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ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR) FOR THE PROPOSED DERRYNADARRAGH WIND FARM, CO. KILDARE AND CO. OFFALY

Volume II - MAIN EIAR

CHAPTER 16 - LANDSCAPE AND VISUAL AMENITY

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16. LANDSCAPE AND VISUAL IMPACT

16.1 Introduction

This chapter examines the potential effects of the proposed Derrynadarragh Wind Farm, associated grid connection, and turbine delivery route, on the landscape and visual amenity of the receiving environment. Where significant effects are predicted, the chapter identifies appropriate mitigation strategies therein. The assessment will consider the potential effects during the construction, operational, and decommissioning phases.

The Proposed Development refers to all elements of the application for the construction, operation and decommissioning of the proposed Derrynadarragh Wind Farm (refer to **Chapter 2 - Description of Proposed Development,** Volume II of this EIAR). Common acronyms used throughout this EIAR can be found at **Appendix 16.1 - Visual Impact Assessment at VP's**, Volume III of this EIAR**.** This chapter of the EIAR is supported by a portfolio of photomontages provided as a separate booklet, and the following Technical Appendices provided in **Volume I**II of this EIAR:

- Appendix 16.1: Visual Impact Assessments at VPs
- Appendix 16.2: Supporting Figures

This Landscape and Visual Impact Assessment (LVIA) describes the landscape context of the Proposed Development and assesses the likely landscape and visual impacts of the scheme on the receiving environment. Although closely linked, landscape and visual impacts are assessed separately, in accordance with relevant guidance outlined in section 16.4.5.

Landscape Impact Assessment (LIA) relates to changes in the physical landscape brought about by the Proposed Development, 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 Proposed Development without causing unacceptable adverse changes to its character.

Visual Impact Assessment (VIA) relates to assessing effects on specific views and 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 Proposed Development in conjunction with other developments (associated or separate from it).

16.2 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
- 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

16.2.1 Statement of Authority

This Landscape and Visual Impact Assessment was prepared by Bridget Macfarlane (BLA ^{hons}), LVIA Specialist at Macro Works Ltd (Part of APEM Group). Bridget is a Landscape Architect with over six years' experience in the landscape and visual assessment of development projects including six wind farms and 10 solar farms in addition to other forms of electrical infrastructure including BESS, OCGT and substations.

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.

Macro Works is a specialist LVIA company 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 onshore wind farm proposals throughout Ireland, including six Strategic Infrastructure Development (SID) wind farms. Macro Works and its senior staff members are affiliated with the Irish Landscape Institute.

16.3 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.

16.3.1 Study Area

The Wind Energy Development Guidelines published by the Department of the Environment, Heritage and Local Government (DOEHLG) (2006/2019 draft revision) (WEDG) specify different radii for examining the zone of theoretical visibility of proposed wind farm projects (ZTV). 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.

In the case of this project, the blade tips are proposed to be 186m and 187m high and therefore the minimum ZTV radius recommended is 20km from the outermost turbines of the scheme. There are not considered to be any sites of national or international importance between 20 – 25km of the outermost turbines of the Proposed Development and thus, the radius of the Study Area will remain at 20km. Refer to **Plate.** Impacts pertaining to other aspects of the Proposed development such as the grid connection route, and turbine delivery route, are localised to the immediate environment, and as such the consideration of impacts focuses on the immediate landscape context within approximately 500m.

These areas fall within the 20km Study Area.

The Study Area adopted is in accordance with the WEDG (both the current 2006 and Draft Revised 2019 versions) and is consistent with study areas employed for comparable wind energy applications throughout Ireland. It is considered a robust area on which to structure the LVIA, whilst being proportionate to the most notable effects.

Notwithstanding the full extent of the LVIA Study Area, there will be a particular focus on receptors and effects within the Central Study Area where there is a higher potential for significant impacts to occur. When referenced within this assessment, the 'Central Study Area' is the landscape within 5km of the Site. The remainder of the Study Area beyond 5km to the 20km outer limit is referred to as the 'Wider Study Area'. Relevant guidance does not require a Central Study Area, or Wider Study Area to be defined, but it has become standard / best practice to highlight the distinction between the immediate context of the site, the context of the landscape within the local vicinity of the turbines, and then the context of the wider landscape.

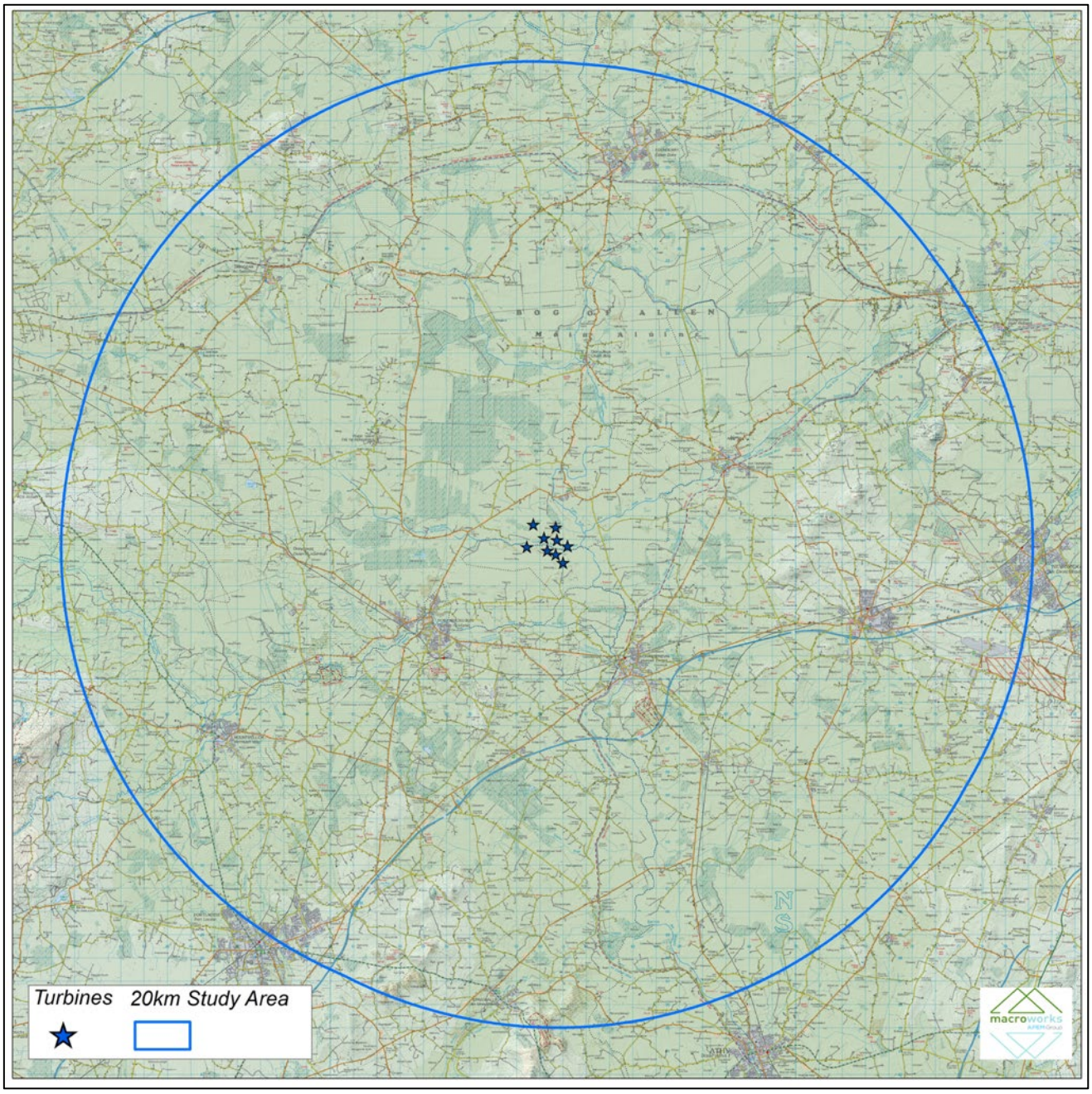

Plate 16-1: Full 20km Extent of the Study Area

16.4 Methodology

Production of this Landscape and Visual Impact Assessment (LVIA) involved baseline work in the form of desktop studies and fieldwork comprising professional evaluation by qualified and experienced Landscape Architects. The assessment is undertaken in accordance with relevant guidance and professional best practice in Ireland and the UK for LVIA in general and specifically for wind energy LVIA. This entailed the following:

16.4.1 Desktop Study

- Review of a Zone of Theoretical Visibility (ZTV) map, which indicates areas from which the Proposed Development is potentially visible in relation to terrain within the Study Area.
- Review of relevant County Development Plans, particularly regarding sensitive landscape and scenic view/route designations (section 16.6.4).
- Selection of potential Viewshed Reference Points (VRPs) from key visual receptors to be investigated during fieldwork for actual visibility and sensitivity (outlined in due course).

16.4.2 Field Assessment

- Recording of a description of the landscape elements and characteristics within the Study Area
- Selection of a refined set of VRP's for assessment. This includes the capture of reference images and grid reference coordinates for each VRP location for the visualisation specialist to prepare photomontages.

16.4.3 Computer Generated Images, Photomontages and Wireframes

This LVIA is supported by a variety of computer-generated maps and graphics as well as verifiable photomontages that depict the Proposed Development within the views from a range of represented visual receptor locations. These maps, graphics and visualisations consist of the following:

- Zone of Theoretical Visibility (ZTV) maps; and
- Photomontages consisting of existing views, wireframe views and proposed views.

16.4.4 Landscape and Visual assessment

The process adopted in regard to the identification of landscape and visual effects (adopting the assessment criteria in 16.4.6 and 16.4.8 respectively) is summarised as follows:

- Selection of a refined set of VRPs for assessment (outlined in due course).
- 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 design guidance and planning policies.
- Consideration of likely significant construction, operational, and decommissioning stage effects and the mitigation measures that could be employed to reduce such effects.
- Assessment of the significance of residual landscape impacts.
- Assessment of the significance of residual visual impacts aided by photomontages prepared at all of the selected VRP locations.
- Assessment of cumulative landscape and visual effects in combination with other surrounding developments that are either existing, permitted or proposed in any live planning permission application.

16.4.5 Relevant Policy and Guidance

This LVIA uses a methodology that is in accordance with that prescribed within the following guidance documents:

- Environmental Protection Agency (EPA) publication '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;
- Landscape Institute and the Institute of Environmental Management and Assessment publication entitled Guidelines for Landscape and Visual Impact Assessment – Third Edition (2013) (GLVIA3);
- Department of the Environment, Heritage and Local Government Wind Energy Development Guidelines (2006) and Draft Revised Wind Energy Development Guidelines (2019);
- NatureScot: Assessing the cumulative landscape and visual impact of onshore wind energy developments (2021);
- Scottish Natural Heritage (SNH) Visual representation of wind farms: Best Practice Guidelines (version 2.2 - 2017); and
- Landscape Institute Technical Guidance Note (TGN) 06/19 Visual Representation of development proposals (2019)
- Office of the Planning Regulator - Environmental Assessments and Planning in Ireland.

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.

16.4.6 Assessment Criteria for Landscape Effects

16.4.6.1 Landscape Sensitivity

When assessing the potential landscape effects of the Development, 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, national or international 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 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 expressed 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 16-1**.

16.4.7 Assessment Criteria for Landscape Impacts

The classification system used by Macro Works to determine the significance of landscape and visual impacts is based on the IEMA Guidelines for Landscape and Visual Impact Assessment (2013). When assessing the potential impacts on the landscape resulting from a wind farm development, the following criteria are considered:

- Landscape character, value and sensitivity
- Magnitude of likely impacts; and
- Significance of landscape effects

Table 16-1: 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.
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.

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 Proposed Development. 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 Boundary that may have an effect on the landscape character of the area.

Table 16-2: Magnitude of Landscape Impacts

Magnitude of Impact	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 overall 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 an overall 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 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
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

The significance of a landscape impact is based on a balance between the sensitivity of the landscape receptor and the magnitude of the impact. The significance of landscape impacts is arrived at using the following matrix:

Table 16-3: Landscape Impact Significance Matrix

	Sensitivity of Receptor				
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 (Shaded Cells) are considered to be 'significant impacts' in EIA terms.*

16.4.8 Assessment Criteria for Visual Impacts

As with the landscape impact, the visual impact of the Proposed Development 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.

16.4.9 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, 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:

Susceptibility of receptor group to changes in view. This is one of the most important criteria to consider in determining overall visual sensitivity because it is the single category dealing with viewer susceptibility. In accordance with the IEMA Guidelines for Landscape and Visual Assessment (3rd edition 2013) 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 focused 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; and*
- *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; and*

- *People at their place of work whose attention may be focused on their work or activity, not their surroundings and where the setting is not important to the quality of working life."*

Values Associated with the View

- **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 within 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;
- **Connection with the landscape.** This considers whether or not receptors are likely to be highly attuned to views of the landscape i.e. commuters hurriedly driving on busy national route versus hill walkers directly engaged with the landscape enjoying changing sequential views over it;
- **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; and
- **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.

16.4.10 Magnitude of Visual Effects

The magnitude of visual effects is determined on the basis of two main factors; the visual presence (scale, extent, prominence) of the proposal and its effect on visual amenity (legibility, characteristics, harmony).

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 negatively. 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 impact 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 impact 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). The magnitude of visual impacts is classified in the following table derived from GLVIA3:

Table 16-4: Magnitude of Visual Effects

Criteria	Description
Very High	The proposal intrudes into a large proportion or critical part of the available vista and is without question the most noticeable element. A high degree of visual clutter or disharmony is also generated, strongly reducing the visual amenity of the scene
High	The proposal 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 clutter or disharmony is also likely to be generated, appreciably reducing the visual amenity of the scene
Medium	The proposal represents a moderate intrusion into the available vista, is a readily noticeable element and/or it may generate a degree of visual clutter or disharmony, thereby reducing the visual amenity of the scene. Alternatively, it may represent a balance of higher and lower order estimates in relation to visual presence and 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 detract from, and may even enhance, the visual amenity of the scene

16.4.11 Visual Impact Significance

As stated above, the significance of visual impacts is a function of visual receptor sensitivity and visual impact magnitude. This relationship is expressed in the same significance metric included for Landscape Effect Significance at **Table 16-3.**

- 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

Landscape and Visual effects are also categorised according to their duration:

- Temporary – Lasting for one year or less;
- Short Term – Lasting one to seven years;
- Medium Term – Lasting seven to fifteen years;
- Long Term – Lasting fifteen years to sixty years; and
- Permanent – Lasting over sixty 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 negative, rather than positive or even neutral. Unless otherwise stated, the quality of the landscape and visual effect judgements herein can be taken as negative.

In terms of duration, the proposed turbines will have a long-term impact, as permission is being sought for a 35 year period after which the turbines will be decommissioned. Some other elements of the Proposed Development relating to access tracks and elements of the grid connection will likely remain in perpetuity and will therefore have Permanent effects.

16.4.12 Assessment Criteria for Cumulative Effects

The WEDG (2006 and 2019 Draft Revised) references the need to assess the cumulative effects of the scheme as including the "wind energy development and the grid connection and any other works which are ancillary to the development 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 16.2.2).

NatureScot's 'Guidance – Assessing the Cumulative Effects of Onshore Wind Farms' (2021) 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 herein, albeit with subsequent consideration of cumulative impacts with other forms of notable development (existing, permitted or proposed).

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."*

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'*

The WEDG (both 2006 and Draft Revised 2019) describes a cumulative effect as "t*he 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 16-5 provides Macro Works' criteria for assessing the magnitude of cumulative impacts. The approach adopted is informed by the NatureScot Guidelines (2021) and GLVIA3, but adopts a study area that is consistent with the main assessment to retain a proportionate focus on the most notable effects. As industry-specific guidance for the assessment of cumulative landscape and visual effects, this guidance is widely adopted for LVIA work and is considered best practice in Ireland, and the approach adopted in relation to many other schemes across Ireland.

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

Table 16-5: Magnitude of Cumulative Effects

Magnitude of Impact	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.

16.5 Description of the Proposed Development

The Proposed Development consists of a 9 no. turbine wind farm and associated infrastructure including internal access tracks, hard standings, onsite 110 kV substation and associated grid connection infrastructure, internal electrical and communications cabling, temporary construction compounds, drainage infrastructure, biodiversity enhancement measures, temporary accommodations works along the Proposed Turbine Delivery Route and all associated works related to the construction of the Proposed Development.

A 10-year planning permission and 35-year operational life from the date of commissioning of the Proposed Wind Farm is being sought. This reflects the lifespan of modern-day turbines.

A permanent planning permission is being sought for the Grid Connection and onsite 110 kV substation as these will become an asset of the national grid under the management of EirGrid and will remain in place upon decommissioning of the Proposed Wind Farm.

A more detailed description of the Proposed Development is included in Chapter 2.

16.6 Receiving Environment

16.6.1 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 Proposed Development 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). The Proposed Development is contained partially in the Kildare County Development Plan (2023-2029) and partially within the Offaly County Development Plan (2021-2027). A large portion of the southwest extents of the Study Area falls within County Laois, and the Laois CDP (2021-2027) will therefore also be taken into account.

A description of the landscape context of the proposed wind farm Site and 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 Proposed Development. The visual resource will be described in greater detail below. Plate 16-2 shows the Site in its landscape context and the immediate surroundings.

16.6.2 Landform and Drainage

The landform of the Study Area is predominantly flat to gently undulating, characteristic of its wider midlands setting. Elevation within the Central Study Area is relatively uniform, generally ranging between 60 m and 80 m AOD. Due to the flat and often boggy nature of the study area, much of which encompasses peatland, watercourses are generally minor and dispersed consisting of a dendritic pattern of meandering streams and artificial drains.

A number of watercourses are present within the Central Study Area. The River Cushina, a tributary of the River Barrow, flows through the wind farm site, marking the boundary between Counties Offaly and Kildare. To the east, the River Figile flows broadly north to south, approximately 570 m from the nearest proposed turbine. The River Barrow is the most extensive watercourse within the Study Area, located approximately 2.7 km south of the nearest turbine. It flows west to east across the southern part of the Study Area, before turning north-eastward.

In the Wider Study Area, the landform becomes more varied, with a number of localised elevated features rising above 100 m AOD. These include Geashill (107 m AOD) to the west; two modest hills near Daingean to the northwest (116 m and 119 m AOD); and a hill with a ringfort at Ballykilleen (106 m AOD). Further south, Garryvacum Hill (123 m AOD) and the elevated woodland and trails of Moore Abbey (122 m AOD) provide further topographic variety. A series of hills are also located along the eastern and north-eastern side of the Study Area, including the Hill of Allen, Boston Hill, Grange Hill, Dunmurry Hill and Red Hill. Other notable landforms within the Wider Study Area include the Bog of Allen to the north.

16.6.3 Vegetation and Land use

Land cover within the Central Study Area comprises a mosaic of cutaway peatland interspersed with areas of marginal farmland, reverting scrub, and forestry concentrated around the peatland fringes. These areas are interspersed with more intensively managed agricultural land, generally located on better-drained soils. Field sizes within this farmland vary from small to large, reflecting differing levels of land use intensity.

This land cover pattern continues northwards across the Study Area, where cutaway peatland becomes more extensive. Agricultural land use, both pastoral and arable, remains the dominant land use across much of the area, with commercial conifer plantations forming the next most extensive land cover type. Scattered areas of urban development are also present, most notably around the settlements of Portarlington and Monasterevin to the south. However, built development occupies a relatively small proportion of the overall land cover.

Additional land uses include a small number of golf courses in the western and southwestern parts of the Study Area, along with remnant stately houses set within extensive demesne parklands, such as Emo Court House. Industrial activity is evident in the form of the Edenderry Power Station in the northern part of the Study Area. Wind energy is also an established element of land use character, particularly in the northern half of the Study Area, where the 28-turbine Mount Lucas Wind Farm is located on a regenerating cutaway bog in County Offaly. Mount Lucas Wind Farm also features a 7 km public walkway and cycle route around the Bord na Móna facility in the northwestern part of the Study Area.

Plate 16.2: Aerial photograph showing the landscape context of the site and its immediate surrounds

16.6.4 Landscape Policy Context and Designations

16.6.4.1 The Department of Environment, Heritage and Local Government Wind Energy Development Guidelines 2006 and draft revised 2019 Wind Energy Development Guidelines

The Wind Energy Development Guidelines (2006/2019 draft revision) provide guidance on wind farm siting and design criteria for a number of different landscapes types. The receiving landscape of the proposed wind farm development is consistent with both the 'Flat Peatland' and 'Hilly and Flat Farmland' landscape types from the Wind Energy Development Guidelines.

