Gur – represented by VP19 and VP21 herein) identified within the Limerick County Development Plan which is considered relevant to the Project and even these are intended for views in the near distance over Tory Hill and Lough Gur respectively. VP21 affords vast elevated views towards the Site in the far distance beyond the more engaging foreground of Lough Gur fringed by a high degree of mature vegetation. Although this receptor is considered to have a High degree of receptor sensitivity due to the scenic, heritage and naturalistic qualities, the turbines are a distant background feature of the plains and the overall significance is deemed to be Slight. With regard to VP19, the turbines are

screened entirely by intervening vegetation and therefore have an overall significance of Negligible (by default).

12.4.3.4 Visual Impacts on Amenity and Heritage Features

There were four viewpoints principally selected because they represent amenity and heritage features. These included the Adare Manor and Golf Course and Lough Gur and the various archaeological features associated with the vicinity (represented by VP20, and VP21 respectively with VP21 described above in the context of designated scenic views). VP20 was assigned a Medium sensitivity as the particular location in which the viewpoint was recorded is from a carpark as opposed to from the manor itself.

The other two amenity and heritage receptors were included as they represent popular walking and cycling trails. VP15 which represents the Ballinaboola Loop in the Ballyhoura Mountains affords a vast panoramic view of the plains beneath distant mountains and although the view is not designated within the CDP, it is an attractive view with vast scenic qualities. VP24 was selected as a representation of the Slievereagh Hill cycle hub and loop walk route in the eastern periphery of the Study Area. Both VP15 and VP24 afford broad elevated views and are each assigned Medium sensitivity.

The highest significance of visual impact (Moderate-slight) occurred at VP21, followed by 'Slight' at VP15. The significance of effect at VP20 and VP24 was deemed Imperceptible and Slight-imperceptible respectively – the first due to screening and the second due to distance.

12.4.3.5 Visual Impacts on Local Community Views

Local Community views are considered to be those experienced by people who live, work and move around the area within approximately 5km of the Site. These are generally the people that are most likely to have their visual amenity affected by a wind energy proposal due to proximity to the turbines, a greater potential to view turbines in various directions, or having turbines as a familiar feature of their daily views.

In this instance 13 of the 28 viewpoints selected for the visual impact assessment are contained within 5km of the Site. These include: VP1, VP2, VP3, VP4, VP5, VP6 VP7, VP8, VP9, VP10, VP17, VP27 and VP28. It is important to note that many views selected to represent local community receptors were also selected to represent other receptor types such as Centres of Population, Major Routes and Amenity/heritage features. The sensitivity of these views ranges between Medium-low to Medium, with the higher sensitivity

associated with a local cemetery. Those receptors identified with a 'medium-low' sensitivity are more typical views influenced by the surrounding working landscape, such as broad areas of pastoral farmland or located along busy road corridors.

The significance of visual effects ranged between 'Substantial-moderate' to 'Imperceptible', with the highest impacts generally related to those receptors located nearest to the Project that have the potential for views of the turbines at a prominent scale. Two viewpoints were classified with a 'Substantial-moderate' significance of visual effect including VP5 and VP7, whilst VP6 was assessed to incur a Moderate effect. Viewpoint VP5 represents the closest views of the proposed turbines from the adjacent local road to the east. At this location, the turbines are seen at a prominent scale from relatively close range. The turbines are seen to emerge out of the pastoral field to the west in a context of typical lowland vegetation. From this aspect, the turbines present with a minor degree of overlap between the turbines to the north. However, the main consideration is the introduction of tall moving structures into a typical rural landscape, thereby substantially increasing the scale and intensity of built development.

VP8 presents a typical view of the Project amongst a context of several industrial buildings, but with the main difference being the higher receptor sensitivity (Medium) of this local cemetery relative to the Medium-low receptor sensitivity attributed to more typical local rural views / viewers. It is considered that the proposed turbines will be a prominent and distinctive feature in the near distance for visitors to the cemetery, but are viewed in the context of other industrial activities which are more visually dominant in this setting. Although this will increase the intensity of built development in this view, it will not unduly detract from the foreground setting and is deemed to be a visual effect of Moderate-slight significance.

At all of the remaining VP locations within the Local Community set, the significance of effect is Moderate-slight or lower.

12.4.3.6 Visual Impacts on Centres of Population

There are several notable settlements within the Study Area including Charleville, which is located 2.5km from the nearest turbine represented by VP1 and VP8 (already covered under heritage and amenity features). VP1 represents a slightly elevated residential area at the outskirts of Charleville. From here the turbines present at a prominent scale in the near-middle distance in a legible and compatible manner, but representing a considerable uplift

in the scale and intensity of utilitarian-built development, resulting in a 'Moderate' significance of impact.

