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CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR) FOR THE PROPOSED BALLINAGREE WIND FARM EIAR

VOLUME 2 - MAIN EIAR

CHAPTER 15 – LANDSCAPE AND VISUAL IMPACT ASSESSMENT

Prepared for: Ballinagree Wind DAC

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TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF FIGURES

LIST OF TABLES

15 LANDSCAPE AND VISUAL IMPACT ASSESSMENT

15.1 Introduction

This chapter describes the landscape context of the proposed Ballinagree Wind Farm 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.

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 on the general visual amenity experienced by people. This deals with how the surroundings of individuals or groups of people may be specifically affected by changes in the content and character of views as a result of the change or loss of existing elements of the landscape and/or introduction of new elements. Visual impacts may occur from; Visual Obstruction (blocking of a view, be it full, partial or intermittent) or; Visual Intrusion (interruption of a view without blocking).

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

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

- Environmental Protection Agency (EPA) publication 'Guidelines on the Information to be contained in Environmental Impact Statements (Draft 2017) and the accompanying Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (Draft 2015).
- Landscape Institute and the Institute of Environmental Management and Assessment publication entitled Guidelines for Landscape and Visual Impact Assessment – Third Addition (2013).
- Scottish Natural Heritage (SNH) Guidance Note: Cumulative Effect of Wind Farms (2012).
- Department of the Environment, Heritage and Local Government Wind Energy Development Guidelines (2006).
- Scottish Natural Heritage (SNH) Visual representation of wind farms: Best Practice Guidelines (version 2.2 - 2017).

15.1.1 Statement of Authority

This Landscape and Visual Assessment (LVIA) report was prepared by Richard Barker (MLA MILI) and Cian Doughan (BSLA MILI) of Macro Works Ltd. Macro Works Ltd, 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. Relevant experience includes LVIA work on over 140 on-shore 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.

15.1.2 Description of the Proposed Development

The proposed project assessed in this EIAR is comprised of the following key elements:

- The wind farm site (also referred to in this EIAR as 'the Site');
- The grid connection;
- The turbine delivery route (also referred to in this EIAR as 'the TDR');
- Biodiversity enhancement and management plan lands (also referred to in this EIAR as 'the BEMP lands').

A detailed description of the proposed project assessed in the EIAR is contained in Chapter 3.

15.1.3 Definition of the Study Area

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

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

In the case of this project, the blade tips are up to 185m high and, thus, the minimum ZTV radius recommended is 20 km from the outermost turbines of the scheme. However, Blarney Castle is located just over c.24km southeast of the site, and consequently as per the 2006 guidance, it is recommended to include that receptor within the study even though it falls outside of the principle study area. Notwithstanding the full 20km extent of the LVIA study area, there will be a particular focus on receptors and effects within the central study area where there is higher potential for significant impacts to occur. When referenced within this assessment, the 'central study area' is the landscape within 5km of the site.

15.2 Methodology

Production of this Landscape and Visual Impact Assessment involved baseline work in the form of desktop studies and fieldwork comprising professional evaluation by qualified and experienced Landscape Architects as detailed in the preceding Statement of Authority. This entailed the following:

15.2.1 Desktop Survey

- Establishing an appropriate Study Area from which to study the landscape and visual impacts of the proposed wind farm;
- Review of a Zone of Theoretical Visibility (ZTV) map, which indicates areas from which the project is potentially visible in relation to terrain within the Study Area;
- Review of relevant County Development Plans, particularly with regard to sensitive landscape and scenic view/route designations;
- Selection of potential View Points (VPs) from key visual receptors to be investigated during fieldwork for actual visibility and sensitivity.

15.2.2 Fieldwork

- 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.

15.2.3 Appraisal

- 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, facilities and heritage features and; designated and recognised views of scenic value.
- Consideration of design guidance and planning policies.
- Consideration of potentially significant 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.

15.2.4 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

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 to its essential characteristics. Landscape Value and Sensitivity is classified using the following criteria outlined in Table 15.1 below;

Table 15.1: 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 proposal site boundary that may have an effect on the landscape character of the area. Table 15.2 refers.

Table 15.2: 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 set out in Table 15.3.

Table 15.3: 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 are considered to be 'significant impacts' in EIA terms.*

15.2.5 Assessment Criteria for Visual Impacts

As with the landscape impact, the visual impact of the proposed wind farm 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.

15.2.5.1 Visual Sensitivity

Unlike landscape sensitivity, visual sensitivity has an anthropocentric basis. 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 criterion. Susceptibility criteria is extracted directly from the IEMA Guidelines for Landscape and Visual Assessment (2013), 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.*
- **Recognised scenic value of the view** (County Development Plan designations, guidebooks, touring maps, postcards etc). These represent a consensus in terms of which scenic views and routes within an area are strongly valued by the population because in the case of County Development Plans, at least, a public consultation process is required;
- **Views from within highly sensitive landscape areas**. Again, highly sensitive landscape designations are usually part of a county's Landscape Character Assessment, which is then incorporated with the County Development Plan and is therefore subject to the public consultation process. Viewers within such areas are likely to be highly attuned to the landscape around them;
- **Intensity of use, popularity**. Whilst not reflective of the amenity value of a view, this criterion relates to the number of viewers likely to experience a view on a regular basis and whether this is significant at county or regional scale;
- **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.

15.2.5.2 Visual Impact Magnitude

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

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

For wind energy developments, a strong visual presence is not necessarily synonymous with adverse impact. Instead, the 2012 Fáilte Ireland survey entitled 'Visitor Attitudes On The Environment – Wind Farms' found that *"Compared with other types of development in the Irish landscape, wind farms elicited a positive response when compared to telecommunication masts and steel electricity pylons"*…. and that *"most* (tourists) *felt that their presence did not detract from the quality of their sightseeing, with the largest proportion (45%) saying that the presence of the wind farm had a positive impact on their enjoyment of sightseeing…*". The purpose here is not to suggest that turbines are either inherently liked or disliked, 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:

Table 15.4: Magnitude of Visual Impact

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

15.2.6 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 matrix included for Landscape Impact Significance at Table 15.3 above.