The most relevant recommendations for the 'Flat Peatland' Landscape Type are set out below:

'Flat Peatland':

Location – "*can be placed almost anywhere in these landscapes from an aesthetic point of view. They are probably best located away from roadsides allowing a reasonable sense of separation. However, the possibility of driving through a wind energy development closely straddling a road could prove an exciting experience.*"

Spatial extent – *"The vast scale of this landscape type allows for a correspondingly large spatial extent for wind energy developments."*

Spacing – *"Regular spacing is generally preferred, especially in areas of mechanically harvested peat ridges."*

Layout – *"In open expanses, a wind energy development layout with depth, preferably comprising a grid, is more appropriate than a simple linear layout. However, where a wind energy development is located close to feature such as a river, road or escarpment, a linear or staggered linear layout would also be appropriate."*

Height - *"Aesthetically, tall turbines would be most appropriate. In any case, in terms of viability they are likely to be necessary given the relatively low wind speeds available. An even profile would be preferred."*

Cumulative - "*The openness of vista across these landscapes will result in a clear visibility of other wind energy developments in the area. Given that the wind energy developments are likely to be extensive and high, it is important that they are not perceived to crowd and dominate the flat landscape. More than one wind energy development might be acceptable in the distant background provided it was only faintly visible under normal atmospheric conditions."*

The most relevant recommendations for the 'Hilly and Flat Farmland' Landscape Type are set out below:

'Hilly and Flat Farmland':

Location – *"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 large scale. 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."*

Given the hybrid landscape context it is considered that the proposed development is in general accordance with the Wind Energy Development Guidance for both relevant landscape types, or alternatively, does not contradict any of the relevant guidance. The proposed organic clustered layout is more appropriate than a rigid linear layout in this flat and varied landcover context and this is appropriate to the guidance of both relevant landscape types.

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 "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."

In this case, the proposed turbines are 186m/187m (above existing ground level) tip height so the required residential setback distance is 748m and the proposed development complies with this.

16.6.4.2 Offaly County Development Plan 2021-2027

Five of the proposed turbines are located within County Offaly. The Offaly County Development Plan does not include a specific Landscape Character Assessment. Instead, Volume 1, Chapter 4: *Biodiversity and Landscape* provides Landscape Sensitivity Areas, which utilise three sensitivity categories: *High*, *Moderate*, and *Low*. These are described within the CDP as follows:

Low sensitivity areas are; *"robust landscapes which are tolerant to change, such as the county's main urban and farming areas, which have the ability to accommodate development."*

Moderate sensitivity areas can; *"accommodate development pressure but with limitations in the scale and magnitude. In this category of sensitivity, elements of the landscape can accept some changes while others are more vulnerable to change."*

High sensitivity areas are; *"vulnerable landscapes with the ability to accommodate limited development pressure. Landscape elements are highly sensitive to certain types of change. If pressure for development exceeds the landscapes limitations the character of the landscape may change. The following include identified features or areas of natural beauty or interest which have extremely low capacity to absorb new development. Areas included within this class are designated Areas of High Amenity."*

In terms of the Proposed Development, three of the five proposed turbines within County Offaly are contained within a 'Low' landscape sensitivity area, whilst the other two turbines fall within a 'Moderate' landscape sensitivity area. 'Low' landscape sensitivity is the most common classification across the Study Area, although numerous areas of 'Moderate' landscape sensitivity are present, typically associated with exploited peatlands.

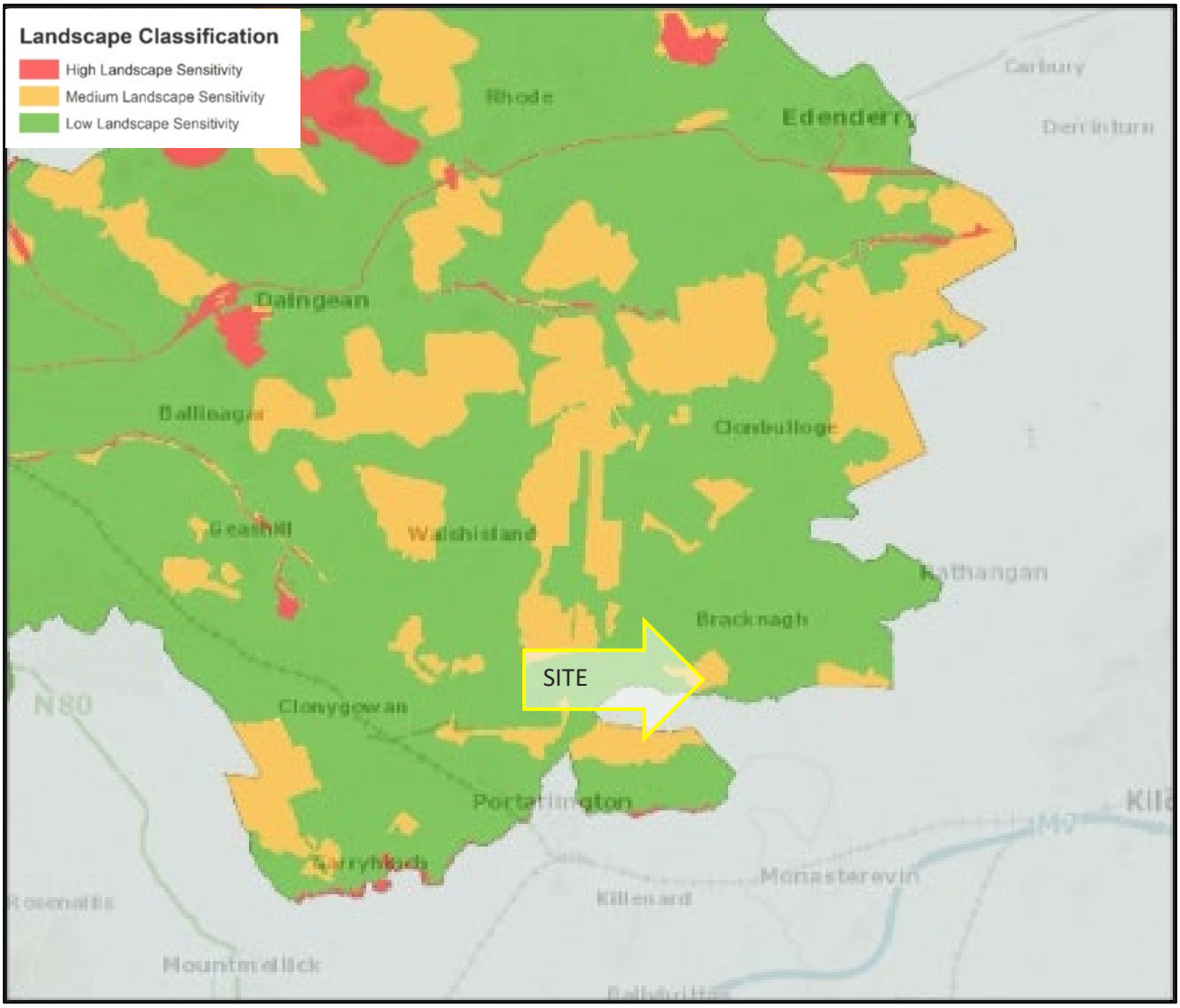

Plate 16-3: Landscape classifications in Offaly in relation to the approximate location of the Proposed Development

'High' landscape sensitivity classifications within the study area are commonly concentrated around the wider northwest of the Study Area. These concern;

The Grand Canal Corridor: Which traverses the study area in a general west-to-east direction, approximately c. 16km north of the nearest turbine, the Offaly CDP includes the following descriptions;

- *Characteristics: The Grand Canal is a focus for a wide range of uses, in particular, for recreation and tourism purposes.*
- *Characteristics: The visual quality of the surrounding areas is intrinsic to maintaining the attractiveness of the Grand Canal corridor.*
- *Sensitivities: Hence, the corridor particularly outside of settlements is especially sensitive to large development structures, insensitively designed sporadic housing and large-scale land uses such as extractive industries.*

Croghan Hill located c.18.4km northwest of the site-

- *"Characteristics: Croghan Hill and its environs including Raheenmore Bog (which was designated a nature reserve under the Wildlife Act 1976) and Cannakill Deserted Medieval Village, are the main elements of this high amenity area.*
- *Characteristics: Croghan Hill is an extinct volcano which lies 234 meters above sea level and commands views over north and east Offaly and the surrounding counties.*
- *Sensitivities: This is an area of archaeological and high amenity value and is highly sensitive to new developments.*
- *Sensitivities: Croghan Hill, due to its elevated nature in comparison to its surrounding flat landscape, impacts on the visual quality of the surrounding area and is highly sensitive to developments of any nature, in particular sand and gravel extraction.*
- *The Council recognises the scenic quality and recreational value of the Croghan Hill area including Croghan Hill, Raheenmore Bog and Cannakill Deserted Medieval Village."*

The Esker Landscape-

- *Characteristics: Eskers were built up under the ice cap about ten thousand years ago and have archaeological significance, as they formed the early highways in Ireland.*
- *Characteristics: In old Irish, 'eiscir' means divide while 'riada' means road.*
- *Sensitivities: The eskers have geomorphologic, scientific, historical, cultural, recreational and amenity value and uniqueness.*
- *Sensitivities: In particular, the esker system north of Clara bog is critically important, as it is most likely the source of nutrient rich water, which feeds the bog's soak systems.*
- *Sensitivities: There is a need to balance the conservation of the important landscape features associated with eskers providing educational / tourism and recreational potential with the requirements of aggregate extraction and economic development. Hence, the esker landscape is highly sensitive to any future development and the opening up of new pits for sand and gravel extraction will be strongly resisted (refer to Chapter 5, Economic Development Strategy).*

These 'High' sensitivity landscape classifications correlate closely to the 'Areas of High Amenity' designated in County Offaly. Relevant 'Areas of High Amenity' include the Grand Canal (2), Croghan Hill and its Environs (6), and Other Eskers (11) (refer **Plate 16-4).**

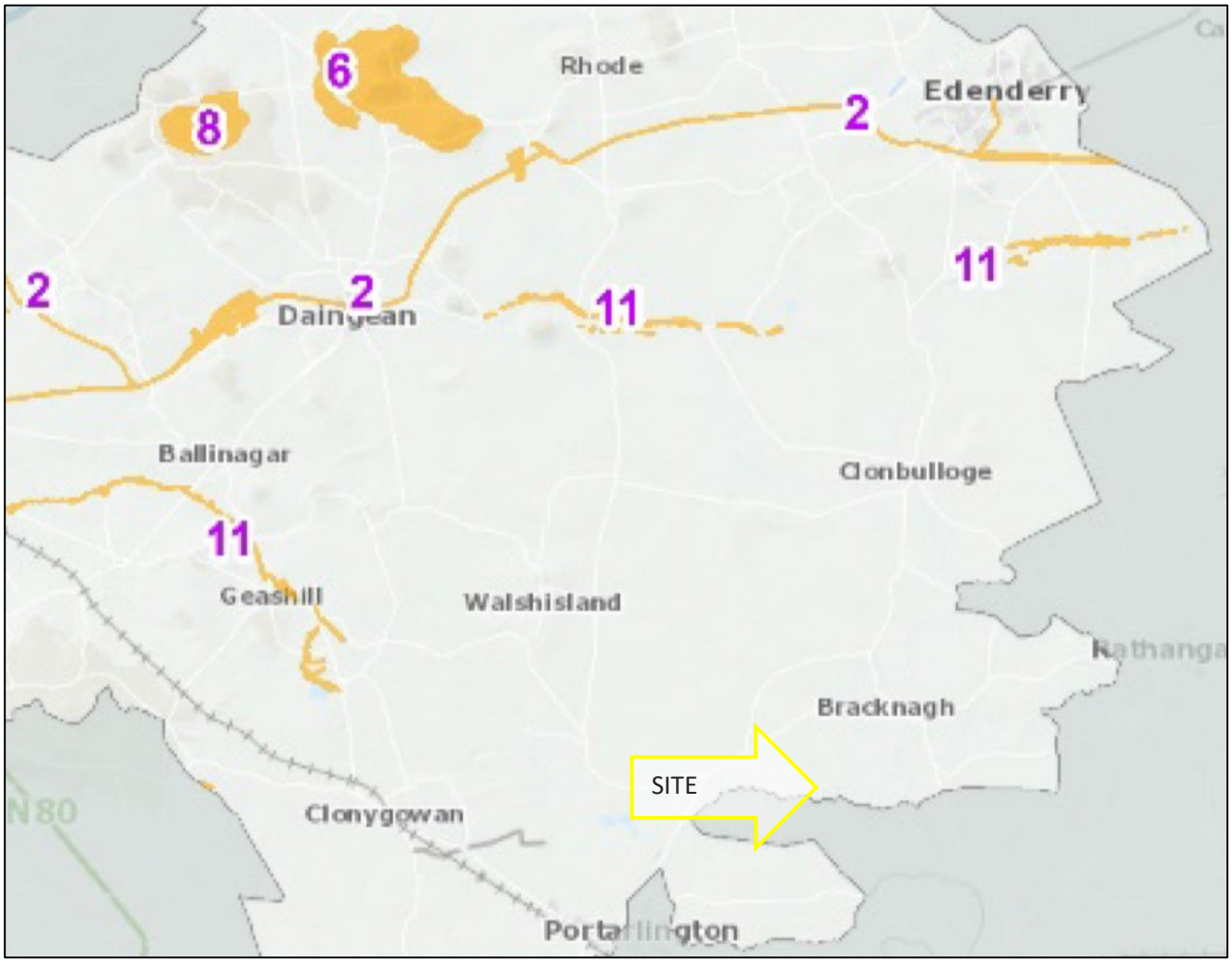

Plate 16-4: Areas of High Amenity in relation to the approximated location of the proposed development

Objectives/policy relating to Proposed Development are outlined within the Offaly County Development Plan Biodiversity and Landscape Chapter in subsection 4.16. Those deemed relevant to the Proposed Development are included below:

Geology, Eskers and Quarries

BLP 11: *It is Council policy to protect and conserve the landscape, natural heritage and biodiversity value of esker systems in the county as identified in the Offaly Esker Study, 2006.*

Areas of High Amenity

BLP-35: *It is Council policy to protect and preserve the county's Areas of High Amenity namely the Slieve Bloom Mountains, Clonmacnoise Heritage Zone, Durrow High Cross, Abbey and surrounding area, the River Shannon, Lough Boora Discovery Park, Grand Canal, Croghan Hill, Raheenmore Bog, Pallas Lake, Clara Bog, Clara eskers, Eiscir Riada and other eskers. Notwithstanding the location of certain settlements, or parts of, for which there are settlement plans (Towns, Villages, Sráids), within the Areas of High Amenity, it is not the intention of this policy to hinder appropriate sustainable levels of development (as set out in the plans and subject to proper planning). Further, it is policy to facilitate the sustainable extension and expansion of existing visitor, tourist related or other rural enterprises within the Areas of High Amenity, where such development is appropriate and where it can be demonstrated that it gives 'added value' to the extending activity and to the immediate area which is the subject of the 'Area of High Amenity' designation.*

BLP-36: *It is Council policy, to ensure that issues of scale, siting, design and overall compatibility (including particular regard to environmental sensitivities) with a site's location within an Area of High Amenity are of paramount importance when assessing any application for planning permission. The merits of each proposal will be examined on a case-by case basis.*

Landscape

BLO-24*: It is an objective of the Council to have regard to the Landscape Sensitivity Areas in Tables 4.18, 4.19 and 4.20 in the consideration of planning applications.*

BLO-25: *It is an objective of the Council to protect skylines and ridgelines from development where such developments will create significant visual intrusion.*

BLP-38: *It is Council policy to protect and enhance the county's landscape, by ensuring that development retains, protects and where necessary, enhances the appearance and character of the county's existing landscape.*

BLP-39: *It is Council policy to seek to ensure that local landscape features, including historic features and buildings, hedgerow, shelter belts and stone walls, are retained, protected and enhanced where appropriate, so as to preserve the local landscape and character of an area, whilst providing for future development.*

BLP-40*: It is Council policy to ensure that consideration of landscape sensitivity is an important factor in determining development uses.*

Areas of High Amenity

BLO-22: *It is an objective of the Council to ensure that new development, whether individually or cumulatively, does not impinge in any significant way on the character, integrity and distinctiveness of or the scenic value of the Areas of High Amenity listed in Table 4.17. New development in Areas of High Amenity shall not be permitted if it; Causes unacceptable visual harm; Introduces incongruous landscape elements; and Causes the disturbance or loss of (i) landscape elements that contribute to local distinctiveness; (ii) historic elements that contribute significantly to landscape character and quality such as field or road patterns; (iii) vegetation which is a characteristic of that landscape type and (iv) the visual condition of landscape elements.*

16.6.4.3 Offaly County Development Plan 2021-2027 – Wind Energy Policy

Offaly County Council has incorporated a 'Wind Energy Strategy' into the current CDP. The wind energy strategy divides the county into areas 'Deemed Open for Consideration for Wind Energy Developments' and areas 'Not Deemed Suitable for Wind Energy Developments'.

These are described as;

Areas 'Deemed Open for Consideration for Wind Energy Developments': *"These areas are open for consideration for wind energy development as these areas are characterised by low housing densities, do not conflict with European or National designated sites and have the ability by virtue of their landscape characteristics to absorb wind farm developments. Notwithstanding this designation, wind farm developments in these areas will be evaluated on a case by case basis subject to criteria listed in Development Management Standard 109 contained in Chapter 13 of Volume 1 of this County Development Plan and the Section 28 Wind Energy Development Guideline"*

Areas 'Not Deemed Suitable for Wind Energy Developments':

"a) This area is considered to be generally unsuitable for wind farm development due to significant environmental, heritage and landscape constraints and housing density.

(b) Individual small scale turbines will be considered on a case by case basis having regard to relevant exemption provisions in the Planning and Development Regulations 2001 as amended.

(c) Applications for re-powering (by replacing existing wind turbines) and extension of existing and permitted wind farms will be assessed on a case by case basis and will be subject to criteria listed in Development Management Standard 109 contained in Chapter 13 of Volume 1 of this County Development Plan and the Section 28 Wind Energy Development Guidelines."

The Site is contained entirely within an area deemed 'Open for Consideration for Wind Energy' (refer Plate 16-5). This area is identified as '2 – Area generally from Cloneygowan to Clonbullogue', and is described within the Wind Energy Strategy as follows:

"This area is characterised by a predominantly flat and in places slightly undulating landscape with a number of significant tracts of peatlands and transitional woodlands and coniferous forestry, in particular in areas around Walsh Island, Bracknagh and Clonbulloge, along with improved agricultural land, large landholdings and a dispersed pattern of rural housing. The extensive tracts of flat peatlands in this area offer potential to accommodate a wind farm layout with depth, comprising a grid formation giving a better sense of balance and visual cohesion. In addition, there exists a precedent of windfarm and renewable energy projects developed in the area such as Mount Lucas windfarm while other projects have been deemed suitable and are awaiting commencement of development. There exists both good wind speeds and electricity infrastructure in the area.

A potential constraint in this area is the objective in Chapter 4 to examine the feasibility of developing Wilderness Corridors at bogs at Cavemount, Esker, Ballycon, Derrycricket, Clonsast North, Clonsast and Derryounce. The Council will not be in favour of any developments proposed on these bogs with the potential to impact upon the character, uniqueness and wilderness potential of these areas. The impact on a potential Wilderness Corridor from any wind farm development will be assessed at project level by the Council."