The settlement of Bruree, located 2.5km north-east, is broadly represented by VP3 and has potential to experience partial views of the turbines resulting in a worst-case scenario of 'Moderate-slight' significance of impact. However, it is noted that VP3 affords an open view across a GAA Pitch when in reality the proposed Project will be screened to the vast majority of the settlement due to a succession of intervening built elements and vegetation.
Effin (represented by VP9) is a small village located 5km south-east, however due to intervening screening, the visual impact significance is deemed to be Imperceptible.

12.4.3.7 Visual Impacts on Major Routes

The nearest and most impacted major route within the Study Area is the N20 national secondary road, which is represented by three viewpoints herein (VP7, VP4 and VP17). Viewpoint VP4 is the closest to the proposed turbines, but due to intervening screening, only three of the proposed turbines will be partially visible from here in a context that readily assimilates them in terms of scale and function. Consequently, the significance of visual impact was judged to be 'Slight'. VP7 represents a view at a distance of just 1km from the nearest turbine. Here the turbines present prominently with eight turbines visible and one screened by intervening vegetation. This results in a Substantial-moderate significance of effect, which is equivalent to the highest effect assessed for any receptors in this study. A fleeting view is afforded from VP17, where the blade sets of the proposed turbines will be partially visible within and above skyline vegetation. The significance of the effect is therefore deemed to be Slight. For the reasons outlined above it is not considered that there will be any significant visual impacts from Major routes. The highest significance being Substantial-moderate at VP7.

12.4.3.8 Summary of Visual Impacts

Based on the visual impact assessment the most notable visual impacts occur at VP5, VP6, VP7 which are representative of local community views and all located within 1km of the nearest turbine. These account for all three of the 'Substantial-moderate' visual impact significance classifications and principally relate to their close proximity to the Project. Nonetheless, in all instances where the proposed turbines are viewed at a close distance, they do not present with any strong sense of overbearing, nor do they appear over-scaled or inappropriate in these extensive lowland plains, which represent a typical agricultural working landscape.

With regard to some of the more sensitive parts of the wider Study Area, such as Lough Gur to the northeast and the Ballyhoura Mountains to the south that afford vast views over the lowlands - whilst the turbines will be visible in some instances, due to the considerable distances from the turbines, there is a strong contextual separation between these elevated receptors and the proposed turbines within the distant agricultural lowlands. Where visible, the proposed turbines form a small component of the diverse tapestry of managed and modified land that cloaks the plains and gently rolling hills of the Site and its surrounds.

On balance of the reasons outlined above, it is not considered that the proposed Garrane Green Energy Project will result in significant visual impacts at any surrounding receptors.

12.4.4 Cumulative Baseline

There are seven operational wind farms within the Study Area, one wind farm currently in-planning and another due to enter planning imminently. These include:

- Slievereagh 2 (Operational / 2 turbines)
- Buttevant (Operational / 6 turbines)
- Castlepook (Operational / 14 turbines)
- Kilmeedy (Operational / 2 turbines)
- Kilberrihert (Operational / 3 turbines)
- Boolard (Consented/ 2 turbines)
- Rathnacally (Operational / 2 turbines)
- Tullacondra (Consented/ 9 turbines)
- Ballinlee (Due to enter Planning / 17 turbines)

12.4.5 Cumulative Effects

Cumulative ZTV maps are provided in **Figure 12.12** and **Figure 12.13**. Two versions have been produced to help illustrate the difference between an existing / imminent cumulative baseline which includes the Project and all existing and under-construction turbines, and a potential future cumulative baseline, which is extended to include those schemes that are permitted, in-planning or pre-planning where information is within the public domain.

A colour grading has been employed to illustrate the following types of theoretical visibility:

- Blue wash: indicates parts of the Study Area where theoretical visibility of the proposed turbines only is possible, and they will not be seen in combination with existing (and/or 'in-planning') turbines in the landscape;
- Pink wash: indicates parts of the Study Area where the proposed turbines have the potential to be seen with existing wind farms;

- Green wash: indicates parts of the Study Area where the proposed turbines would not be visible, but existing (and/or 'in-construction') wind turbines would be.

The cumulative ZTV map shows the potential cumulative visibility between the proposed turbines and all other existing and consented developments within the 20km study area. At present, there are seven existing (operational) wind farm developments. The nearest existing wind farm to the proposed development is the existing Rathnacally development comprising of two turbines c. 8km to the south of site. Whilst wind energy development is a familiar feature that can be viewed from the central study area, it is important to note that the majority of existing and consented developments within the study area are located well outside of the Central Study Area. These are predominately in the upland areas of the outer southern portions of the Study Area, although there is one existing wind farm in the wider eastern periphery and another in the wider western periphery.