15.3 Existing Environment

15.3.1 Landscape Baseline

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

A description of the landscape context of the proposed wind farm site and wider study area is provided below under the headings of landform and drainage and vegetation and land use. Centres of population, transport routes and tourism, recreation and heritage features form part of the visual baseline and are dealt with in Section 15.4 below.

Figure 15.1: Aerial photography showing the Landscape context of the site and its immediate surrounds

15.3.1.1 Landform and Drainage

The principal landform within the study area is that of the Boggeragh Mountains which encloses the site to the north and east and creates a basin-like landscape formation in which much of the southern extents of the site is situated in. Musheramore mountain is the highest of the Boggeragh Mountains rising to a height of c.644m AOD and contains the westernmost portions of the proposal site. The northern areas of the site are situated across Seefin ridge which rises to a height of c.491m AOD, whilst Knockcraugh Hill rises to a height of c.434m AOD further to the east again.

Other notable hilltops within the Boggeragh range include Mount Hillary (391m AOD) and Bweenduff (416m AOD), both of which are situated in the northeast quadrant of the wider study area. North and northwest of the site the elevated hills and ridges of the Boggeragh Mountains swiftly transition to a low rolling landscape where the terrain drains into numerous small rivers and streams that flow into the River Blackwater. The River Blackwater is the most prominent watercourse in the wider northern half of the study area where it flows in a general easterly direction entering the study area at the settlement of Rathmore and exiting it southwest of Mallow. In similar circumstance to the northern half of the study area, the terrain to the south of the site begins to descend towards a low rolling landscape comprised of low broad ridges and winding river valleys. The nearest river to the site is that of the River Laney which emerges on the east-facing hillside of Musheramore and passes directly through the proposal site and east of the settlement of Ballinagree. The River Laney then meanders through the southern half of the study area before merging with the River Lee. The River Lee is one of the most distinctive landscape features within the southern half of the study area where it flows in an easterly direction towards Cork City.

Other distinctive landscape features within the wider study area include the Derrynasaggart Mountains which rise in the wider western half of the study area and include some notable hilltops such as Mullaghanish (649m AOD) and Caherbarnagh (681m AOD).

15.3.1.2 Vegetation and Land Use

The principal land use within the central and wider study area is that of agricultural farmland bound by a network of mixed hedgerow vegetation. Much of the site itself is contained in large conifer forest plantations which make a prominent imprint on the landscape of the study area and is often found carpeting transitional rolling hills and upland areas within the 20km study area. North and west of the site, the upland terrain is cloaked in areas of mountain moorland and rocky outcrops. A relatively modest rural population exists in the immediate site surrounds due to the upland nature of the terrain. The settlements of Millstreet, Kanturk, Macroom, and the outskirts of Mallow account for the most notable areas of urban land cover within the study area, whilst other anthropogenic landscape features include the linear transport corridors of the N72 and N22 situated on the study areas outer periphery. Several active quarries are also located throughout the wider study area.