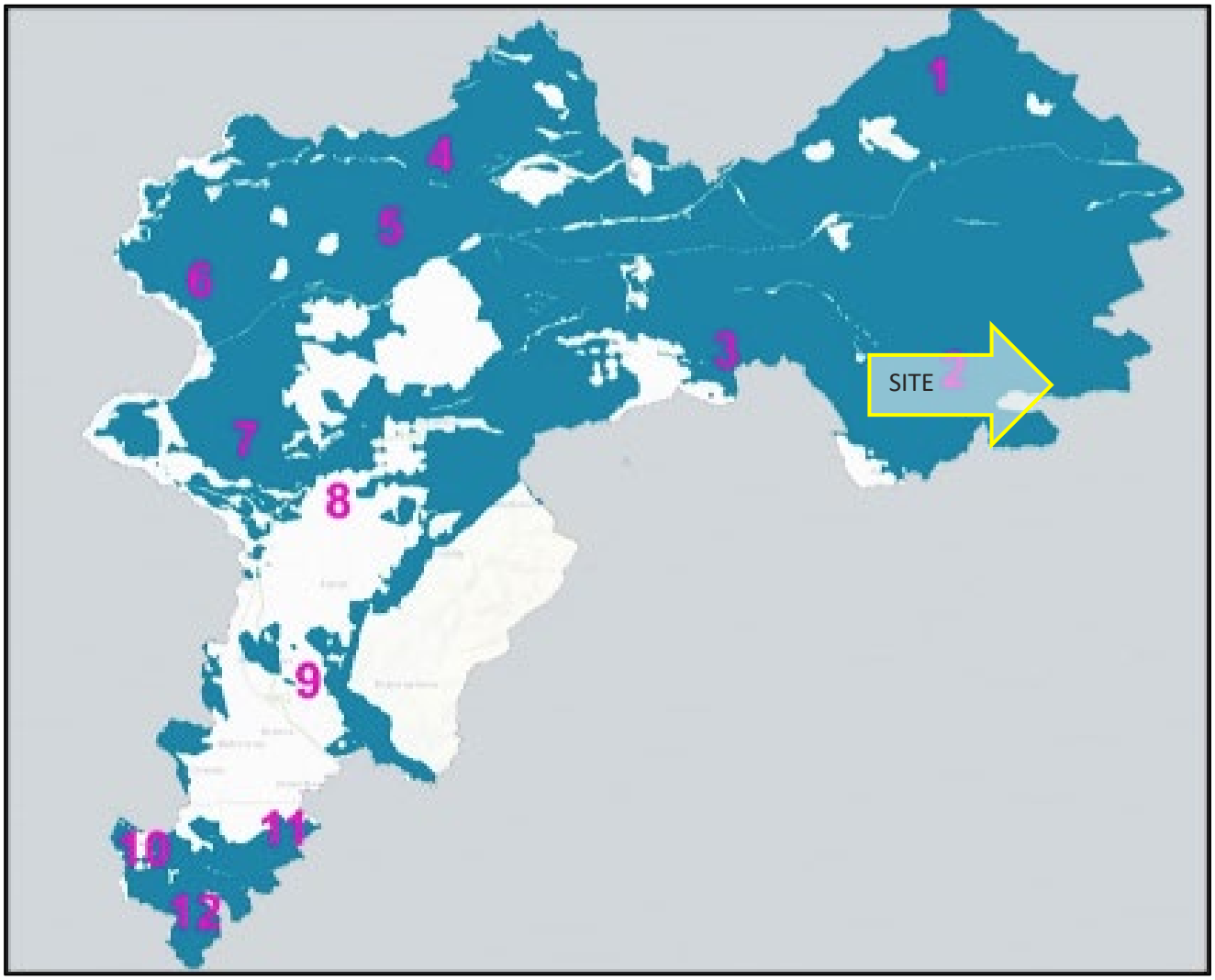

Plate 16-5: Wind Energy Strategy in Offaly in relation to the approximate location of the proposed development

16.6.4.4 Views of Recognised Scenic Value – Offaly County Development Plan 2021-2027

Scenic views and routes in County Offaly within 20km of the Proposed Development are shown in **Plate** 16-6. These are discussed in Table 16-6.

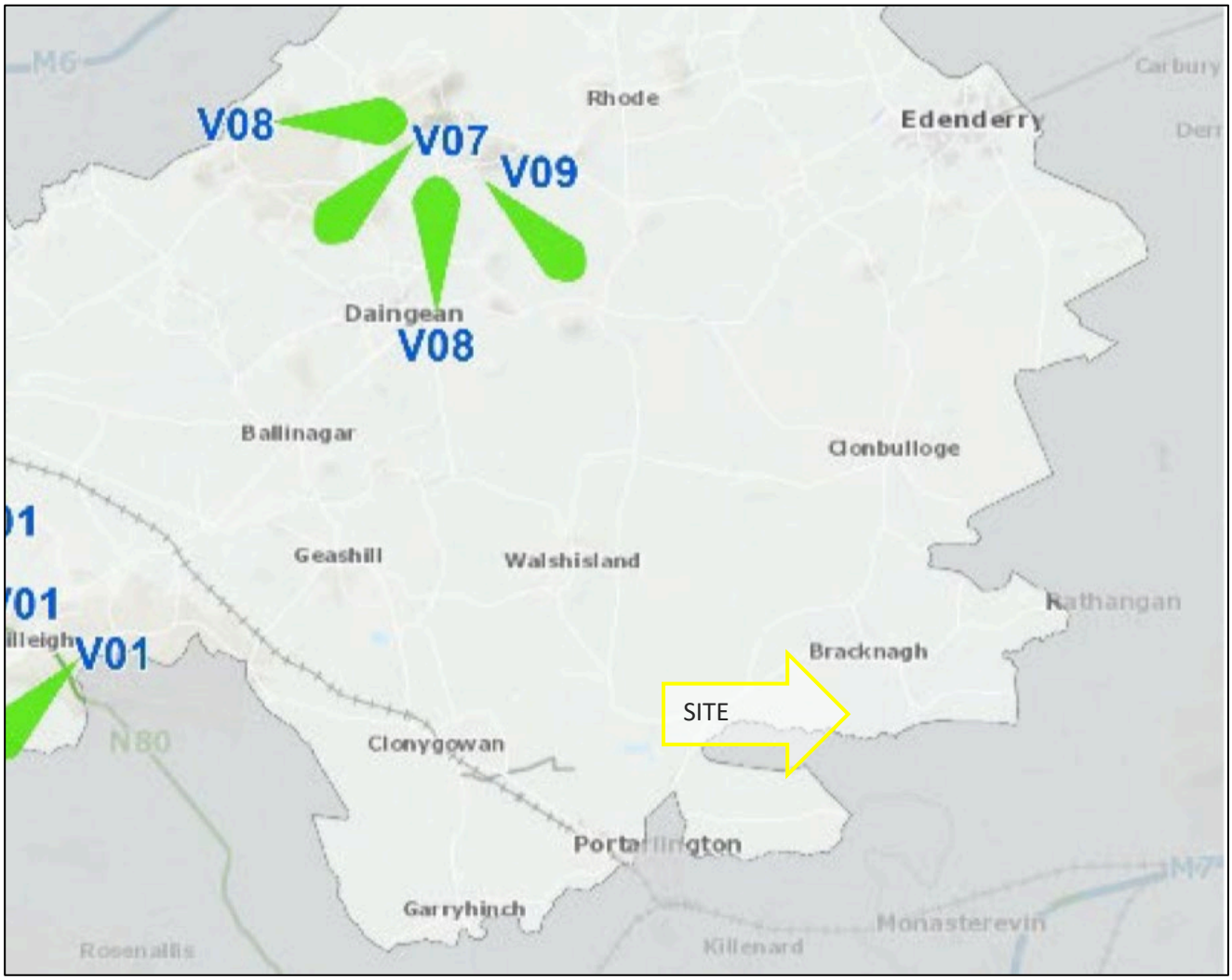

Plate 16-6: Scenic Designations within County Offaly

16.6.5 Kildare County Development Plan (2023-2029)

The four southernmost turbines are contained within County Kildare. The Kildare CDP incorporates a landscape character assessment (completed in 2004) which is included within the current CDP. The Proposed Development falls within the 'Southern Lowlands' LCA which occupies the majority of the southeast portion of the Study Area (refer to Plate 16-7). The only other LCA which fall within the Central Study Area is the 'River Barrow' LCA, approximately 2.8km south of the nearest turbine.

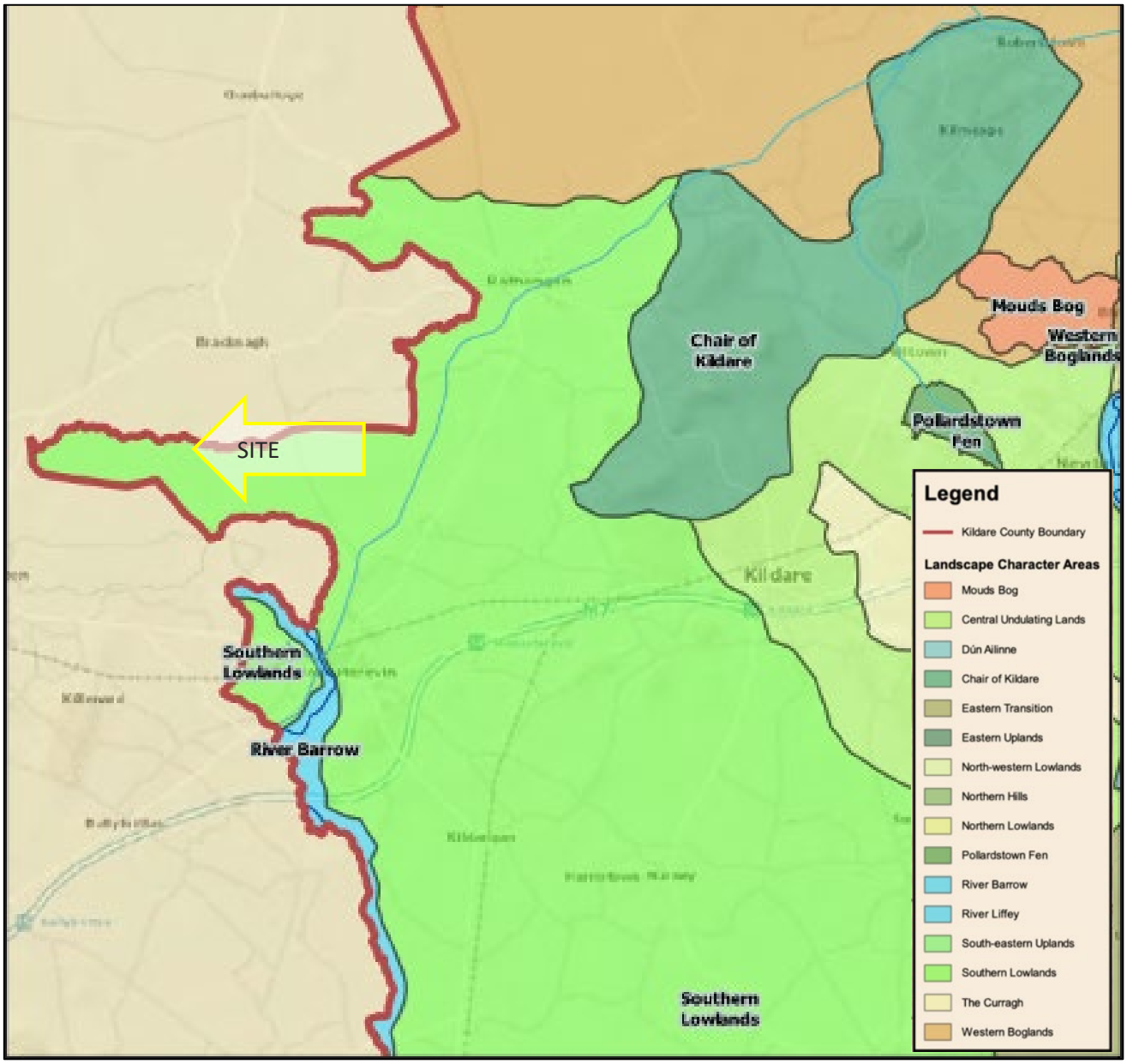

Plate 16-7: Landscape Character Areas within County Kildare in relation to the Proposed Development

With regard to landscape sensitivity, the Kildare CDP designates a general sensitivity rating to each LCA, ranging from 'Class 1 - Low Sensitivity' to 'Class 5 - Unique Sensitivity'.

The host LCA 'Southern Lowlands' is designated a ‘Class 1- Low Sensitivity’. The adjacent LCA, located c. 2.8km south 'River Barrow’ LCA is designated the highest 'Class 4 - Special Sensitivity' and occupies the entire River Barrow corridor.

LCAs within the Study Area that are designated a 'Class 3- High Sensitivity' or above include;

- The 'Chair of Kildare' LCA located c. 8km east of the nearest turbine is designated a ‘Class 4-Special sensitivity'
- The 'Western Boglands' LCA is located c. 6.7km northeast of the nearest turbine is designated a ‘Class 3- High Sensitivity'.
- The 'Mauds Bog' LCA located 17.6km northeast is designated a Class 4- 'Special sensitivity'
- The 'Pollardstown Fen' LCA located 15.7km east is designated a Class 5- 'Unique sensitivity'
- The 'Curragh' LCA located 14km east is designated a Class 5- Unique sensitivity

The Kildare CDP identifies specific locations of sensitive landscape features and illustrates them in the mapping located below. As shown, approximately 9 km east of the Proposed Development, there is a cluster of sensitive landscape features, including a series of ridgelines, hilltop views, and scenic designations. However, the immediate surroundings of the proposed turbines include several peat bogs, which are identified as ‘sensitive landscape features’ within Plate 16-8.

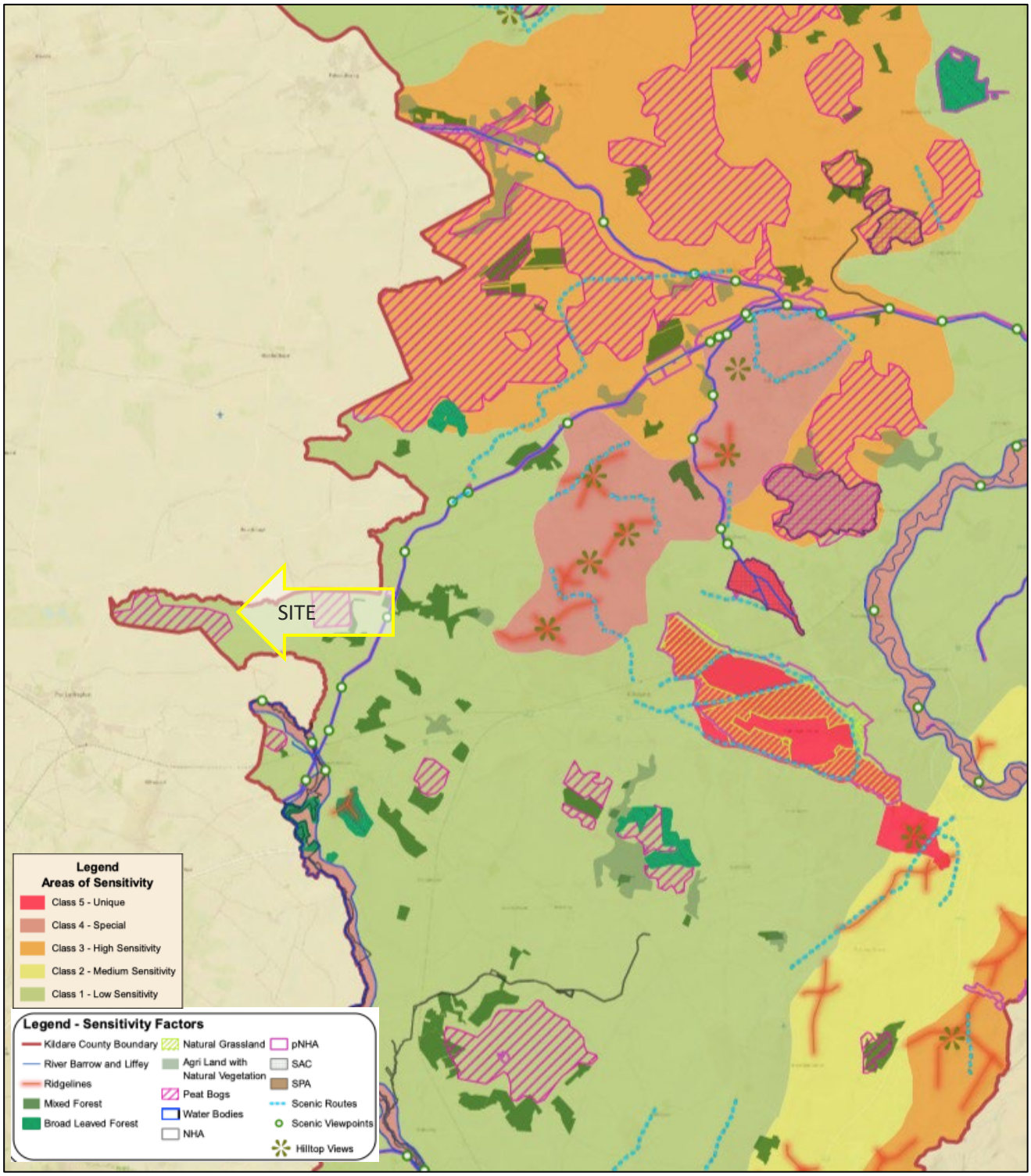

Plate 16-8: Landscape Sensitivity Areas in relation to the approximate location of the Proposed Development

16.6.5.1 Objectives of the Kildare County Development Plan 2023-2029 for Biodiversity and Landscape

Objectives/policy relating to landscape sensitivity are outlined within the Kildare County Development Plan Landscape Recreation Amenity in subsection 13.3.2. Those deemed relevant to the proposed development are included below:

LR P1: *Protect and enhance the county's landscape, by ensuring that development retains, protects and, where necessary, enhances the appearance and character of the existing local landscape*

- ***LR01****: Ensure that consideration of landscape sensitivity is an important factor in determining development uses. In areas of high landscape sensitivity, the design, type and the choice of location of the proposed development in the landscape will be critical considerations*
- ***LR04****: Ensure that local landscape features, including historic features and buildings, hedgerows, shelter belts and stone walls, are retained, protected and enhanced where appropriate, so as to preserve the local landscape and character of an area.*
- ***LR05****: Preserve, where appropriate, the open character of commonage.*
- ***LR010:*** *Recognise that the lowlands and the transitional area are made up of a variety of working landscapes, which are critical resources for sustaining the economic and social well-being of the county and include areas of significant landscape and ecological value, which are worthy of protection. Such landscapes include the internationally recognised landscape of Punchestown and its environs.*
- ***LR012:*** *Recognise that boglands, including cutaway and cut-over bogs, are critical natural resources for ecological and environmental reasons, particularly for climate mitigation and adaptation. Development proposals for boglands that reduce biodiversity and increase greenhouse gas will not be considered. Appropriate environmental assessment should be carried out for any development proposals which impact on boglands*

16.6.5.2 Kildare County Development Plan 2023-2029- Wind Energy Strategy

Kildare County Council incorporates a Wind Energy Strategy into Appendix 2 of the current CDP. This divides the county into three designations that reflects the acceptability of windfarm development. These are outlined below:

Acceptable in Principle – "*This is the preferred area for wind energy development characterised by a robust landscape6, a low housing density, adequate windspeeds and proximity to the existing electricity transmission and distribution grid, while having no significant conflicts with natural heritage designations. Wind farm developments will be facilitated in this area subject to compliance with normal planning and environmental criteria outlined in Section 5 of this report and the development management standards in the County Development Plan."*

Open for Consideration*- "This area is characterised by medium landscape sensitivity 7 which is a less robust category of landscape sensitivity. It has the potential to accommodate wind farm development subject to a detailed assessment on the visual impact of the proposal on the landscape in particular, and cumulative visual impacts with existing and permitted wind farms. Wind farm developments will be facilitated in this area subject to compliance with normal planning and environmental criteria outlined in Section 5 of this report and the development management standards in the County Development Plan. Wind farm proposals in this area will be required to demonstrate potential for cumulative visual impacts at application stage."*

Not Normally Permissible – *"This area is considered to be generally unsuitable for wind farm development as it is defined by highly sensitive landscapes, settlements, designated sites, areas of aviation significance and/or low windspeeds. Individual small-scale turbines and community led initiatives may be considered on a case-by-case basis. Any development in this area will be subject to compliance with planning and environmental criteria outlined in Section 5 of this report and the development management standards in the County Development Plan."*

The Proposed Development is contained entirely within an area deemed 'Acceptable in Principle' (refer **Plate 16-9**).