The existing and permitted wind farms within the study area are highlighted on the cumulative ZTV map (based on a bare-ground scenario – (see **Figure 12.12** and **Figure 12.13**), which identifies that only 55.8% of the study area has the potential to afford visibility of existing or consented developments in addition to the proposed development. Indeed, the high degree of existing turbine visibility is evident on the cumulative ZTV map, which shows that the proposed development only has the potential to be viewed in isolation within approximately 0.4% of the study area (a series of small isolated pockets to the southeast of the proposed development). Only 6.2% of the entire study area has the potential to afford no visibility of existing, consented or the proposed development, which further reflects the fact that existing wind turbines are a familiar feature of this landscape context.

As mentioned above, all of the existing and consented developments are located outside of the Central Study Area with a notable offset from the Proposed development. The most notable potential for cumulative visual effects relates to Rathnacally Wind Farm c.8km to the south. However, this is only a two turbine scheme and therefore, it is highly unlikely for this to trigger any significant cumulative effects. Indeed. aside from Rathnacally none of the other schemes share the common cumulative visibility pattern with the proposed development (purple wash) indicating that they have little or no potential for intervisibility even in a bare-ground scenario.

The Route Screening Analysis (RSA) undertaken for the proposed development indicates that there is little visibility of it from within the lowlands context beyond 2km. This substantially precludes intervisibility between these two lowlands developments. It should

also be noted that Macro Works has undertaken RSA for the pre-planning Balinlee Wind Farm and it is almost as screened as the proposed development within its surrounding vegetated lowland context. This serves to further reinforce the very low levels of intervisibility between the two developments. Indeed, it is likely that only from elevated terrain such as that within the outer southern quarters of the study area are both of these developments potentially visible at the same time. In such circumstances they will be seen with a considerable separation distance, at broadly disparate viewing angles or with one as a distant background feature relative to the other.

The implications of the inclusion of the Ballinlee Wind Farm and Tullacondra Wind Farms were analysed and the following was noted:

- 4.2% of the Study Area has no theoretical visibility of any turbines (a reduction of 2% of the Study Area);
- 0.1% of the Study Area offers potential for the proposed turbines to be viewed in isolation (a reduction of 0.3%);
- 39.7% of the Study Area offers theoretical potential for other wind turbines to be visible in the absence of the proposed development (a reduction of 0.1%); and
- 56% of the Study Area has a theoretical potential for visibility of both the proposed turbines and the other existing turbines (an increase of 0.2%).

These results indicate the negligible difference that the addition of the Ballinlee Wind Farm and Tullacondra Wind Farms would have on the extent of the Study Area that would be theoretically influenced.

In terms of cumulative landscape effects, whilst the proposed turbines will have a similar height to the Ballinlee and Tullacondra turbines, there will be no perception of scale conflict. Given the distance between the Proposed development and these wind farms which are currently in planning, all turbines will be interpreted as individual wind farms.

In a potential future cumulative scenario in which all other turbines that have been permitted or are subject to a valid planning application are present, it is recognised that the landscape will be subject to a greater number of turbines, and that in locations within the southern parts of the Study Area in particular, there may be some sense of proliferation with landscape character more heavily informed by wind energy.

In a potential future cumulative scenario in which all other turbines that have been permitted or are subject to a valid planning application are present, views will invariably be more heavily influenced by wind energy development. Whilst there will be locations where

combined visibility will be possible, and the proposed turbines will be visible sequentially, the addition of 9 turbines is not considered to have any significant effect on views in this cumulative scenario.

On balance of the reasons above, it is considered that the proposed Garrane Wind Farm development will contribute to a cumulative landscape and visual impact in the order of **Low** in respect of the current cumulative scenario. Despite the considerable number of existing wind farm developments within the study area, the proposed development is principally viewed distinctly separate to these.

12.5 MITIGATION MEASURES

Outside of those landscape and visual mitigation measures that formed part of the iterative design process of this Project, which are embedded in the assessed Project, other specific landscape and visual mitigation measures are not considered necessary / likely to be effective. Thus, the impacts assessed in Section 12.4 are the equivalent of residual impacts in this instance.

12.5.1 Decommissioning Phase

The decommissioning phase will see a similar nature of effects to the construction stage due to the movement of heavy machinery within the Site and to and from the Site removing turbine components. However, such effects will be temporary in duration and decreasing in scale as turbines are removed from view and the landscape is substantially reinstated to former uses. As with construction stage impacts, decommissioning stage effects are not considered to be significant.

12.6 SUMMARY OF SIGNIFICANT EFFECTS

It is not considered that there will be any significant effects on landscape and visual amenity arising from the proposed Garrane Green Energy Project.

12.7 STATEMENT OF SIGNIFICANCE

Based on the landscape, visual and cumulative assessment contained herein, it is considered that there will not be any significant effects arising from the proposed Garrane Green Energy Project.