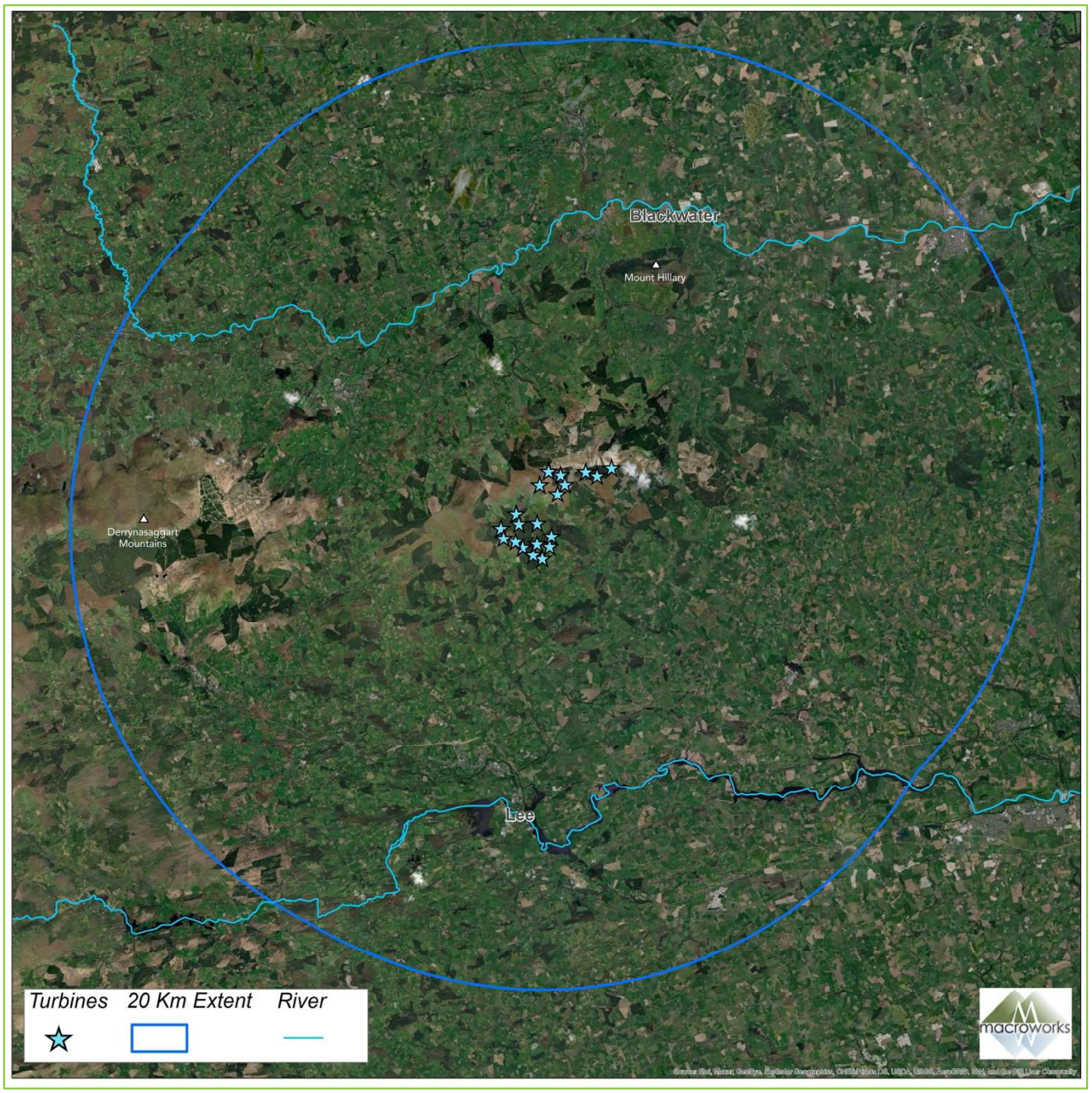

Figure 15.2: Aerial photograph showing the landscape context of the wider Study Area

15.3.2 Landscape Policy Context and Designations

15.3.2.1 Department of Environment, Heritage and Local Government Wind Energy Development Guidelines 2006

The 2006 Wind Energy Development Guidelines provide guidance on wind farm siting and design criteria for a number of different landscapes types (this section remains unchanged in the draft 2019 guidelines). The main wind farm site and central study area is considered to be located within a landscape that is consistent with the 'Transitional Marginal Landscapes' landscape type.

However, there are also some aspects of both the 'Mountain Moorland' (along the higher peaks and ridges) and Hilly and 'Flat Farmland' (on lower ground north and south). In such instances the Guidelines recommend consideration of the advice for each landscape type. Siting and design recommendations for these landscape types include the following:

Transitional Marginal Landscapes:

Location – *"As wind energy developments, for reasons of commercial viability, will typically be located on ridges and peaks, a clear visual separation will be achieved from the complexity of lower ground."*

"wind energy developments might also be located at lower levels in extensive areas of this landscape type, where they will be perceived against a relatively complex backdrop. In these situations it is important to minimise visual confusion such as the crossing by blade sets of skylines, buildings, utility lines and varied landcover."

Spatial extent - *"Wind energy developments in these landscapes should be relatively small in terms of spatial extent. It is important that they do not dominate but achieve a balance with their surrounds, especially considering that small fields and houses are prevalent."*

"4(a)Wind energy development with regular spacing and linear layout – may not be appropriate due to the undulation of the land from as well as limited field pattern."

"4(b)Wind energy development with irregular spacing and random layout -is more appropriate given the relative undulation of the setting."

"4(c)Large wind energy development straddling two landscape character types within the same visual unit can create visual ambivalence and, thus, negative tension between the two character types involved."

Spacing - *"All options are possible, depending on the actual landscape characteristics. However, irregular spacing is likely to be most appropriate."*

Layout - *"The likely location of wind energy developments on ridges suggests a linear or staggered linear layout whereas on broader hilltops they could be linear or clustered."*

Height - *"…where the upper ground is relatively open and visually extensive, taller turbines may be more appropriate."*

"…the profile can be even or uneven, depending on the profile and visual complexity of the terrain involved. The more rugged and undulating, the greater the acceptability of an uneven profile provided it does not result in significant visual confusion and conflict."

Cumulative - *"This would have to be evaluated on a case-by-case basis, but great caution should be exercised. The spatial enclosure often found in transitional marginal landscapes is likely to preclude the possibility of seeing another wind energy development. However, should two or more wind energy developments be visible within a confined setting a critically adverse effect might result, depending on turbine height and wind energy development extent and proximity."*

In instances where two or more landscape types are potentially applicable, the Guidelines recommend consideration of the advice for each landscape type rather than just the one which is considered to be most applicable. The 2006 Guidance specifically states (p40):

> *"It is, however, common that a wind energy development is located in one landscape character type but is visible from another, for example, where the site comprises an unenclosed moorland ridge standing above a broad flat farmland. In such an instance, the entire visual unit should be taken into consideration …".*

In combination with the recommendations for *'*Transitional Marginal Landscapes*',* the siting and design recommendations for the *'Mountain Moorland'* and *'Hilly and Flat Farmland'* landscape types have also been considered when designing the turbine layout for the proposed Ballinagree Wind Farm as a result of the varied nature of the landscape within the central and wider study area. In general, the proposed development is relatively consistent with the guidance notes for all three landscape types but it is especially consistent with the guidance for the landscape type 'Transitional Marginal Landscapes' in which the proposed project is situated. A key consideration in this instance was the locational guidance which states "*wind energy developments may be located at lower levels in extensive areas of this landscape type, where they will be perceived against a relatively complex backdrop"*. Although general 'spatial extent' recommendation for 'transitional marginal' landscapes is "…relatively small..", this is a more expansive and sparsely populated landscape than the specimen type used for the Guidelines i.e., where 'small fields and houses' are less of a design consideration.

Siting in Relation to Individual Properties ('Setback')

Section 6.18 of the Draft Revised Wind Energy Development Guidelines (December 2019) refers to appropriate setback distances for visual amenity purposes. The guidelines outline a mandatory minimum setback distance of *"500 meters"* or the distance of *"4 times the tip height"* of the proposed *turbines "between the nearest point of the curtilage of any residential property".* This is set out in the 2019 Draft Revised Wind Energy Development Guidelines in Specific Planning Policy Requirement 2 (subsection 6.18.1) 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.*

The nearest residential dwelling to any of the proposed turbines is 809m which exceeds and fully complies with the setback distance outlined in the both the current 2006 Guidelines and the Draft Revised Guidelines (2019).

15.3.2.2 Cork County Development Plan 2014 – 2020

The current Cork County Development Plan 2014-2020 includes Chapter 13 'Green Infrastructure and Environment', within which sub-section 13.5 relates to landscape. A number of general objectives relating to landscape are noted within this chapter and are included below:

GI 6-1: Landscape

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

GI 6-2: Draft Landscape Strategy

"Ensure that the management of development throughout the County will have regard for the value of the landscape, its character, distinctiveness and sensitivity as recognised in the Cork County Draft Landscape Strategy and its recommendations, in order to minimize the visual and environmental impact of development, particularly in areas designated as High Value Landscapes where higher development standards (layout, design, landscaping, materials used) will be required."