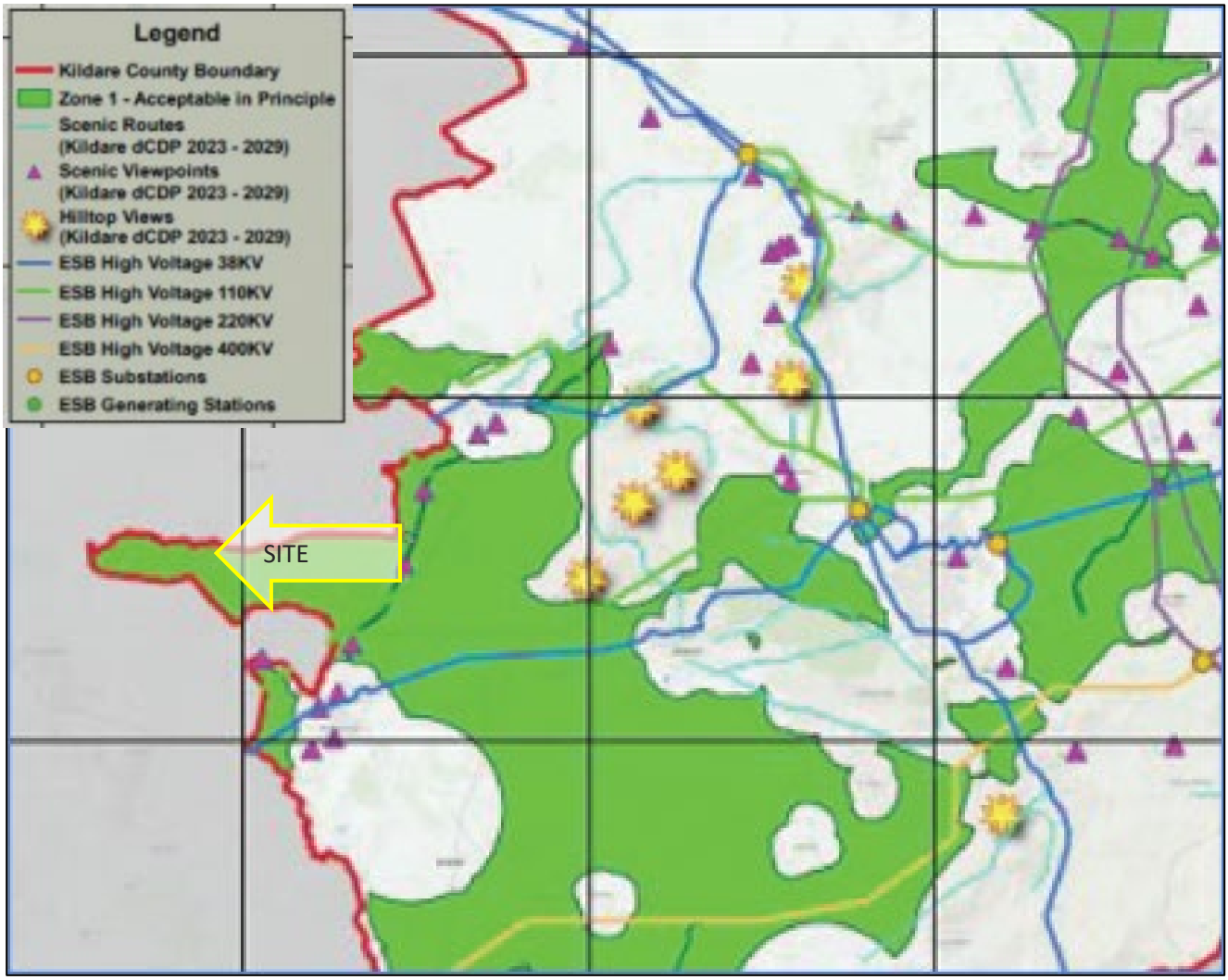

Plate 16-9: Wind Energy in County Kildare in relation to the Proposed Development

16.6.5.3 Views of Recognised Scenic Value – Kildare County Development Plan 2023-2029

Scenic views and routes in County Kildare within 20km of the Proposed Development are shown in Plate 16-10 These are discussed in Table 16-6.

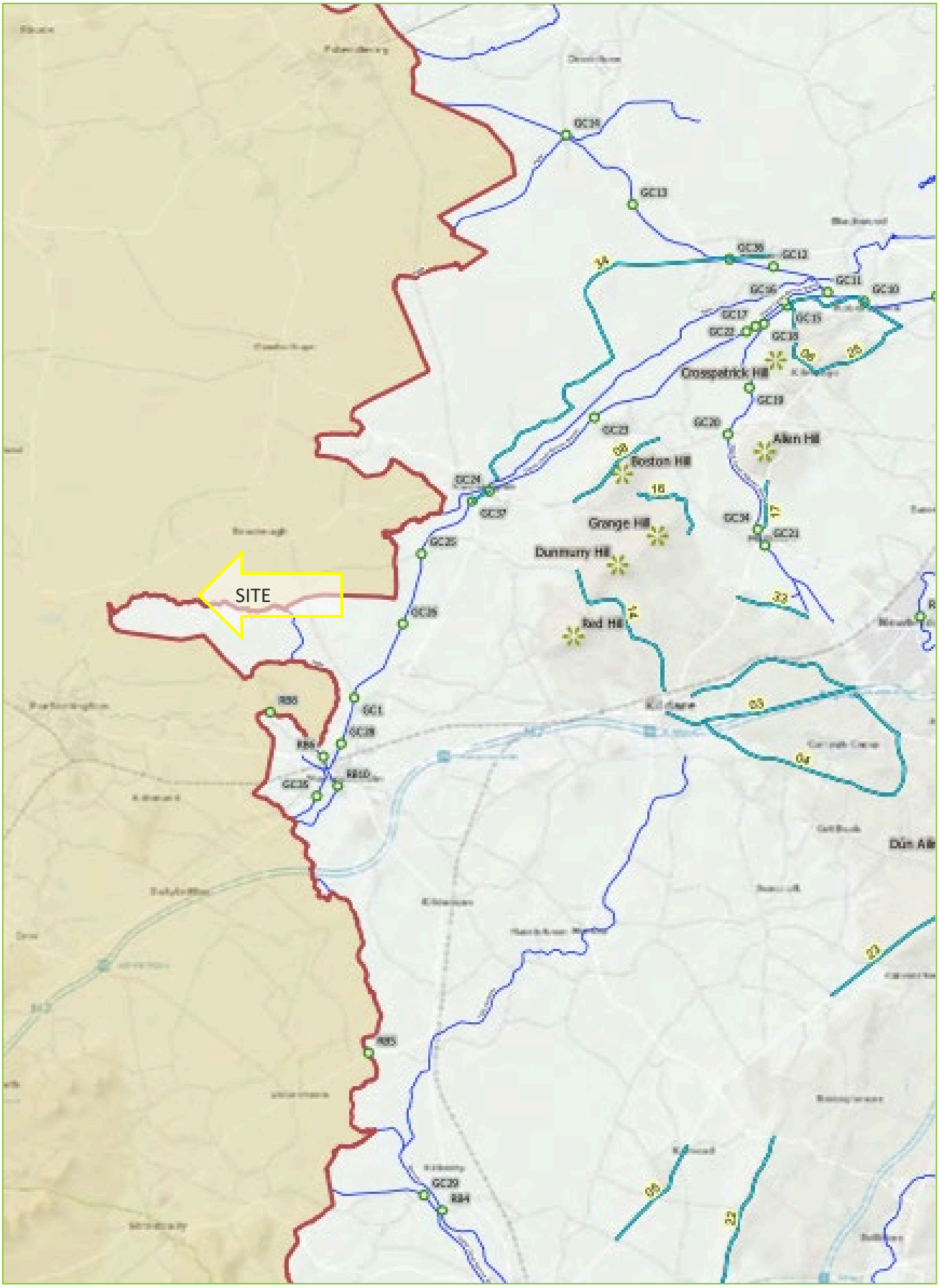

Plate 16-10: Scenic designations in County Kildare in relation to the Proposed Development

16.6.6 Laois County Development Plan (2021-2027)

County Laois is located approximately 1.1 km south of the Proposed Development and is therefore considered relevant when assessing landscape and visual-related policies in the Laois CDP. The Laois CDP 2021–2027 includes a Landscape Character Assessment, which identifies the different Landscape Character Types (LCTs) within the county. The nearest LCT to the Proposed Development is the 'Lowland Agricultural Areas', located just over 1.1 km to the south at its closest point (refer Plate 16-11). Other LCTs within the Study Area include: 'Urban Fringe Areas', 'Peatland', and 'Mountain, Hills and Upland Areas'.

In terms of LCT sensitivity 'Urban Fringe Areas' and 'Lowland Agricultural Areas' are both designated a 'Low' sensitivity. 'Peatland' and 'Mountain, Hills and Upland Areas' are assessed as having 'High' sensitivity.

'Low' landscape sensitivity is described within the Laois CDP as; *"Areas With the capacity to generally accommodate a wide range of uses without significant adverse effects on the appearance or character of the area."*

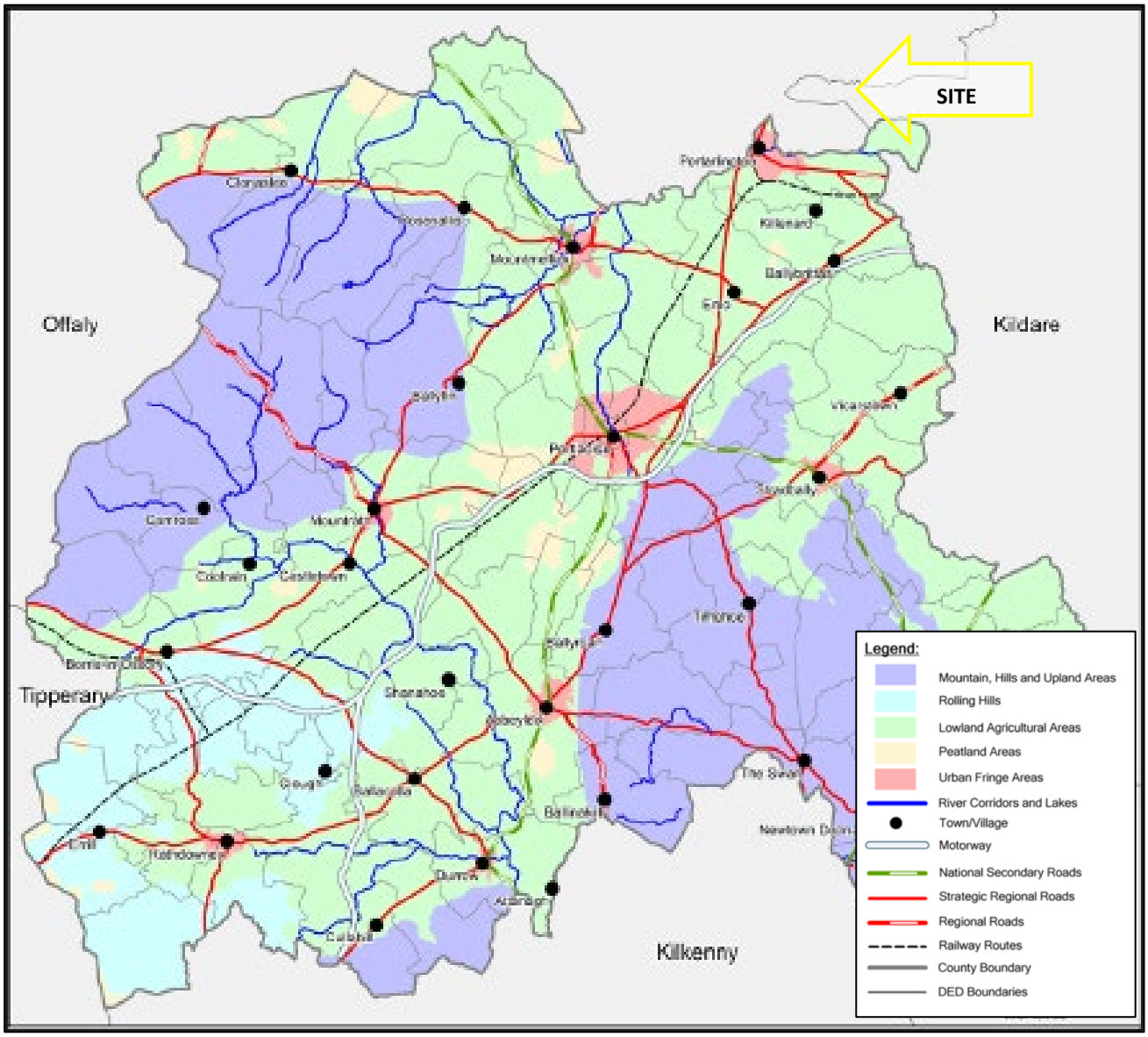

Plate 16-11: Landscape Character Types in County Laois in relation to the Proposed Development

16.6.7 Laois County Development Plan 2021-2027- Wind Energy Strategy

Appendix 5 of the Laois CDP contains a Wind Energy Strategy, which divides the county in 'preferred areas, 'areas open for consideration' and 'areas not open for consideration' for wind energy. However, it is noted that the majority of the county is not zoned, indicating a relatively median sensitivity to wind energy.

Although the Proposed Development is not located within Co. Laois, the Wind Energy Strategy is included as a reflection of the wider landscape setting. In this instance, the part of county Laois closest to the Proposed Development (1.5km southeast) is not classified, nor are the wider surrounds (1.5km to 15km south -refer Plate 16-12) thus, wind energy development is not considered to be favoured or unfavoured in this north-eastern portion of County Laois.

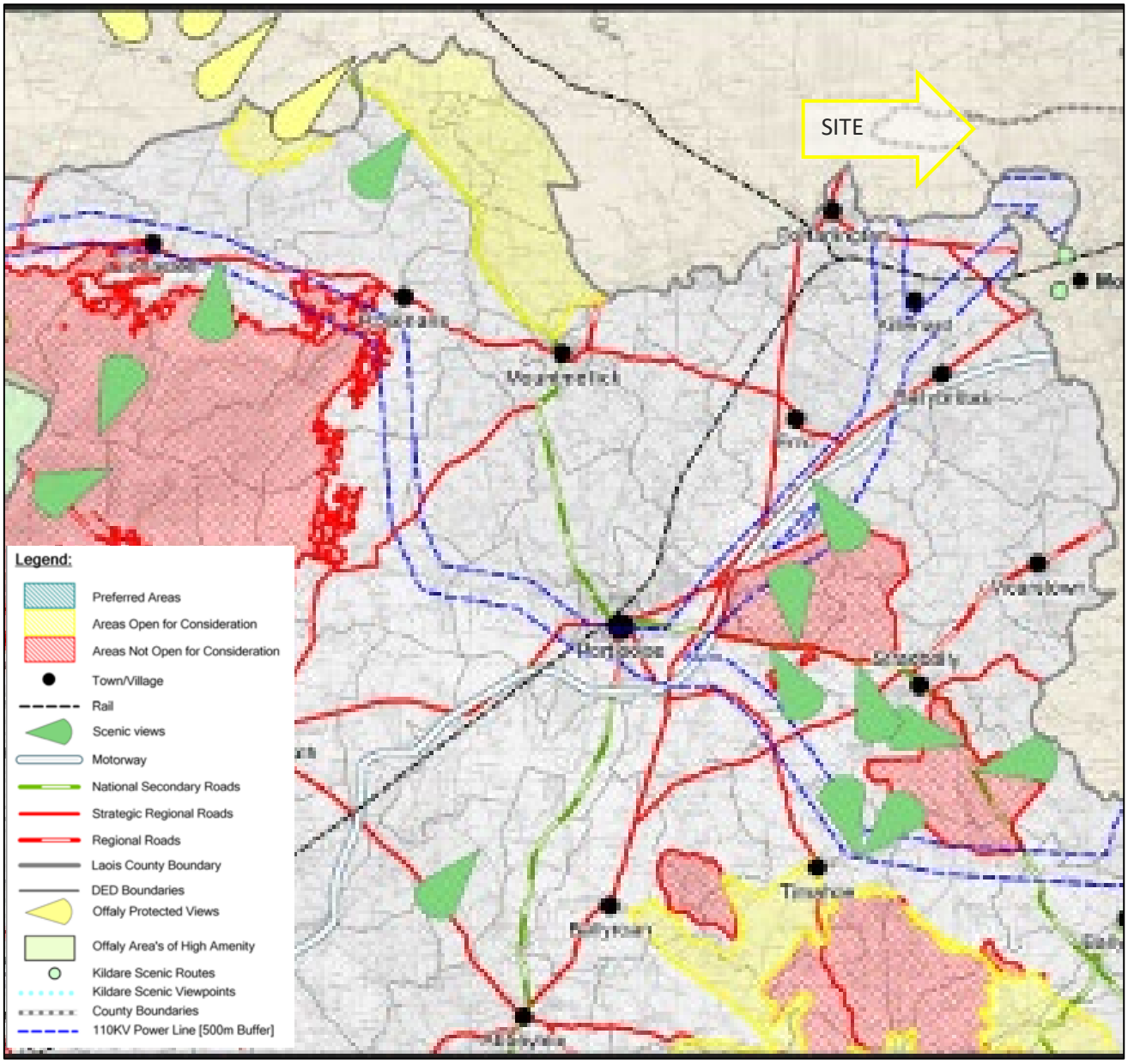

Plate 16-12: Wind Energy Map in County Laois in relation to the Proposed Development

16.6.7.1 Views of Recognised Scenic Value – Laois County Development Plan 2021-2027

Scenic views in County Laois within 20km of the Proposed Development are shown in Plate 16-13. These are discussed in Table 16-6.

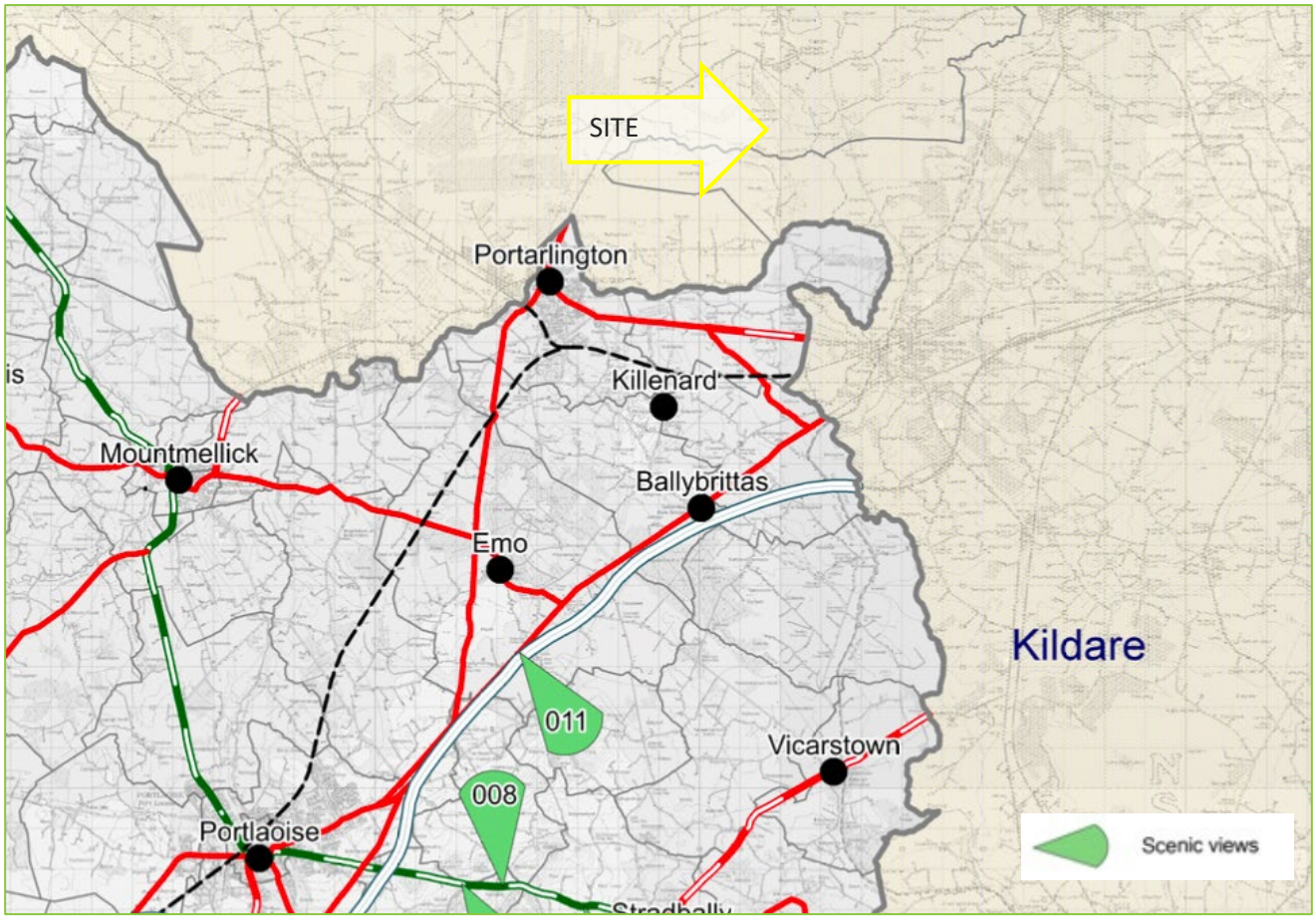

Plate 16-13: Scenic designations in County Laois in relation to the Proposed Development

16.6.8 Visual Baseline

16.6.8.1 Zone of Theoretical Visibility (ZTV)

Only those parts of the Study Area that potentially afford views of the Proposed Development are relevant to this part of the assessment. Therefore, the first part of the visual baseline is establishing a ZTV and subsequently, identifying visual receptors on which to base the visual impact assessment.

A computer-generated ZTV map has been prepared to illustrate where the Proposed Development is potentially visible. 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 nature of the topography in parts of the landscape, and the combined influence of successive layers of vegetation throughout the landscape, the main value of this form of ZTV mapping is to determine those areas from which the Proposed Development will not be visible, such as to retain a proportionate focus on locations where there is potential for visibility.