GI 6-3: Draft Landscape Strategy and Local Area Plans

"Have regard to the Cork County Draft Landscape Strategy (2007) in the preparation of Local Area Plans and other plans."

A Landscape Character Assessment was undertaken as part of the Draft Cork Landscape Strategy (2007). This has been incorporated within the Cork County Development Plan (2014-2020 and divides the county into 16 No. Landscape Character Types (LCTs). The proposed development is principally situated in the easternmost extents of the Landscape Character Type LCT 15b – 'Ridged and Peaked Upland' although some turbines within the array straddle the southern portions LCT 14b – 'Fissured Marginal and Forested Rolling Upland' and the northern portions of LCT13a – 'Valleyed Marginal Middleground' (Figure 15.4 and Figure 15.5 refers) LCT15b and LCT14b are recognised as having; Medium landscape sensitivity and Medium Landscape Value, and a County and Local Landscape Importance respectively. LCT 13a is classified with a High landscape sensitivity; High Landscape Value; and County Landscape Importance.

Within the Cork Landscape Strategy (2007), LCT 15b – 'Ridged and Peaked Upland' is described as a *"ridged, peaked and forested upland landscape type which is located south of Millstreet town, includes much of the Millstreet to Macroom road (R582) and swings south west towards the county boundary west of Ballyvourney. This landscape type has been glaciated and comprises a fairly rugged and rolling mountainous topography at a relatively high elevation. The area around the Boggeragh Mountains provides a good example of this landscape type….. The landscape, with its rapid and steep rising and falling, seems to tumble down along the valleys. The rugged and diverse landcover, involving moorland, heath and scrub, lends a strong sense of the naturalistic."* Four landscape character areas occur within this LCT, those are 'LCA 1 – Carraiganimmy (undulating Rugged and Forested Upland Valley)', LCA 2 – 'Derrynasaggart Pass (Composite Moorland Upper Valley)', 'LCA 25 – Millstreet (Composite Upper Valley)', and 'LCA 26 – Ballynagree West (Upper Moorland and Forested Valley)'.

LCT 14b – 'Fissured Marginal and Forested Rolling Upland (Lyre and Nad)' is described as a landscape *"of relatively steep but rolling mountainous upland, which is fissured, in places quite deeply, by narrow serpentine rivers but also which includes some broad flat ground. The Boggeragh Mountains are located in this area. The higher ground is part of a larger mountain range comprising old red sandstone and mudstone. The area is characterised by fast flowing rivers which fan outwards from the main upland mass in directions ranging from south-west to east-west. The elevation of this landscape provides fairly open vistas, though these can be curtailed by the interweaving of slopes as well as by the coniferous plantations when viewed at close quarters."* Landscape Character Areas (LCAs) within this landscape type include 'LCA 3 – The Boggeraghs (Moorland and Forested Mountain Upper Valley and Fissured Hilly Mosaic Farmland).

LCT 13a – 'Valleyed Marginal Middleground is *"found between Ballyvourney and Macroom. Topographically this landscape comprises low rounded hills of old red sandstone enclosing fairly broad undulating river valleys. The rivers in the western area comprise the middle to upper levels of the River Lee and Sullane River before they join together as the River Lee in an adjacent landscape type (Hilly River and Reservoir Valleys). The Sullane River holds stocks of small Brown Trout while the River Lee is a serious Salmon angling river. An appearance of roughness prevails due to the fragmentation of fields by areas of marginal quality on peaty podzols or which are uncultivated and include clumps of willow, birch, heather, bracken and gorse. This appearance is also contributed to by the occasional rock outcrop and by the intermittent change of hedgerows from broadleaf to conifer shelterbelts and the strips of riparian vegetation winding along the more fertile riverbanks. Fields are located on hill slopes and valley bottoms and are used for grazing. They are both regular and irregular in configuration and small to medium in size, defined by low hedgerows of broadleaf trees and shrubs and conifers or simply by banks.*" Landscape Character Areas (LCAs) within this landscape type include 'Kilmichael – Broad Middle Valley of Rugged Scrub and Marginal Land', 'Macroom – Broad Middle Valley of Semi-Rugged Mosaic Hills and Rock Outcrops', and 'Ballynagree – Moorland Ridge, Rolling Farmland and Boggy Flat Valley'.

Other LCTs that occur within the central study area include 'LCT 11 – Broad Marginal Middleground Valleys', 'LCT 10b Fissured Fertile Middleground'. LCT 10b is classified with a High landscape sensitivity; Medium Landscape Value; and County Landscape Importance whilst LCT 11 is categorised with a High landscape sensitivity; High Landscape Value; and Local Landscape Importance.

LCTs within the wider study area include 'LCT 5 – Fertile Plain with Moorland Ridge', 'LCT 6a – Broad Fertile Lowland Valleys', 'LCT 8 – Hilly River and Reservoir Valleys', 'LCT 10a – Fissured Fertile Middleground' and 'LCT 12a – Rolling Marginal Middleground'.

The value of the landscape in county Cork "*is defined as the environmental or cultural benefits, including services and functions, which are derived from various landscape attributes. Value is evaluated using criteria ranging from Very High to Low*". It should be noted that the proposed development is not situated in an area recognised as 'high value landscape (HVL)' and the nearest HVL designation relates to 'LCT 8 – Hilly River and Reservoir Valleys', which is located some c. 8.5km southeast of the site at its nearest point (Figure 15.6 refers).

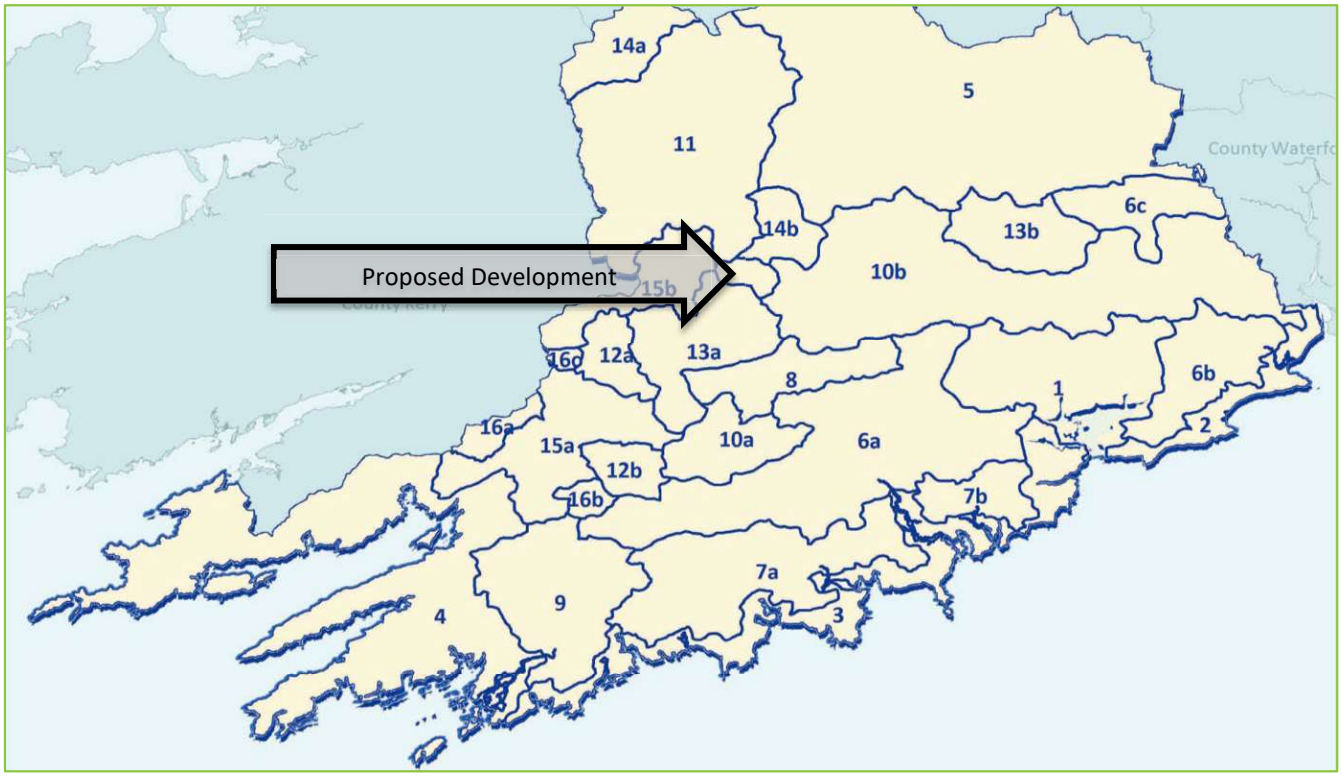

Figure 15.3: Excerpt from Cork County Development Plan (2014). Appendix E, Map 2 showing approximate location of proposed development in relation to Landscape Character Types. Site located across LCT15b, LCT14b and LCT13a