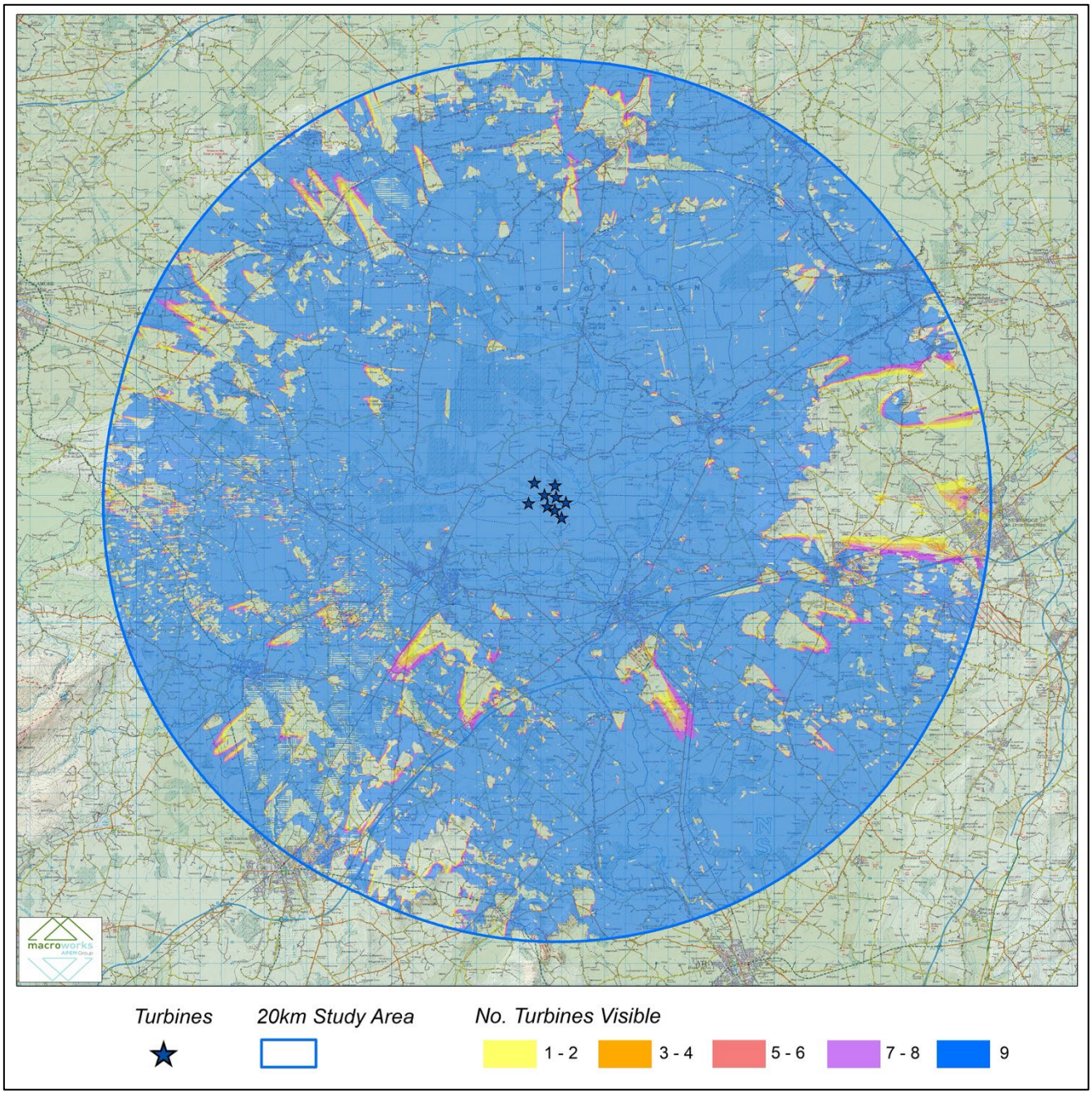

Plate 16-14: Bare-ground ZTV Map based on 186/187m tip height (See Appendix 16.2 for larger scale map)

The following key points are illustrated by the 'bare-ground' ZTV map (Plate 16-14 refers):

- The most important point to note in respect of this bare-ground ZTV map is that it represents only a potential for visibility and is theoretical in nature as it does not account for successive layers of trees, hedgerows, and other screening elements within the landscape. See the Route Screening Analysis (RSA) covered in section 16.7.4 for a more realistic understanding of potential visibility.
- The ZTV illustrates that comprehensive theoretical visibility (blue colour) of the proposed nine-turbine development is afforded across extensive parts of the 20 km Study Area. Comprehensive visibility is most prevalent in the immediate surrounds of the site and Central Study Area, extending approximately 5–10 km from the site in all directions and across much of the wider southeast and northeast.
- The largest area where there is no potential for visibility of the proposed turbines occurs in the wider eastern extents (approx. 9 km east of the site), where the turbines are screened by the 'Chair of Kildare' collection of hills (Red Hill, Dunmurry Hill, Grange Hill, and Boston Hill). Visibility then re-emerges on the western side of the Hill of Allen (approx. 15 km east of the site), which subsequently screens any further visibility beyond.
- A patchy visibility pattern is displayed within the southwest extents, where fragmented visibility of the proposed turbines is afforded by the undulating landform. Areas of no visibility are primarily associated with valleys or lower-lying landforms where topography restricts outward views.
- Where ZTV coverage exists within the Study Area, the overwhelming majority of locations experience theoretical visibility of all of the proposed turbines. Only a small proportion of the ZTV pattern shows partial visibility of the development, usually as a transitional zone between areas of full visibility and areas where the proposed development is screened entirely.
- In terms of settlements within the central Study Area, the towns of Portarlington and Monasterevin, and the village of Bracknagh, experience theoretical visibility of all of the proposed turbines, as do the Grand Canal, the Dublin to Cork InterCity railway line, and four regional roads.

16.6.8.2 Views of Recognised Scenic Value

Views of recognised scenic value are primarily indicated within Offaly, Kildare and Laois County Development Plans in the context of scenic views/routes designations, and these same views might also be indicated on touring maps, guidebooks, roadside rest stops or on post cards that represent the area.

All of the scenic routes and views in both Offaly, Kildare and Laois that fall inside the ZTV pattern (see 16.6 below) were investigated during fieldwork to determine whether actual views of the proposed wind farm might be afforded. Where visibility may occur, a viewpoint has been selected for use in the visual impact appraisal later in this chapter. In some instances, a single viewpoint is selected to represent a stretch of designated scenic route or a cluster of designated scenic views, particularly distant ones.

Table 16-6: Views of Recognised Scenic Value in the Study Area

Scenic View ref:	Relevance to visual impact appraisal	VP ref no. herein
Offaly County Development Plan 2021-2027– Scenic Designations		
V07	**Not Relevant** – View is located 19km northwest and is oriented in the opposite directio	-
V08	**Not Relevant** – View is located 15km northwest and is oriented in the opposite direction	-
V09	**Yes Relevant** – An elevated viewpoint with potential for distant views of the Proposed Development	VP12
Kildare County Development Plan 2023-2029 - Scenic Designations		
Hill Views; *Red Hill, Dunmurry Hill, Grange Hill, Boston Hill, Allen Hill, Crosspatrick Hill*	**Yes Relevant** – Susceptible views include both those to and from the hills, not just from hilltops. While views of the Proposed Development are likely from these summits, it is not necessary to represent each individually, as they typically occur along ZTV transition zones.	VP21 (Dunmurry Hill)
Grand Canal Viewpoints *GC29, 35, 28, 1, 26,25,37, 24,23,20,19, 22,17,18,15,16,12,36,13,14-* Views to and from bridges on the Grand Canal	**Yes Relevant** – Susceptible views associated with the Grand Canal are considered to include both views to and from the bridges that traverse the canal. While there may be theoretical potential for visibility of the Proposed Development from these locations, the primary focus of these views is on the canal corridor and adjacent bridge structures. In addition, the canal banks are typically enclosed by dense vegetation, which would further reduce the likelihood of clear outward visibility towards the Proposed Development.	VP7, VP6, VP3
River Barrow Views; *RB4,5,6,8,10.* Views to and from bridges on the River Barrow	**Yes Relevant –** Similar to the Grand Canal, susceptible views of the River Barrow are considered to be 'views of the River Barrow from bridges, adjacent lands and roads'. Whilst there may theoretically be potential for visibility of the Proposed Development from these locations, it is important to note that the view in question is primarily focused on the river and bridge in the immediate vicinity. Furthermore, the banks surrounding the canal/ river are generally densely vegetated, further limiting visibility.	VP18
S03	**Not relevant –** Views to the north and south, not in direction of the proposed turbines	-
S04	**Not relevant –** Views in opposite direction to the Proposed Development. No realistic potential of visibility	-

Scenic View ref:	Relevance to visual impact appraisal	VP ref no. herein
S34	**Yes relevant –** The primary source of amenity for this scenic route is focussed on the 'Bog of Allen/ 'Hill of Allen, Grange and Dunmurry' located to the southeast/east. However the southern end of the scenic route is located just over 7km from the Proposed Development and affords potential views.	VP3
S08	**Not relevant –** Susceptible views orientated to the northwest in the direction of the 'Bogland Plains,' in the opposite direction to the Proposed Development.	-
S16	**Not relevant –** Doesn't fall within ZTV with susceptible views in the opposite direction	-
S17	**Not relevant –** At a distance of over c.16km at its nearest, there is no realistic prospect of visibility of the Proposed Development	-
S14	**Yes relevant –** Potential for distant views	VP21
S33	**Not relevant –** Not within ZTV	-
S06	**Not relevant –** Susceptible view in the opposite direction, at a distance of over 18km from the Proposed Development, there is no realistic prospect of visibility.	-
S25	**Not relevant –** Susceptible view in the opposite direction/ not within ZTV, at a distance of over 18km from the Proposed Development, there is no realistic prospect of visibility.	-
Laois County Development Plan 2021-2027 - Scenic Views		
010	**Not relevant –** Susceptible view in the opposite direction	-
011	**Not relevant –** Susceptible view in the opposite direction	-
008	**Not relevant –** Susceptible view in the opposite direction	-
009	**Not relevant –** Susceptible view in the opposite direction	-
018	**Not relevant –** Susceptible view in the opposite direction	-

16.7 Existing Environment

16.7.1 Centres of Population and Houses

While the Study Area is rural in character, there are several small to medium-sized settlements distributed throughout. Within the Central Study Area, the nearest settlement is Bracknagh, located approximately 1.6 km to the northeast of the site. Portarlington (Co. Laois), situated around 4.3 km to the southwest, represents one of the more prominent settlements within the broader Study Area. Monasterevin (Co. Kildare), a similarly scaled town, lies approximately 4.8 km to the southeast.

Other settlements within the Wider Study Area include;

- Rathangan c.7.4km northeast
- Kildare c.17.6km southeast
- Killenard c.6km southwest
- Emo c.11.7km southwest
- Kildangan c.10.2km southeast
- Nurney c.13.7km southeast
- Suncroft c.17.6km southeast
- Clonbulloge c.7.3km north
- Walsh Island c.7.5km northwest
- Geashill c.13.6km northwest
- Ballinagar c.16km northwest
- Daingean c.15.4km northwest
- Mountmellick c.15km southwest
- Ballybrittas c.8.5km southwest
- Stradbally c.18.7km south
- Allenwood c.18.7km northeast
- Edenderry c.16.5km northeast
- Rhode c.17.6km northwest

16.7.2 Transport Routes

The Study Area is intersected by a network of primary transport corridors. Of particular relevance to the Proposed Development is the M7 Dublin-Limerick motorway, which traverses east to southwest through the study area (c. 6.7km southeast of the site). The length of the motorway within the study area is approx. 36km. Further afield, the N80 national road follows a short section of the western boundary of the Wider Study Area, at a distance of around 16.4km from the nearest proposed turbine.

Otherwise, there is a network of regional roads that traverse the Study Area that include;

- R419, while the 1.24km northwest of the nearest turbine connecting Portalington to Bracknagh
- R400 traversing north to west through the Study Area before joining the R419 2.6km west of the nearest turbine
- R442 located 1.7km north connects Clonbulloge to Bracknagh
- R420 located 4km south
- R424 is located 3.7km to the south connecting Portalington to Monasterevin
- R401 is located 11.5km east
- R445 is located 6.4km southeast traversing southwest to east through the study area
- R414 traversing northeast to Clonbollogue 5.2km east
- R402 located 10.8km north
- R423 is located 6.8km southwest

The Dublin to Cork InterCity railway also runs in a broad northeast-southwest direction through the Study Area, (stopping at Monastervin and Portarlington Stations), coming within approx. 3km south of the nearest Derrylea cluster. At Portarlington, this line is joined by the Dublin to Athlone rail line, which diverges northwest, within approx. 4.7km southeast of the nearest turbine.

16.7.3 Tourism, Heritage and Public Amenity

In terms of tourism, heritage, and recreation, there is not a strong presence of recreational amenity within the Central Study Area. Nonetheless, a number of local and more notable heritage features are located within the Study Area, as outlined below:

Approximately 4.16 km southwest of the Proposed Development lies the Derryounce Lakes and Waterways. Situated within a dense conifer plantation on cutaway bog, this area comprises the larger Lough Lurgan and the smaller Derryounce Lake. It is served by three marked looped walks and, together with the lakes, forms the core of the amenity area known as Derryounce Lakes and Walkways (Portarlington Community Development Association).

The Grand Canal Way, a designated way-marked trail, follows the towpath of the Grand Canal in an east–west direction through the northern part of the Study Area. Although it remains more than 16 km from the nearest turbine, it traverses centrally through the northern portion of the Study Area. The Grand Canal Way connects with the Barrow Way, which passes through the eastern extents of the Study Area, coming within 3.5 km east of the Proposed Development. The Barrow Blueway is a 115 km recreational route currently under phased development, which follows the River Barrow and the Barrow Line of the Grand Canal from County Kildare to County Carlow and beyond. Within the Study Area, the Blueway alignment fringes the eastern periphery of the Central Study Area near Monasterevin. The River Barrow itself, located approximately 2.6 km from the nearest turbine, is a known angling location. Smaller tributaries of the Barrow within the Central Study Area, including the Cushina, Figile, and Slate Rivers, are also used for fishing, though this varies according to the size and accessibility of each watercourse.

Other localised attractions include the Garryhinch Loops—a series of short woodland trails located between Mountmellick and Portarlington, approximately 9.5 km southwest of the site. To the southeast, Moore Abbey Woods offers a series of informal walking routes. The Mount Lucas Wind Farm, located within the Wider Study Area, includes walking and cycling trails through a rehabilitating bog landscape. Emo Court Demesne is another key amenity asset, combining formal gardens, parkland, a historic house open to the public, and visitor facilities including a café. The site also features the Emo Slí—a 4.3 km woodland trail located over 10 km southwest of the Proposed Development.

Key features in the Wider Study Area include;

- Croghan Hill 18.4km northwest
- Rock of Dunamase 18.6km southwest

16.7.4 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 proposed development.

Route Screening Analysis, 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, Route Screening Analysis (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 in accordance with best practice.

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.

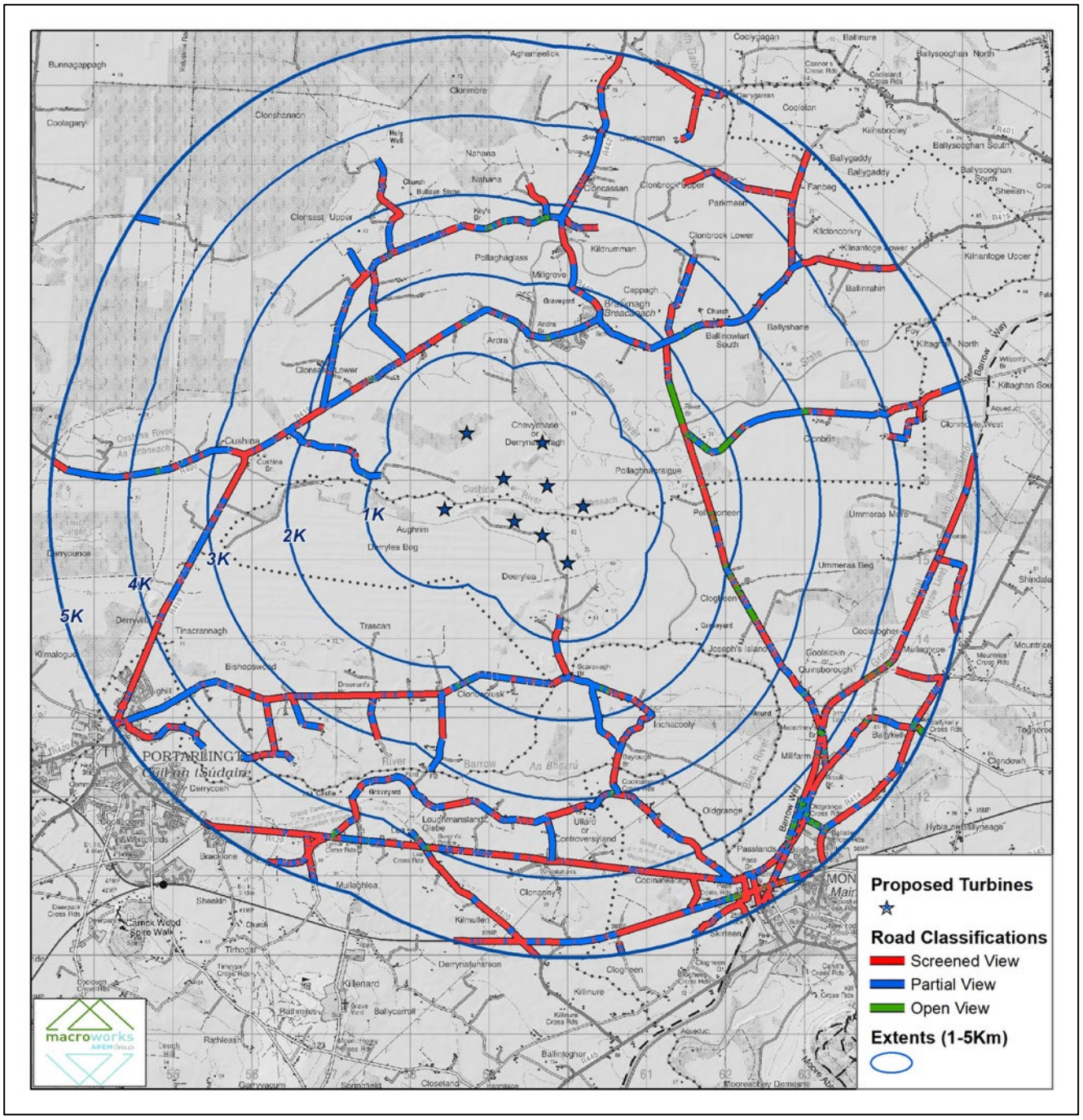

Plate 16-15: Route Screening Analysis (RSA) Map

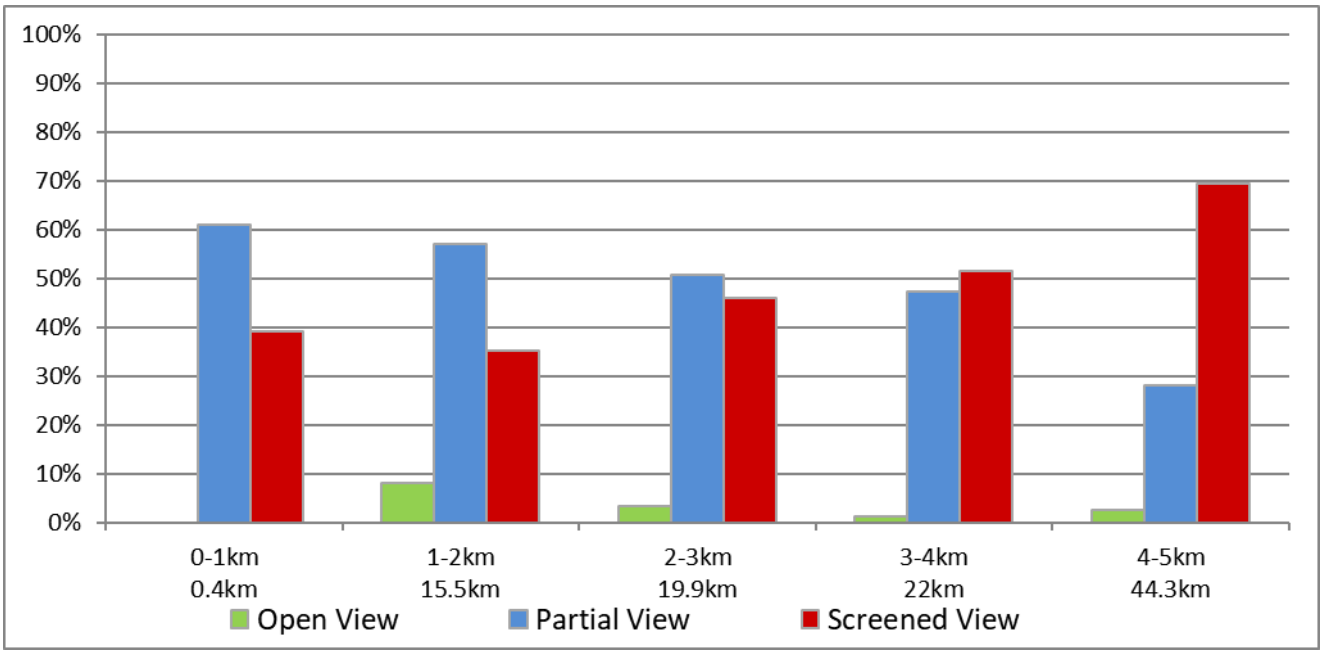

Plate 16.16: Graph illustrating results of Route Screening Analysis

The RSA map (Plate 16-15) and associated graph (Plate 16-16) illustrates a strong degree of wind farm screening from the six regional roads and local road network located within 5km of the proposed development. The closest distance band (within 1km) experiences no potential for open (full) views of the proposed wind farm which is particularly rare for any wind development, especially within a flat landscape like the proposed development. This indicates that within 1km of the site, intervening vegetation (predominantly hedgerows and regenerating scrub) serves to restrict views of the turbines and the level of screening increases with distance. However, it should also be noted that there is only 400m of public road within 1km of the site, which is an important point regardless of the RSA results. The 'Partial Views' category dominates all of the distance bands within 3km and the 'Fully Screened' category dominates all of the distance bands beyond 3km.