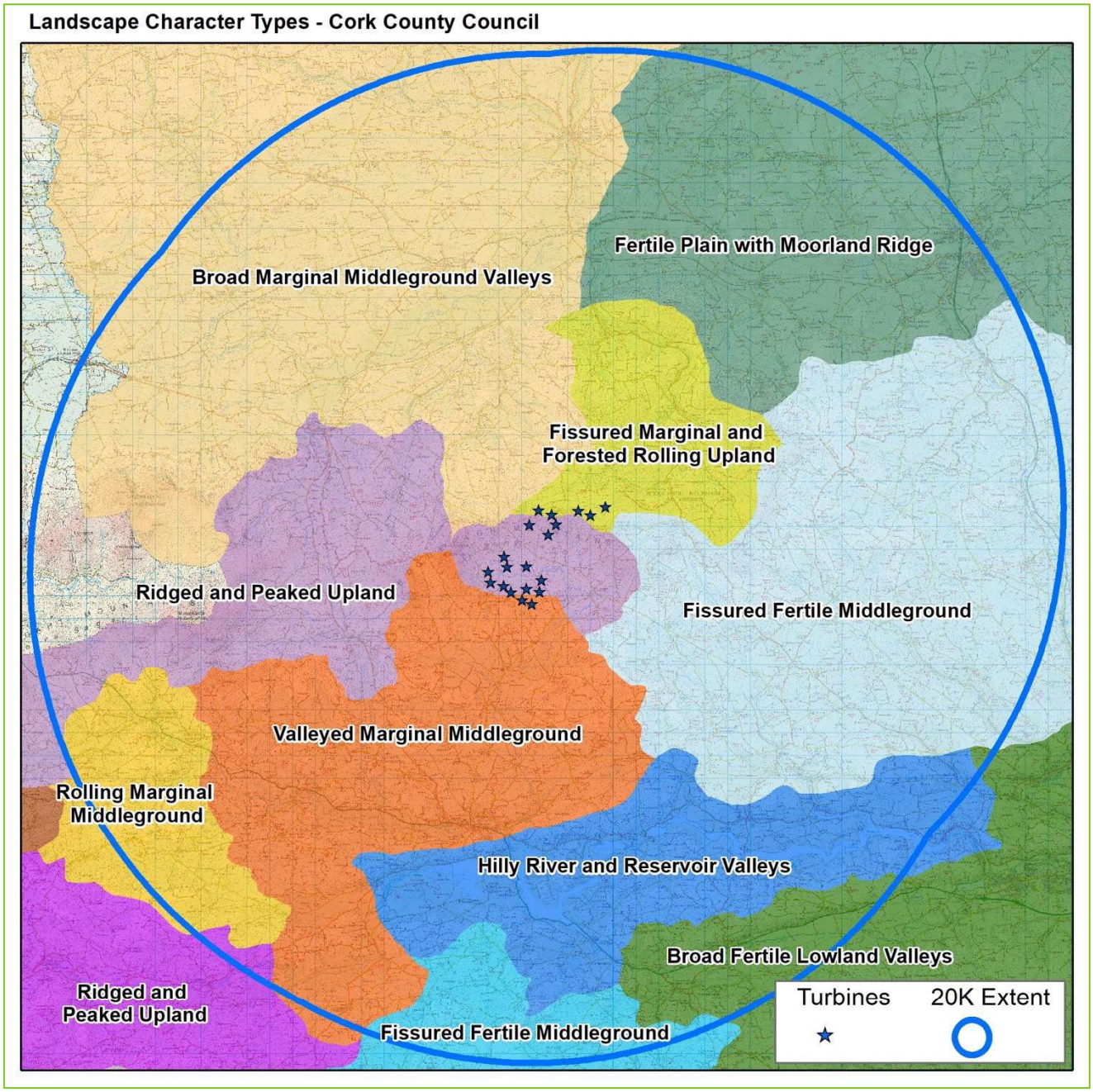

Figure 15.4: Excerpt from Cork County Development Plan (2014) map browser, showing transition landscape character types in relation to the location of the proposed Ballinagree turbines.

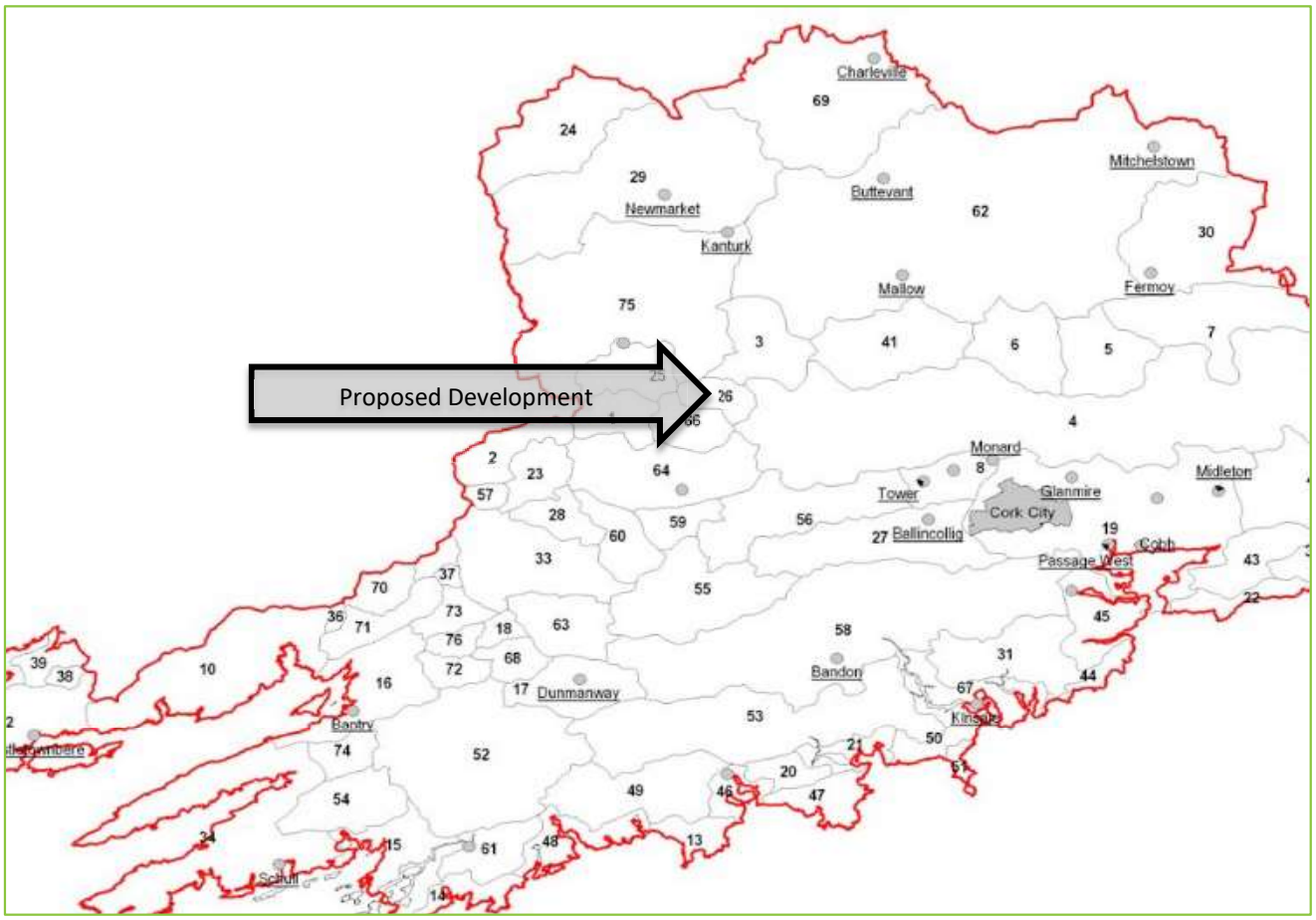

Figure 15.5: Excerpt from County Cork Draft Landscape Strategy 2007. Map 1 showing approximate location of proposed site in relation to Landscape Character Areas

A number of general recommendations are outlined in the Draft Cork County Landscape Strategy regarding LCT 15b – 'Ridged and Peaked Upland', LCT 14b – 'Fissured Marginal and Forested Rolling Upland' and LCT 13a – 'Valleyed Marginal Middleground', some of which relate to the development in question:

LCT 15b – Ridged and Peak Upland

- *"Promote the scenic value of the LCT as a visitor attraction and provide sensitively designed and located facilities such as parking, picnic areas, way marked trails, driving routes and signage.*
- *Recognise the value of the upland areas (Boggeragh Mountains) as a valuable tourism resource for hillwalking.*
- *Recognise the potential of Millstreet town as a relatively strong tourist destination due to the presence of the Green Glens Arena. The rural area contains the widely known Millstreet Country Park and also the Duhallow way for hikers.*
- *Promote introduction of deciduous edges to existing plantations to soften their appearance. New plantations should respect landscape pattern.*
- *Encourage broadleaf planting and protect existing areas of broadleaf woodland.*
- *Protect the high ridges and mountainous peaks, particularly to the south west of Millstreet town (Claragh Mountain). These upland areas are predominant components of this landscape type."*