Fully Screened Views

In terms of fully screened views, these fluctuate from 35% to 70% across the distance bands. There is a minor decrease from 0-1km (39%) to 1-2km (35%), however the proportion of 'Fully Screened' views consistently increasing with distance. As would be expected, screened views are most prevalent in the outer 4-5km band. This is followed by the 3-4km band and then narrowly by the 2-3km.

Most notably, the southeastern section of the RSA Study Area, which includes the settlement of Monasterevin, serviced by an array of local and regional roads will be screened nearly entirely from the proposed development apart from partial visibility experienced along the R424 and glimpse views elsewhere. Similarly, for the settlement of Portarlington, located in the southwest in the 4-5m band, the proposed development will be screened near entirely as a result of the dense intervening vegetation. Typically for RSA in midland areas, screened views begin to dominate in the outer bands (e.g. 3-4km and 4-5km), however in this instance, due to the dense vegetation in the immediate surrounds of the site, screened views are found even in the 0-1km band. This is reflective of the regenerating scrub around the peatland fringe and hedgerows that contain the field boundaries.

Partial Views

Overall, partial views (less than one full blade set) range from 62% to 28% of road sections, illustrating a steady decrease in percentage further from the proposed development with the outer band registering the lowest at 28%. Partial visibility steadily but subtly decreases within the closest four band (registering similar figures between 61-57%). Partial visibility then decreases notably in the outer band recording the lowest at 28%. This reflects the fact that full screening has taken over as the predominant visibility scenario due to the relative height of the turbines (which are further away and perceptually smaller) compared to intervening vegetation and buildings (which remain consistently close to the viewer).

Open Views

As illustrated in Plate 16-17,'Open Views' of the proposed turbines are few in all of the distance bands. There are no open views of the development in the 0-1km distance band . However, there is a limited number of roads within 1km of the proposed development. The 1-2km distance band has the highest i.e. 8% of road viewing scenarios. This decreases to 4% within the 2-3km range, then to 1% within the 3-4km range, and then increases to 2% in the final 4-5km band. Overall, the RSA indicates that the potential for the of full visibility of even one blade set is very limited within the Central Study Area.

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) and accompanying graph at Plate 16.18).

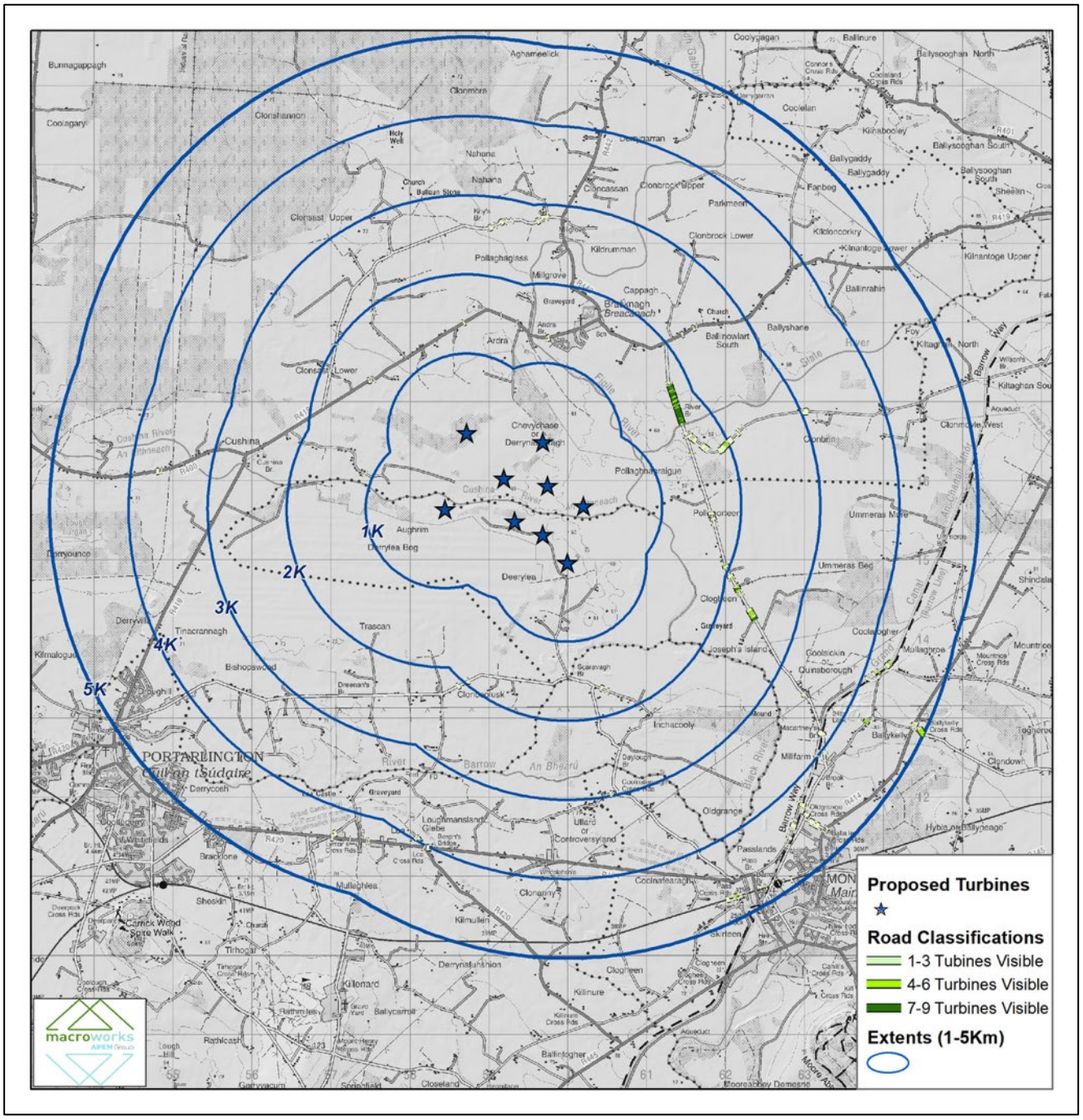

Plate 16-17: Map of Route Screening Analysis for 'Open Views'

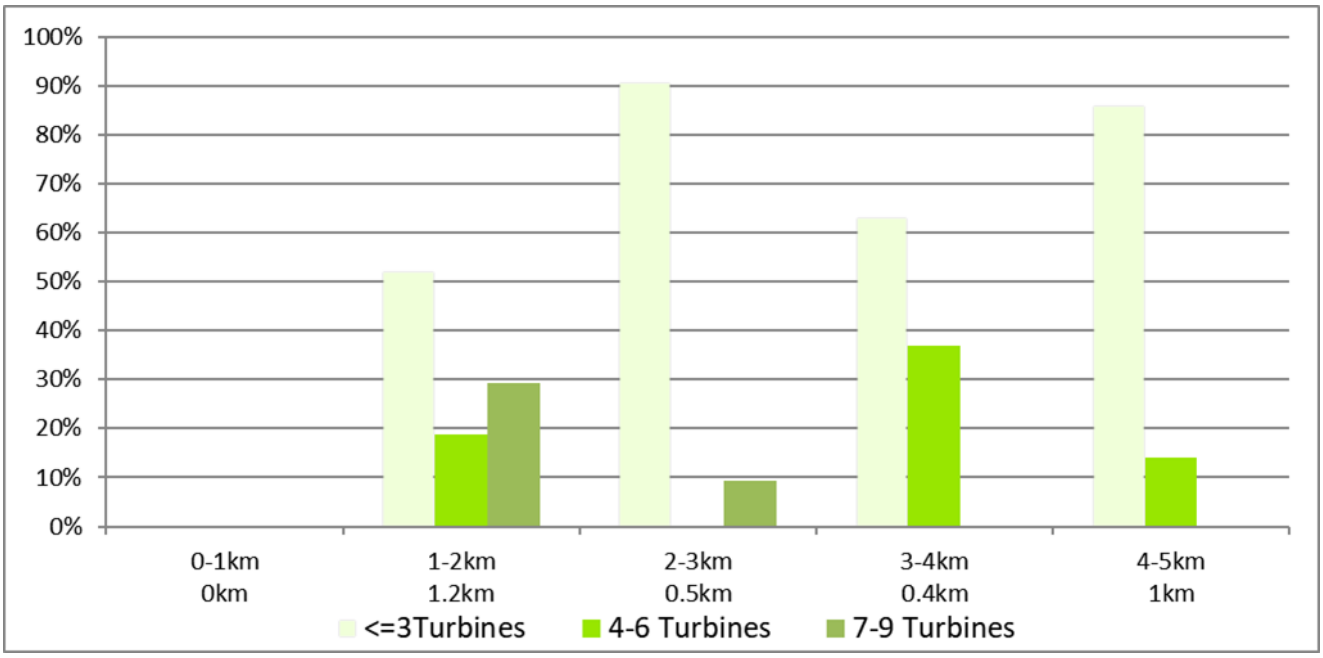

Plate 16-18: Graph illustrating RSA results for 'Open Views'

The results shown in Plate 16-17 and Plate 16-18 are sporadic and indicate that usually when there is an 'Open View' of the project, it relates to the blade sets of less than 3 turbines. Indeed, this is the case between 52% and 91% of the time across the five distance bands, with the view of 4-6 turbines occurring between c. 18% and 37% of the time. Within the 3-4km range 'Open Views' of 4-6 turbines occur 37% of the time, which is a notable increase to the rest of the pattern displayed. However, within the 3-5km ranges there is nowhere where all of the turbines can be seen. 'Open Views' of 7-9 turbines occurs from between 9% and 29% of the road sections and are only present in the 1-2km and 2-3km distance bands.

16.7.5 Identification of Viewshed Reference Points as a Basis for Assessment

The results of the ZTV analysis provide a basis for the selection of VRP's, which are the locations used to study the landscape and visual impact of the Development in detail. It is not warranted to include every location that provides a view of the Development as this would result in an unwieldy report and make it extremely difficult to draw out the key impacts arising from the Project. Instead, as is standard professional practice a variety of receptor locations was selected that are likely to provide views of the Development from different distances, different angles and different contexts.

The visual impact of a Development 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 how 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 CDP, 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 Development, 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 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 and/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 Development. 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 VRPs selected in this instance are set out in **Table 16-7** and their location and orientation are shown on **Plate 16-19** and the Map in the photomontage booklet. They have all been selected based on relevant guidance and best practice.

Table 16-7: Outline description of selected Viewshed Reference Points (See Viewpoint Location Map – Plate 16-19)

VRP No.	Location	Receptor type	Distance (km)	Direction of View
1	Local road at Cushina	LCV	720m	E
2	R419 at Clonsast Lower	LCV, MR	1.3km	SE
3	Spencer Bridge, Grand Canal	COP, AH, DSV	7.4km	WSW
4	Ellistown GAA Club	COP	7.85km	W
5	R442 at Bracknagh	MR, COP	1.7km	SW
6	Grand Canal Bridge near Monasterevin	COP, AH, DSV, LCV	4.5km	NW
7	Macartney Lock Bridge – Grand Canal	MR, COP, AH, DSV	3.85km	NW
8	R442, Clonbulloge	COP, MR	7.13km	S
9	Walsh Island	COP	7.55km	SE
10	Local road at Clonavoe	COP	6.23km	SSE
11	R402 near Mountlucas	MR	13.53km	SE
12	Designated Scenic Route, Coole	DSR	17.63km	SE
13	River Barrow, Portarlington	LCV, COP	5km	NE

VRP No.	Location	Receptor type	Distance (km)	Direction of View
14	Tirhogar Drive, Killenard	COP	5.47km	NNE
15	Local Road at Trascan	LCV, COP	2.3km	N
16	L1002 in Pollagorteen	LCV	1.62km	W
17	Grand Canal at Courtwood	AH, DSV	11km	N
18	Baylough Bridge, River Barrow	AH, LCV	2.65km	NW
19	Emo Court House	AH	10km	NW
20	R420 southeast of Clonygowan	MR, COP	9.52km	ENE
21	Designated Scenic Route, R401	DSR, MR	10.1km	W

*Key Views (KV) / Designated Scenic Routes and Views (DSR/ DSV) / Local Community views (LCV) / Centres of Population (CP) / Major Routes (MR) / Amenity and heritage features (AH)

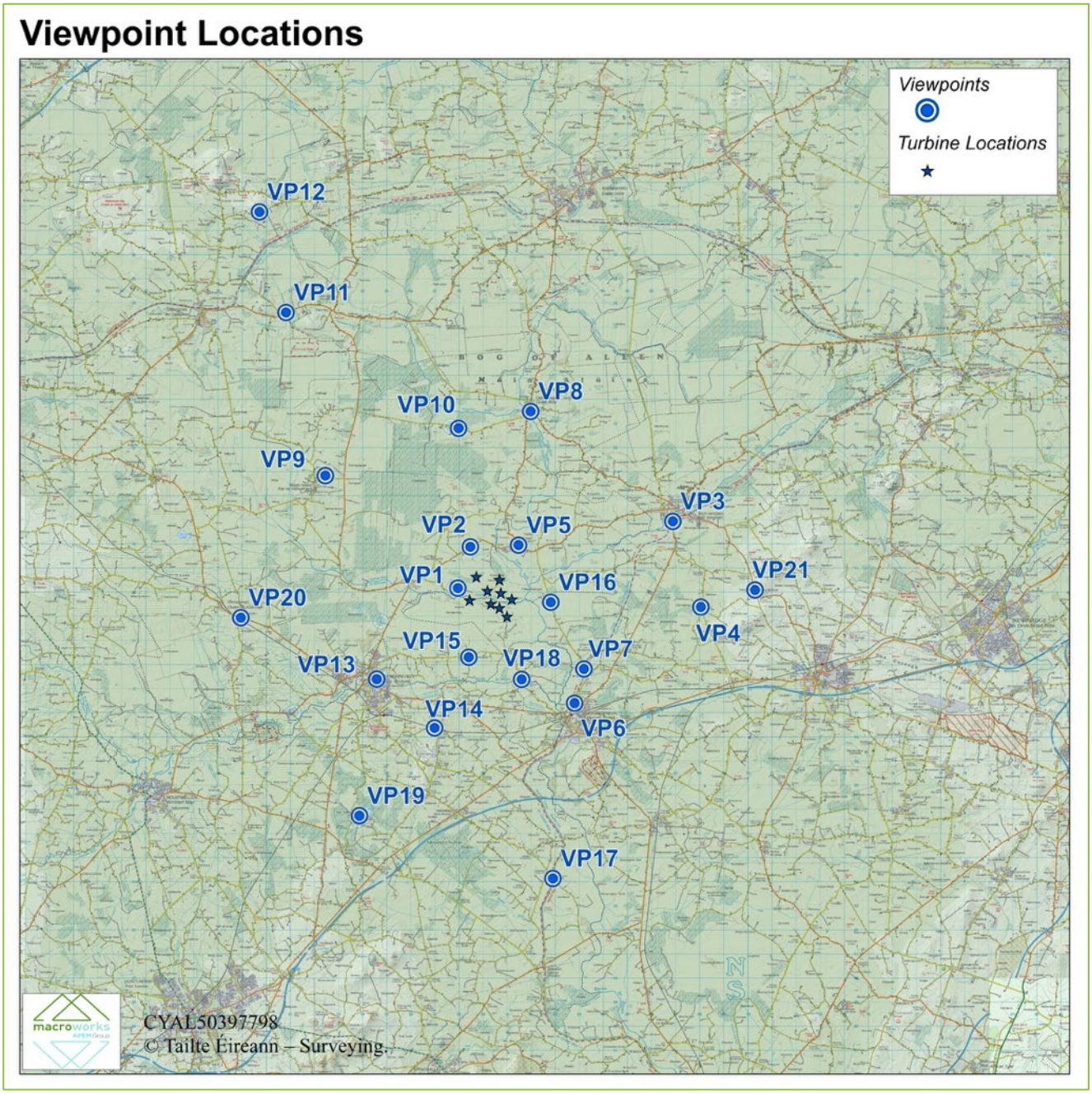

Plate 16-19: Map showing selected VRPs within the Study Area

16.7.6 Cumulative Baseline

Within the 20km radius Study Area, there are numerous existing/operational wind energy developments. Those that occur within the Study Area include:

Operational:

- Mount Lucas – (28 turbine scheme 10.5km northwest)
- Yellow River- (3 turbine scheme 19.3km northwest)
- Cloncreen – (21 turbine scheme 8.6km north)
- Moanvane (12 turbine scheme 6.4km west)
- Cushaling – (9 turbine scheme 10.8km northeast)

Permitted

- Dernacart- (8 turbine scheme 16km southwest)

In Planning

Clonarrow- (4 turbine scheme 12.6km northwest)

- Ballydermot- (47 turbine scheme 7.7km northeast)
- Cushina – (9 turbine scheme 3.1km northwest)

A cumulative ZTV map is provided in **Plate 16-20** and **Plate 16-21** (and included in **Appendix 16.2** (Volume III of this EIAR) at a larger scale) that illustrates these schemes. It is clear from this cumulative context, that the Study Area is strongly influenced by wind energy development, most notably the northern and western extents of the Study Area).

16.8 Mitigation Measures

In relation to the WEDG, it is considered that the Proposed Development is in keeping with the siting and design criteria presented in the guidance for the 'Flat Peatland' landscape type, with the following points noted in relation to embedded location and design mitigation:

Location – The Proposed Development is dispersed across a flat peatland fringe landscape with few roads and residences within 1km.

Spatial extent – The Proposed Development occupies a medium sized spatial extent which responds well to the broad lowland landscape.

Spacing – The turbines are well-spaced, allowing for a high degree of visual permeability between them. Their regular spacing corresponds with the scale and simple form of the receiving landscape type.

Layout – The Proposed Development has an clustered, organic layout which responds to the meandering form of the River Cushina which flows centrally through the scheme.

Height – The 186m turbines are considered to be visually appropriate within the context of this broad peatland setting. The proposed turbines are consistent in height resulting in an even profile which similarly is appropriate for this lowland setting.

Cumulative – Cumulative effects are described in section 16.11.4.8.

16.9 Monitoring

Given that there are no specific mitigation measures proposed in regard to the moderation of landscape and visual effects, monitoring measures are not required. It is reiterated however, that an Environmental Manager / Ecological Clerk of Works (ECoW) with appropriate experience will be appointed for the duration of the construction phase so that the CEMP is effectively implemented. This will include replacement landscaping works.

16.10 Assessment of Potential Effects

16.10.1 Landscape Impacts

Landscape impacts are assessed on the basis of 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 with respect to the Central Study Area (<5 km) as well as the Wider Study Area (5-20km).

16.10.2 Landscape Character, Value and Sensitivity

Landscape value and sensitivity are considered in relation to a number of factors that accord with GLVIA3, which are set out below and discussed relative to the Central and Wider Study Area.

Central Study Area (approx. <5km)

The Central Study Area presents as a typical midlands landscape, shaped by large areas of peatland, cutaway bog, and marginal agricultural land. While certain localised features exhibit more scenic qualities, the landscape is primarily appreciated as a productive, working environment with a longstanding tradition of human intervention and land use.

The proposed turbines within County Offaly fall partially within an area classified as having 'Low' landscape sensitivity and partially within an area of 'Moderate' sensitivity. In Kildare, the proposed turbines are contained entirely within a 'Low' sensitivity area. This reinforces that the landscape is robust and has the capacity to accommodate new development. Although there are some areas of increased sensitivity, such as the River Barrow and Barrow Line of the Grand Canal, as forementioned these are localised features. The overwhelming majority of the Central Study Area comprises a highly modified working landscape, with low sensitivity prevailing across much of the county.