LCT 14b – Fissured Marginal and Forested Rolling Upland

- *"Protect the existing rural character and setting of Nad and Lyre by preventing large-scale development that would undermine the attractiveness of these villages. Maintain the visual integrity of this LCT, which has retained a dominantly undisturbed landscape.*
- *Recognise the value of the upland areas (Boggeragh Mountains) in this LCT particularly as a tourism resource for hill walking.*
- ***Have regard to the impact of windfarms on the landscape. Such developments will need to be located and laid out in a sensitive manner.***
- *Maintain the visual quality of the hill slopes by appropriate siting of new development on visually unobtrusive sites.*
- *Minimise the disturbance of hedgerows in rural areas. Encourage appropriate landscaping and screen planting of proposed developments by using predominantly indigenous/local species and groupings."*

LCT 13a – Valley Marginal Middleground

- *"Preserve the unique landscape setting and scenic and amenity values of the Bride/Bunaglanna river valley.*
- *Develop amenity walks through Ardarou Forest while also continuing to protect it for its wildlife and natural heritage value.*
- *Protect the setting of Glenville Manor while also recognising the potential of Glenville Manor as a unique heritage resource for the community.*
- *Recognise the potential role of tourism in this LCT."*

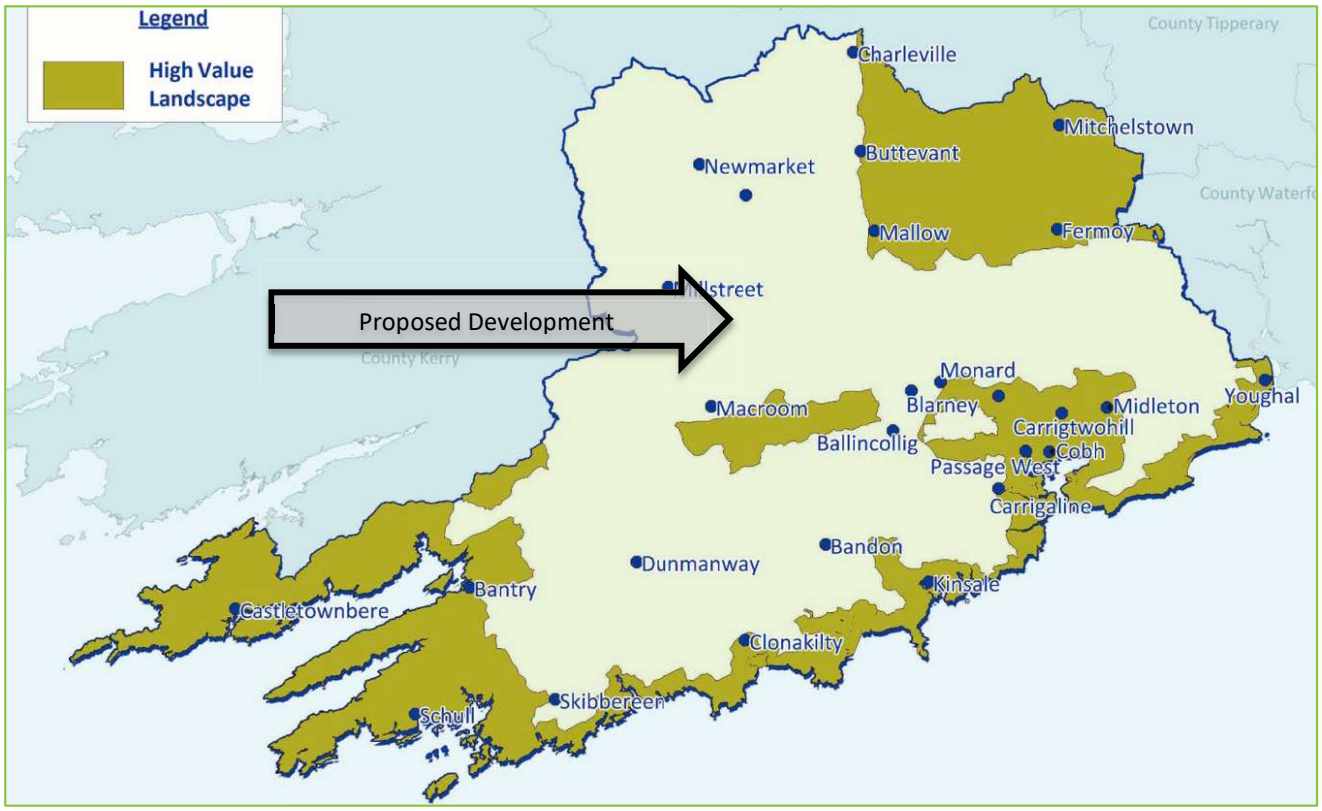

Figure 15.6: Excerpt from Cork County Development Plan (2014). Chapter 13, Figure 13.2 showing approximate location of proposed site in relation to high value landscapes.

15.3.2.3 Kerry County Development Plan 2015 – 2021

Whilst the proposed development is wholly contained within County Cork, a section of the wider western half of the study area falls within County Kerry, and therefore it is important to consider landscape designations in the current Kerry County Development Plan. The current Kerry County Development Plan contains one objective under the heading 'Landscape Protection'.