The landscape sensitivities of the Central Study Area are primarily defined by the Grand Canal and River Barrow Corridor, which possesses a blend of scenic, recreational, and heritage value, albeit on a very localised scale. This is further supported by the Barrow Way, which is a national waymarked trail. These attributes contribute to a sense of amenity in parts of the Central Study Area. However, it is worth noting that the Grand Canal is located approximately 3.9 km from the Proposed Development, and the River Barrow is over 2.6 km away. Accordingly, there is a notable degree of contextual separation between the Site and the main corridor of the Grand Canal.

In terms of scenic value, there are multiple scenic designations across the Study Area. Six are contained within the Central Study Area, identified as GC1, GC26, GC28 and RB6, RB10, and RB8 within the Kildare CDP. These views all relate to various bridges along the Grand Canal and River Barrow. The Barrow line of the Grand Canal traverses the Central Study Area in a general south-northeast direction coming within 3.5km east of the Site. The Kildare CDP states that susceptible views are considered to be: *"to and from bridges on the Grand Canal" and "Views of the River Barrow from bridges, adjacent lands and roads."* As noted in Table 16-6, the main source of amenity is focused on the canal and bridge in the immediate vicinity as opposed to the contents of the background. The banks of the canal and River Barrow are generally densely vegetated, which often serves to screen or obscure background views. Additionally, the lands adjacent to the Grand Canal and River Barrow typically comprise a mix of less sensitive activities including; agricultural farmland, urban settlements, and conifer forestry. The character and associated landscape value of the canal corridor are largely confined to the canal itself and its towpaths, which although tranquil and exhibiting some degree of natural character, these corridors are not considered particularly sensitive landscape features beyond their immediate setting. A similar observation applies to the River Barrow, which passes through the western and southern extents of the Study Area. While both the Grand Canal and River Barrow are notable landscape features, their value is localised and not considered especially influential in shaping the wider landscape character.

Overall, the Central Study Area is best described as a robust and actively managed rural landscape, valued for rural subsistence purposes rather than remote and naturalistic character. While certain areas, particularly along the Grand Canal and River Barrow, exhibit higher levels of sensitivity due to their scenic, recreational or cultural values, the predominant character of the Central Study Area is defined by its working, utilitarian function.

On balance of the reasons outlined above, whilst the landscape associated with the Grand Canal and River Barrow corridors are considered to have a comparatively higher landscape sensitivity (**High-Medium**), the landscape sensitivity of the Central Study Area is deemed to have a predominant **Medium-Low** sensitivity.

Wider Study Area (approx. >5km)

The Wider Study Area exhibits a broadly comparable landscape composition to the Central Study Area. The northern and western extents are primarily defined by extensive tracts of cutaway peatland interspersed with a patchwork of agricultural farmland and coniferous forestry. While peatland is present throughout, agricultural land tends to be the prevailing land cover across much of the remaining area. In terms of topography, the Wider Study Area is generally flat to gently undulating, although the eastern portion contains a number of locally elevated landforms including Boston Hill, Grange Hill, Dunmurry Hill, and Red Hill together known as the 'Chair of Kildare' hills. Although parts of the Wider Study Area exhibit a more visually appealing rural character, the overall pattern remains that of a productive rural landscape shaped largely by agricultural activity. Wind energy infrastructure is also an established feature, particularly in the northern portion of the Study Area, where five operational wind farms are currently present.

With regard to landscape and scenic designations, the Study Area spans three counties, each of which contains areas of varying landscape sensitivity. The majority of the Wider Study Area lies within areas identified as having a 'Low' sensitivity. Nonetheless, each of the three counties also includes locations that are subject to higher landscape sensitivity designations, or comparable classifications. These include the Grand Canal Corridor, the River Barrow, the Esker landscape, and Croghan Hill. Within County Kildare, a number of individual landscape features are identified as being of 'special' or 'unique' sensitivity, including the 'Chair of Kildare', 'Pollardstown Fen', and the 'Curragh'. These areas are valued for their inherent amenity, ecological and/or cultural qualities. However, it is noted that they are set within a broader landscape context that is considerably influenced by anthropogenic features and land use patterns.

In terms of landscape values within the Wider Study Area, similar to the Central Study Area, the Grand Canal and River Barrow represent notable features. This is reinforced by the presence of multiple designated scenic views and areas identified with a 'High' sensitivity overlay along the course. However, as previously noted, the character and values associated with these corridors are largely confined to their immediate surroundings and do not exert a strong influence on the wider landscape context. There is a relatively low occurrence of built heritage assets or demesne landscapes within the Wider Study Area. Where such features are present, they tend not to exert a defining influence on overall landscape character. One exception is the vicinity of the village of Emo, where the presence of Emo Court Demesne contributes a more distinctive localised character. Additional sensitive features are located on the wider periphery of the Study Area, including Croghan Hill and Daingean Bog.

Overall, the Wider Study Area encompasses varying landscape types, the character of which is largely shaped by extensive human intervention and land use modification. Agricultural practices and energy production—particularly peat extraction—have played a prominent role in shaping this landscape. While some isolated features within the Wider Study Area are identified as having higher landscape sensitivity, these are limited in extent and localised in influence. On balance, the landscape sensitivity across the broader outer study area is assessed as broadly comparable to that of the Central Study Area and is best described as **Medium–Low**, reflecting its modified, functional and working character.

16.10.3 Magnitude of Landscape Effects

The proposed turbines, as well as the ancillary development, such as access and circulation roads, areas for the proposed Electrical Substation and hard standing for the proposed turbines, will directly impact the physical landscape of the proposed development site, as well as its character. However, the only envisaged landscape impact upon the Study Area (i.e., outside the Site) will be the likely impact upon landscape character from the proposed turbines.

16.10.3.1 Construction Stage Effects on Landscape Character

It is considered that the Development will have a modest physical impact on the landscape within the Site, because none of the proposed features are considered to have an extensive physical 'footprint'.

The topography and land cover of the Site will remain largely unaltered. Aside from the nine no. proposed turbines, construction will be limited to an Electrical Substation and Control Building, internal access tracks, Turbine Hardstands and a Temporary Construction Compound. Excavations will tie into existing ground levels and will be the minimum required to ensure efficient working. Any temporary excavations or stockpiles of material will be re-graded to marry into existing site levels and reseeded appropriately.

All works associated with the connection of the electrical substation to the national electricity grid will be with a Grid Connection to Bracklone substation will be underground. As Bracklone is a GIS Substation, the grid route cables will remain underground and will enter the Substation building through existing premade ducts openings.

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 notable impact on the character of the Site and cable routes than the operational phase. There will be some long-term/permanent effects on the physical landscape in the form of Turbine Foundations and hardstands, the existing/upgraded access tracks and a substation, but only the on-site substation and mast are likely to remain in perpetuity as part of the national grid network.

The highest level of construction phase landscape character impacts will occur towards the latter stages when the turbines have been substantially constructed, but not yet commissioned and likely to be facing in different directions with much of the associated construction stage machinery, facilities and stockpiling still present. Such impacts will be most pronounced within and immediately surrounding the site, whereas from increasingly broader distances ground-based site activity will not be visible and only the emergent turbines will influence landscape character.

As the construction stage of the Development is estimated to take approximately 24 months, construction-stage impacts are considered short-term, by the EPA Guidance terms (i.e., effects lasting from one to seven years).

In summary, the magnitude of construction-stage effects on the physical landscape of the Site and its immediate surrounds (<1km) are deemed to be **High-medium**, with a **Negativ**e quality of effect and **short-term** in duration. Beyond c. 1-2km from the site, the magnitude of effect will reduce to Medium and then Medium-low out to the extent of the Central Study Area. Beyond the Central Study Area, the magnitude of construction stage impacts will reduce to Low and Negligible at increasing distances and as the emerging development becomes a smaller scale feature of an increasingly broad landscape context out to the extent of the Wider Study Area.

As outlined in **Section 16.4.**7 the significance of landscape impacts is a function of landscape sensitivity weighed against the magnitude of the landscape impact. This is established on the basis of the significance graph (**Table 16-3**) in conjunction with professional judgement. Accordingly, when the worst-case High-medium magnitude judgement is combined with the Medium-low landscape sensitivity of the receiving environment, of the Central Study Area, the Development is deemed to have a **Moderate** significance of construction-stage landscape effects. These will be of a Negative quality and will be short-term in duration. Beyond 1-2km of the site construction stage effects will reduce to Moderate-slight out to the extent of the Central Study Area (5km). Beyond the Central Study Area (5km from the site) and relevant to the Wider Study Area, the magnitude of landscape impact during the construction phase is deemed to reduce to **Low** and **Negligible** at increasing distances. The quality of the landscape effects would remain **Negative** and will be **short-term** in duration.

Table 16-8: Summary of Construction Phase Landscape Effects

Distance from site	Landscape Sensitivity	Magnitude of Construction Phase Landscape Impacts	Significance of Construction Phase Landscape Effects
0-1km	Medium-low	High-medium	**Moderate** (Not Significant)
1-3km	Medium-low	Medium	**Moderate / Moderate-slight** (Not Significant)
3-5km	Medium-low	Medium-low	**Moderate-slight / Slight** (Not Significant)
5-10km	Medium-low	Low	**Slight** (Not Significant)
10-20km	High-medium / Medium	Low / Negligible	**Slight / Imperceptible** (Not Significant)

On the basis of the assessment provided above, the Proposed Development is considered to generate construction stage effects which are not likely to cause significant effects on the landscape or the environment**.**

16.10.3.2 Operational & Decommissioning 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 been a characteristic feature of the area become a new defining element of that landscape character. In this instance, wind turbines are an existing feature within the existing landscape context, with existing turbines located 6.4km to the west and permitted wind turbines located 3.1km to the northwest.

Indeed, the entire Study Area encompasses over 80 existing and consented turbines. Thus, the overall effect is one of intensification and extension of an established land use and not the introduction of a new and unfamiliar one. In terms of scale and function, the Proposed Development is well assimilated within the context of the Central Study Area, which exhibits of a range of working rural land uses. Although it represents a considerably higher level of built development and a more utilitarian aesthetic than what currently exists on the Site, it will not appear incongruous or detract notably from its prevailing working, rural landscape character.

The influence of the proposed turbines on landscape character will inherently be most notable at the immediate landscape level, where their scale and form have the potential to generate considerable change to the character of the landscape. However, the degree to which the proposed turbines will influence landscape character is moderated by the other wind farms within 10km, and despite the proposed turbines having a marginally greater height, the influence this will have on landscape character will be modest, given the scale of the underlying landscape. With distance the comparative influence of the Development reduces as demonstrated above.

Although the Development will influence the scenic properties of the landscape associated with the likes of the Grand Canal the River Barrow and the 'Chair of Kildare' hills, the turbines will generally be seen as a background feature and part of the wider productive rural context which already contains wind turbines. The spacing afforded between the turbines will maintain a high degree of visual permeability to ensure that visual relationships with the wider landscape will remain available, and the underlying features and characteristics of the landscape will be retained. In this respect the proposed wind farm represents a supplementary vertical land use that does not unduly interfere with the ground plane rural productivity of the Site and its surrounds.

It is important to note that in terms of duration, this development proposal represents a long term, but not permanent impact on the landscape and is reversible. The lifespan of the project 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 6 months.

For the reasons outlined above, the magnitude of the landscape impact is deemed to be **High-medium** for the site and its immediate surrounds (<1km) reducing to **Medium** and **Medium-low** at increasing distances for the remainder of the Central Study Area. Beyond 5km from the site, the magnitude of landscape impact is deemed to reduce to **Low** and **Negligible** as the wind farm becomes a proportionately smaller and more familiar component of the overall landscape fabric with distance and broadening landscape context where it is just one of a series of wind farm developments.

As outlined in **Section 16.**4.7 above, the significance of landscape impacts is a function of landscape sensitivity weighed against the magnitude of the landscape impact. This is established on the basis of the significance graph (**Table 16-5**) in conjunction with professional judgement. Accordingly, the significance of Operational and Decommissioning stage impacts on landscape character is deemed to be **Moderate** within the Site and its immediate surrounds reducing to **Moderate-slight** within the remainder of the Central Study Area, which will have a Negative Quality of effect and be long-term in duration. However, the significance will reduce to Slight and Imperceptible at increasing distances thereafter, as the Development becomes a progressively smaller component of the wider landscape fabric.

Table 16-9: Summary of Operational Phase Landscape Effects

Distance from site	Landscape Sensitivity	Magnitude of Construction Phase Landscape Impacts	Significance of Construction Phase Landscape Effects
0-1km	Medium-low	High-medium	**Moderate** (Not Significant)
1-3km	Medium-low	Medium	**Moderate / Moderate-slight** (Not Significant)
3-5km	Medium-low	Medium-low	**Moderate-slight / Slight** (Not Significant)
5-10km	Medium-low	Low	**Slight** (Not Significant)
10-20km	High-medium / Medium	Low / Negligible	**Slight / Imperceptible** (Not Significant)

16.10.3.3 Conclusion

On the basis of the assessment provided above, the effects of the turbines and associated infrastructure on the landscape and the environment are not likely to be significant.

16.10.3.4 Grid Connection and Turbine Delivery Route

There will be limited operational stage landscape effects relating to the grid connection and turbine delivery route. Landscape effects relating to the turbine delivery route will be confined to just the construction stage of the project and most of the grid connection route will run underground, and the cable trenches fully reinstated during the construction phase of the proposed project. There is the potential for a slight intensification of development where the proposed grid connection links back to the existing substation connection. Notwithstanding, any landscape impacts related to the grid connection during the construction stage will be minor, localised and are not considered to generate significant landscape effects.

16.10.3.5 Conclusion

The effects of the construction and operation of the grid connection and of the provision of the turbine delivery route are not likely to be significant on the landscape or the environment.

16.11 Visual Effects

16.11.1 Sensitivity of Visual Receptors

The Study Area generally presents as a typical rural landscape of rolling farmland, forestry and peatland with most of the population outside of population centres involved in aspects of the rural economy or supporting services.

The more elevated hills within the Wider Study Area such as the Chair of Kildare hills and Croghan Hill are typically identified by the presence of scenic routes and view designations relating to expansive views over the agricultural lowlands. It is important to note that while these routes and views generate a degree of scenic amenity, many of them present with a longstanding sense of human intervention on the landscape and are influenced by an array of productive, anthropogenic land uses such as agricultural farmland, major route corridors, cutaway peatland, plantation forestry wind energy development and urban settlements. While many of these viewpoints also represent other receptors, their primary significance in this assessment lies in their scenic designation as outlined in the relevant CDP. Visual receptor sensitivity is generally deemed to be High-medium for these scenic designations on balance their broad extent weighed against the productive / settled rural character of the afforded views.

Aside from elevated views, the Study Area contains waterway corridors of the Grand Canal and the canalised River Barrow, which also host waterside towpaths that are well used for recreation and amenity purposes. Designated scenic views occur from many of the canal bridges but visibility and visual amenity is largely contained within the tightly vegetated canal corridors. In some locations more open visibility is afforded from elevated sections of the canals where riparian vegetation is light. The sensitivity of canal views tends to be High-medium where a scenic designation applies.

Views of the working agricultural landscape are generally pleasant in terms of the rolling pastoral aesthetic and ‘green’, settled working character. The network of hedgerows and vegetation or scrubby peatland fringes contributes to some sense of naturalness and, combined with the gently undulating topography, generates a sense of localised containment in many locations. Overall, the sensitivity of visual receptors within the more typical working landscape context tends to range between Medium and Medium-low, with those of a Medium sensitivity representing more open expansive views across the wider landscape.

Key differentials in terms of visual receptor sensitivity relate to the occupation of the visual receptor and whether views of the surrounding landscape are an inherent part of the experience. Static residential receptors are considered generally more susceptible to changes in views over those where views are experienced transiently by those travelling through the landscape, particularly on major transport routes where road infrastructure and traffic volume draw from visual amenity.

16.11.2 Construction Phase 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 entrance. In addition, there will be construction machinery on site, which may rise above intervening vegetation and buildings. There will also be stockpiles of stripped topsoil and construction materials awaiting use. However, aside from the site's immediate vicinity, a large part of this temporary activity within the site will remain screened or partially screened from view by the surrounding mature layers of intervening vegetation. Furthermore, construction-related activity is temporary in nature and will cease once the development becomes fully operational. Beyond the immediate site context, the main visual impact will relate to the emerging and not yet commissioned turbines which tend to face in varying directions adding a degree of ambiguity to the view of them.

Visual impact magnitude in close proximity to the site where construction related activity is visible in conjunction with the emerging turbines is considered to be High to High-medium. Coupled with the Medium-low visual receptor sensitivities in the near surrounds of the site, the construction stage visual impacts in the immediate vicinity of the site will be no greater than Substantial-moderate and Moderate and will reduce considerably beyond 1 km, where the proposed construction works will be more heavily screened.

16.11.2.1 Conclusion

On the basis of the assessment provided above, the Construction Phase visual effects of the turbines and associated infrastructure on visual amenity are not likely to be significant.

16.11.3 Operational Phase 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 21 selected representative viewpoint locations has been placed into **Appendix 16.1**, Volume III of this EIAR**.** This section should be read in conjunction with both **Appendix 16.2** (Volume III of this EIAR) 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 16-10** below). A discussion of the results is provided thereafter.

Table 16-10: Summary of Visual Impact Assessment at Representative Viewpoint Locations

	Visual Impact			
VP No.	**Distance to nearest turbine**	**Visual Receptor Sensitivty**	**Magnitude of Visual Impact**	**Significance / Quality / Duration of Impact**
VP1	720m T6	Medium-low	High	Substantial-moderate / Negative / Long term
VP2	1.3km T2	Medium-low	High-Medium	Moderate / Negative / Long-term
VP3	7.4km T9	High-medium	Negligible	Imperceptible / Neutral / Long-term
VP4	7.85km T9	Medium-low	Negligible	Imperceptible / Neutral / Long-term
VP5	1.66km T3	Medium-low	Medium	Moderate / Negative / Long term
VP6	4.54km T1	High-medium	Low	Slight / Negative-neutral / Long-term
VP7	3.85km T1	High-medium	Low	Slight / Negative-neutral / Long-term
VP8	7.13km T1	Medium-low	Negligible	Imperceptible /Neutral / Long-term

	Visual Impact			
VP No.	Distance to nearest turbine	Visual Receptor Sensitivty	Magnitude of Visual Impact	Significance / Quality / Duration of Impact
VP9	7.55km T2	Medium-low	Medium-low	Moderate-slight / Negative / Long term
VP10	6.23km T2	Medium-low	Negligible	Imperceptible / Neutral / Long-term
VP11	13.53km T2	Medium-low	Negligible	Imperceptible /Neutral / Long-term
VP12	17.63km T2	High-medium	Low- negligible	Slight-imperceptible/ Negative-neutral / Long term
VP13	5km T6	Medium-low	Low- negligible	Slight-imperceptible/ Negative-neutral / Long term
VP14	5.47km T6	Medium-low	Negligible	Imperceptible / Neutral / Long-term
VP15	2.3km T1	Medium-low	Medium	Moderate-slight / Negative / Long term
VP16	1.62km T9	Medium-low	Medium	Moderate/ Negative / Long term
VP17	11km T1	High-medium	Low-negligible	Slight-imperceptible / Negative-neutral / Long term
VP18	2.65km T1	Medium	Low	Slight / Neutral / Long term
VP19	10.2km T6	Medium	Negligible	Imperceptible / Neutral / Long term
VP20	9.52km T6	Medium-low	Low	Slight/ Negative / Long term
VP21	10.10km T6	High-medium	Low	Slight/ Negative / Long term

16.11.4 Visual Impact summary by receptor type

The significance of visual impacts is a function of visual receptor sensitivity and visual impact magnitude, determined through professional judgement as informed by the significance matrix in **Table 16-5**. Visual impacts are summarised below by receptor type.

16.11.4.1 Visual Impacts on Designated Views

A number of scenic designations are located across the Study Area, as reflected in eight of the selected viewpoints (VP3, VP6, VP7, VP12, VP13, VP17, VP18 and VP21). The majority of these views are associated with the Grand Canal Corridor and the River Barrow, although VP12 and VP21 represent elevated scenic designation which offer broad views over the landscape below. Of these, VP21 is assessed as experiencing the greatest level of visual change, but with a likely visual effect of only 'Slight', where the turbines appear at a modest scale in the background at a distance of approximately 10km. In this instance, the magnitude of visual effect is influenced by the elevated sensitivity of the receptor, although the turbines appear in a clear and legible manner. At VP6 from the Grand Canal Bridge at Monasterevin and VP7 from Macartney Lock Bridge, filtered middle distance views of the turbines through canal-side vegetation results in a Slight visual impact significance in both instances. Marginally closer views of the proposed turbines but with a higher degree of intervening screening are afforded from VP18 at Baylough Bridge resulting in the same Slight significance of effect. The remaining viewpoints are assessed as experiencing visual effects ranging from 'Slight- imperceptible' to 'Imperceptible', where turbine visibility is limited to small scale views or partial blade sets due to the effects of distance and intervening screening.

On the basis of the assessment, operational phase visual effects in relation to designated scenic views are not likely to be significant.

16.11.4.2 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 (i.e., the Central Study Area). These are generally the people who 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. Owing to proximity, local community views understandably tend to have the highest likely visual impact significance of all receptors within the Study Area.

Of the 21 viewpoints assessed as part of this LVIA, five (VP1-2, VP5, VP15-16) were specifically identified as relevant to the assessment of visual effects in relation to the local community, albeit with others contained within the central study area that were associated with scenic designations (VP7 and VP18) and also relevant to local community receptors. These have been addressed as part of the Designated Views in **Section 16.11.4.1.** Receptor sensitivity across the local community viewpoints was deemed to be Medium–low for all receptors with views generally associated with a more robust working landscape character and lightly settled landscape, influenced by the presence of extensive peatland, agricultural farmland, and coniferous forestry plantations. VP1 (which represents the closest view to the Site) experienced the highest visual impact recorded of 'Substantial-moderate' Visual Impact Significance, where the turbines are a dominant feature at a distance of 700m west of the nearest turbine. Viewpoints VP2, VP15 and VP16 represents the next highest visual impacts of 'Moderate', where the turbines are seen to rise prominently in the near distance, albeit with a modest degree of screening by intervening vegetation. The proposed turbines will form a prominent feature within the local landscape context. However, the scale and lateral extent of the array are well accommodated within the broad landform and land cover context of the surrounding peatland landscape and even at relatively close range, the turbines are not perceived as overbearing.

On the basis of the assessment, operational phase visual effects in relation to local community receptors are not likely to be significant.

16.11.4.3 Visual Impacts on Centres of Population

As previously set out in Section 16.4, there are a number of settlements throughout the Study Area, most notably in the Wider Study Area. In total, five viewpoints (VP4, VP8–10, and VP14) were selected to represent centres of population. It is acknowledged, however, that the landscape is widely settled, with numerous properties dispersed throughout the wider rural area, many of which are represented by these viewpoints.

Of these receptors, VP9 records the highest visual impact significance from any of the centres of population, being that of a 'Moderate-slight'. From this location, which is representative of the small settlement of Walsh Island at a distance of over 7.5km from the nearest turbine, the Proposed Development is a noticeable feature of the backdrop of this view rising above intervening lowland vegetation at a modest scale. All remaining viewpoints are assessed as having 'Imperceptible' levels of visual impact due to factors of distance and screening.

On the basis of the assessment, operational phase visual effects in relation to Centres of Population are not likely to be significant.

16.11.4.4 Visual Impacts on Major Routes

As previously set out in Section 16.4, there are several major routes within the Central and Wider Study Area. In total, of the 21 viewpoints assessed as part of this LVIA, two (VP11 and VP20) were selected to primarily represent major routes through the Study Area. Besides the views which additionally represent other receptors (such as the local community – VP2 and VP5) that are summarised above, all remaining viewpoints were deemed to have a visual impact of 'Slight' or 'Imperceptible' due to combined factors of distance and screening within this lowland setting.

On the basis of the assessment, operational phase visual impacts in relation to Major Routes are not likely to be significant.

16.11.4.5 Visual Impacts on Tourism, Recreational and Heritage Features

As previously set out in Section 16.4, numerous tourism, recreational and heritage features can be found within the Study Area. The most notable of these relate to the Grand Canal and River Barrow, which have been already addressed in Section 16.11.4.5.

Viewpoint VP19, which represents 'Emo Court House' is the only receptor deemed relevant to this receptor type that hasn't been summarised above under another receptor type. Viewpoint VP19 is deemed to be of 'Medium' sensitivity and experiences a pleasant view over a parkland demesne. The Proposed Development is screened entirely in VP19 by a succession of intervening terrain and vegetation, thus the visual impact was deemed 'Imperceptible.'

On the basis of the assessment, operational phase visual effects in relation to Tourism, Recreation and Heritage features are not likely to be significant.

16.11.4.6 Summary and Conclusion of Visual Effects

Based on the visual impact assessments outlined above, the residual visual impacts range from 'Substantial–Moderate' to 'Imperceptible'. All of the higher impacts relate to the nearest views of the Proposed Development, which principally represent local community receptors. Whilst the Proposed Development will be a prominent and distinctive feature and will appear at a considerable scale from some of the closest viewpoints, the turbines are generally well accommodated within this broad, productive landscape context in terms of their scale and function. Other existing wind energy development within the study area results in the proposed wind farm being perceived as an addition to a familiar and characteristic feature of this midlands landscape setting and without generating any undue visual effects in terms of turbine stacking, spatial ambiguity or visual tension with other wind farms.

On the basis of the assessment, operational phase visual effects of the Proposed Development are not likely to be significant.

16.11.4.7 Decommissioning Phase Visual Effects

The decommissioning Phase will see the removal of all turbines and infrastructure from the site, with areas of hard standing that are of no further use reinstated and reseeded to blend with the prevailing surrounding land cover of the time.

The Decommissioning phase will see a similar nature of visual 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 decrease in scale as turbines are removed from view and the landscape is substantially reinstated.

As with construction stage impacts, Decommissioning stage visual effects are not likely to be significant**.**

16.11.4.8 Cumulative Impacts

Within the Study Area there are five existing wind farms, one permitted wind farm development and two wind farms in the early stages of planning. The cumulative developments are set out below.

Table 16-11: Cumulative Windfarms within the Study Area

Windfarm Name	Number of Turbines	Distance and Direction from the Development Site Boundary	Status
Cushaling	9	10.8km northeast	Existing
Cloncreen	20	8.6km north	Existing
Mount Lucas	28	10.5km northwest	Existing
Moanvane	12	6.4km west	Existing
Yellow River	3	19.3km north	Existing
Dernacart	8	16km southwest	Permitted
Ballydermot	47	7.7km northeast	In Planning
Cushina	9	3.1km northwest	In Planning

A cumulative ZTV map is provided in Plate 16-20. A colour grading has been employed to illustrate the following types of visibility:

- Blue wash: indicates parts of the Study Area where theoretical visibility of the Proposed Development occurs in isolation and therefore where the proposed turbines will not be seen in combination with existing turbines in the landscape;
- Pink wash: indicates parts of the Study Area where the proposed development has the potential to be seen cumulatively with the existing wind farms;
- Green wash: indicates parts of the Study Area where the proposed development would not be visible, but existing wind turbines would be.

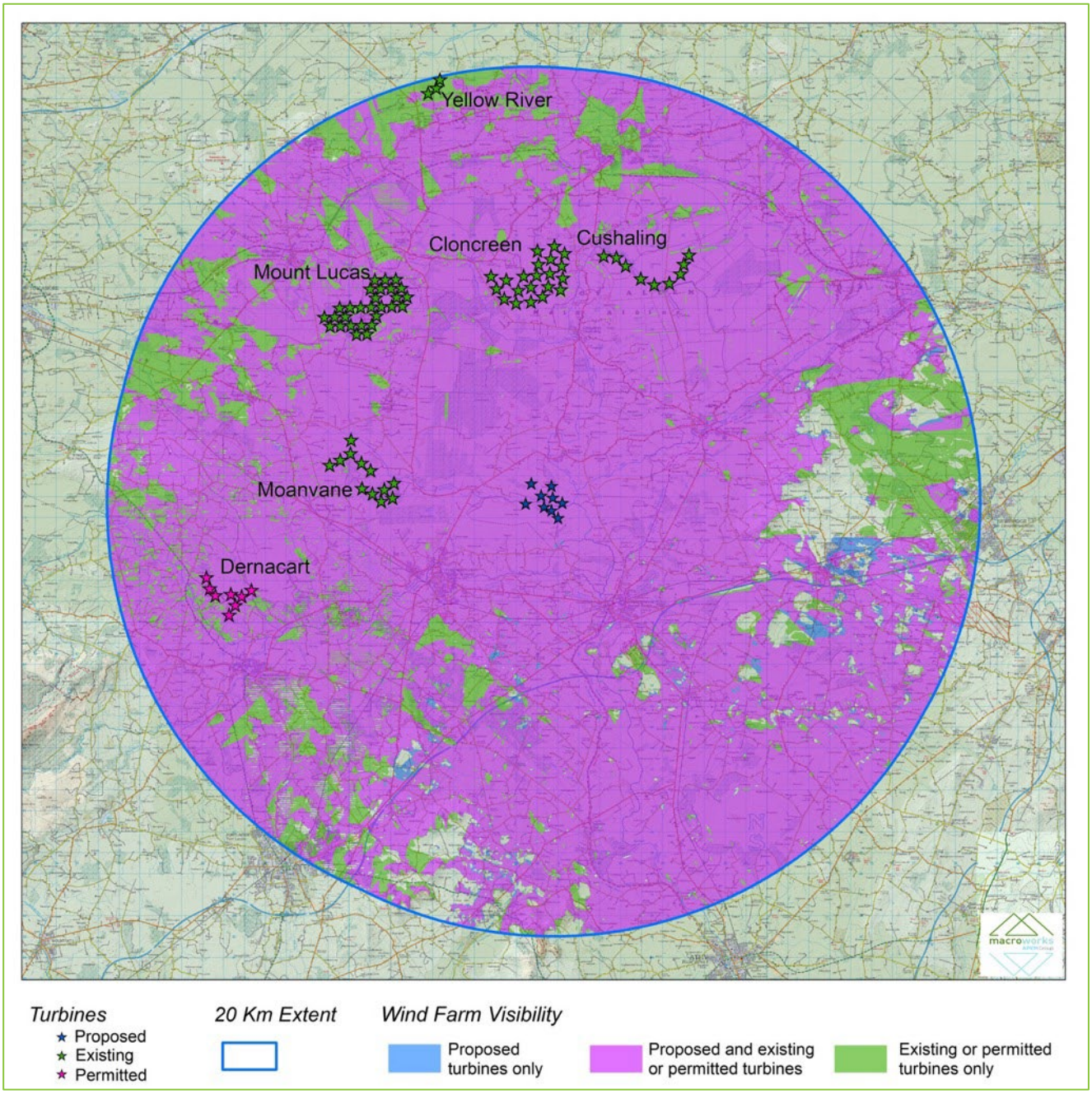

Plate 16-20: Cumulative ZTV (Zone of Theoretic Visibility) showing the theoretical potential for cumulative visibility of the Proposed Development and other existing wind farm developments within the Study Area

The cumulative ZTV map shows the potential cumulative visibility between the proposed turbines and all other existing and permitted developments within the 20km Study Area. At present, there are 5 existing (operational) wind farms and 1 permitted wind farm developments. Whilst views of wind energy development are sometimes afforded from the Central Study Area, it is important to note that all of existing and permitted developments are located outside the Central Study Area, predominantly within the broad expanses of peatland within the northern and western portions of the Wider Study Area.

The cumulative ZTV map (based on a bare-ground scenario – see Plate 16-20), identifies that 82.1% of the Study Area has the theoretical potential to afford visibility of existing and permitted 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 in approximately 1.1% of the Study Area which consist of small sporadic areas of visibility in the south-eastern quarters of the Wider Study Area. In these instances, due to the considerable distance, the Proposed Development will be viewed as a small scale feature in the distance. Only 4.7% of the entire Study Area has the potential to afford no visibility of existing, permitted, or proposed turbines, further reflecting the fact that wind turbines are a familiar feature of this landscape context. However, it is important to also consider the results of the Route Screening Analysis in section 16.7.4. which illustrate much more restricted visibility for the proposed development than the bare-ground ZTV map implies within this vegetated lowland setting. It is reasonable to consider that similar screening occurs around the other cumulative wind farms, which occur in similar landscape settings. Thus, intervisibility between wind farm developments is considerably less than implied by the cumulative ZTV map.

As previously noted, all existing and consented developments are located outside the Central Study Area, with a notable offset from the Proposed Development. The most apparent potential for cumulative visual effects arises in relation to the existing Moanvane development, which comprises 12 turbines set within a landscape of agricultural farmland and commercial forestry approximately 6.4km west of the site. Further north, a cluster of existing wind farms—including Mount Lucas, Cloncreen, and Cushaling—collectively comprises 57 turbines. While there is potential for intervisibility between these developments and the Proposed Development, the separation distance of over 8.5km from the nearest turbines coupled with intervening vegetation screening reduces the likelihood of any material cumulative visual effects. Nevertheless, the Proposed Development will contribute to an overall intensification of wind energy infrastructure within the Study Area.

In terms of sequential cumulative effects, the proposed, permitted, and operational developments have the potential to be experienced from a number of linear receptors within the Study Area, including the Grand Canal and the Barrow Way, located within both the Central and Wider Study Areas. Although the cumulative ZTV illustrates theoretical visibility of the proposed, existing, and permitted developments along these routes, it does not account for the screening effects of local vegetation and topography. Of the representative viewpoints selected to illustrate views from the Grand Canal (VP3, VP6, and VP7), intervisibility is indicated in the ZTV; however, in both VP3 and VP7, all turbines are screened by intervening vegetation, resulting in no actual potential for cumulative visual effects from these locations. In VP6, the Proposed Development appears perceptibly closer than the existing turbines, and there is a clear contextual separation between the two developments. At the representative viewpoint for the River Barrow (VP18), the Proposed Development is entirely screened by a combination of landform and vegetation. As a result, there is little potential for cumulative visual effects from this receptor.

Overall, while the Proposed Development will form part of a broader context comprising six existing and consented wind farm developments plus one planned one within the Study Area, it is not anticipated to contribute to a marked accumulation of wind energy development. However, it will contribute to a greater overall intensity and a more dispersed pattern of wind energy infrastructure across the Study Area.

On balance of the reasons above, it is considered that due to its design and location, the proposed Derrynadarragh Wind Farm development has a **Low** magnitude contribution to cumulative effects with other existing, permitted and proposed wind farms in the Study Area.

16.11.4.9 Potential Future Cumulative Scenario

Whilst still currently in-planning, it is important to consider the potential cumulative effects of other proposed projects in combination with the proposed Derrynadarragh Wind Farm development. This cumulative scenario is given separate consideration because there is less guarantee that proposed developments will eventually be realised in their current form than those that already have planning permission. In this instance there are two other developments currently in-planning these being the Cushina and Ballydermot Wind Farms.

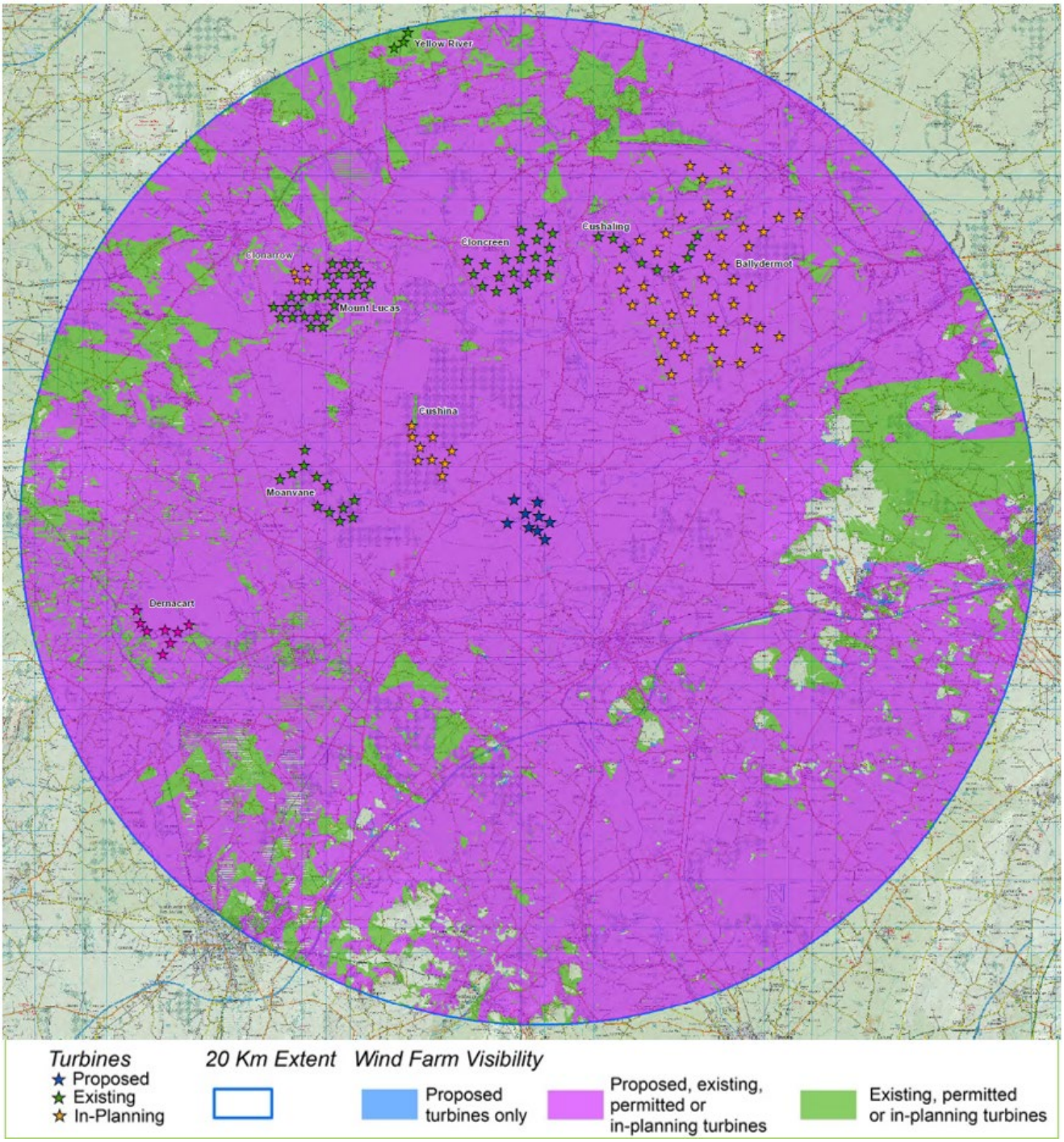

Plate 16-21: Cumulative ZTV (Zone of Theoretic Visibility) showing the theoretical potential for cumulative visibility of the Proposed Development and other existing and proposed wind farm developments within the Study Area

Of the two other proposed developments, Cushina presents the greatest potential for cumulative visual effects because of its closer proximity to the proposed Derrynadarragh Wind Farm site. The nine turbine Cushina Wind Farm is located 3.1km to the northwest of the proposed Derrynadarragh site. This scheme would include turbines with a tip height of 185m, arranged in a similarly staggered layout to the Proposed Development. As illustrated by the cumulative ZTV, there is potential for intervisibility between the two schemes, reflective of the flat, lowland landscape setting. At a distance of just over 3km, there will be a clear spatial separation between the developments, avoiding any sense of visual tension (as shown in the wirelines of VP16, VP7 and VP6). However, at greater distances (i.e. >10km), where intervisibility is present, the two developments may be perceived as being closely related to one another. There is a reasonable degree of cohesion between these two developments where they either appear as a single larger entity or two clusters of a single development, but seldom with clutter or scale confusion or a sense of being surrounded by turbines.

The 47-turbine Ballydermot Wind Farm wind farm is located approximately 7.7km northeast of the Proposed Development at its nearest point. The proposed turbines are expected to have an overall blade tip height ranging from 200 to 220 metres. Whilst there is theoretical potential for intervisibility, at a distance of over 10km to the northeast of the Proposed Development, it is unlikely that any notable intervisibility will occur except from elevated hills and in the context of vast views across the midlands plains where other wind farms will be much closer to Ballydermot Wind Farm.

On balance of the reasons outlined above, it is considered that the proposed Derrynadarragh Wind Farm development has a **Low** magnitude contribution to cumulative effects with other existing, permitted and proposed wind farms in the Study Area.

16.12 Summary of Significant Effects

On the basis of the assessment, cumulative effects in relation to other existing, permitted and proposed wind farms are considered to be **Not Significant**.

16.13 Statement of Significance

Based on the landscape, visual and cumulative assessment contained herein, it is considered that it is not likely that there will be any significant landscape effects, visual effects or cumulative effects arising from the proposed Derrynadarragh Wind Farm alone or in combination with any other existing, permitted or proposed windfarms or any other developments.

16.14 References

- Environmental Protection Agency (EPA) publication 'Guidelines on the Information to be contained in Environmental Impact Statements (2022) and the accompanying Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (2022).

- European Commission (2017). Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU). European Commission.

- Department of Environment Heritage and Local Government (DoEHLG) Wind Energy Planning Guidelines (2006/2019 revision) and Preferred Draft Approach to revising the 2006 Guidance published 2019.

- Landscape Institute and the Institute of Environmental Management and Assessment publication entitled Guidelines for Landscape and Visual Impact Assessment (2013).

- Scottish Natural Heritage (SNH) Guidance Note: 'Assessing the cumulative impact of onshore wind energy developments' (2012).

- Scottish Natural Heritage (SNH) Siting and Designing Wind Farms in the Landscape Version 3 (201

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