ZL-1: *Protect the landscape of the County as a major economic asset and an invaluable amenity which contributes to the quality of people's lives.*

Although the current Kerry County Development Plan does not include a Landscape Character Assessment of the county, there is an objective in the current development plan (ZL2) to undertake this prescribed process once the National Landscape Strategy has been published. This was published in mid-2015, but the considerable process of generating a national landscape character assessment, which is one of its key objectives, has only recently begun. In lieu of a county landscape character assessment, the Kerry County Development Plan utilises zoning mechanisms to protect sensitive landscapes in accordance with the following objective:

ZL-3: *Determine the zoning of lands in rural areas having regard to the sensitivity of the landscape as well as its capacity to absorb further development.*

Consequently, there is a three-tier classification for rural lands that includes:

- Rural Prime Special Amenity
- Rural Secondary Special Amenity
- Rural General

Aside from the areas surrounding the settlement of Rathmore, almost the entirety of the landscape within County Kerry that falls within the study area has been designated an area of 'Rural Secondary Special Amenity'. These landscape units are *"sensitive to development"*, and therefore *"development in these areas must be designed so as to minimise the effect on the landscape"*. The landscape in the surrounds of Rathmore has been classified as 'Rural General' which are landscapes with a "*higher capacity to absorb development*".

15.3.2.4 Cork County Development Plan 2014 – Wind Energy Policy

Section 9.3 of the Cork County Development Plan 2014 covers onshore wind energy within County Cork. A number of objectives relating to the proposed development are outlined therein:

> ***County Development Plan Objective ED 3-1:*** *National Wind Energy Guidelines - Development of on-shore wind shall be designed and developed in line with the 'Planning Guidelines for Wind Farm Development 2006" issued by DoELG and any updates of these guidelines.*
>
> ***County Development Plan Objective ED 3-2****: Wind Energy Projects - On-shore wind energy projects should focus on areas considered 'Acceptable in Principle' and Areas 'Open to Consideration' and generally avoid "Normally Discouraged" areas in this Plan.*
>
> ***County Development Plan Objective ED 3-3****: Wind Energy Generation - Support a plan led approach to wind energy development in County Cork and identify areas for wind energy development. The aim in identifying these areas is to ensure that there are no significant environmental constraints, which could be foreseen to arise in advance* of the planning process.

Figure 9.2 of the Cork County Development Plan 2014 shows a map with policy considerations for wind energy projects (refers) and identifies areas likely to be most suitable for wind energy developments. Although the site is not situated within one of the areas identified as '*likely to be most suitable'*, nor is it situated in areas designated as important landscape (Medium or High).

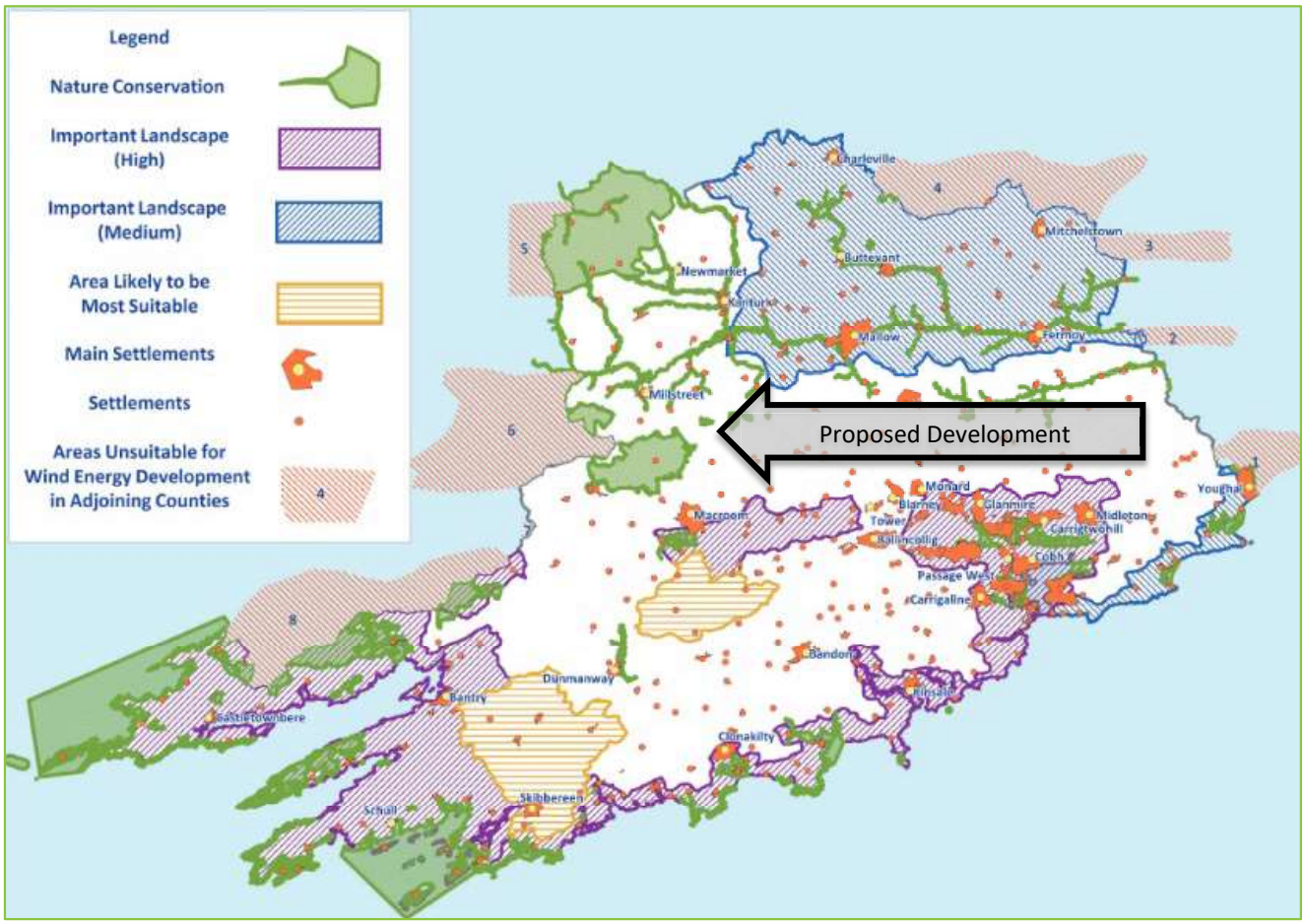

Figure 15.7: Excerpt from Cork County Development Plan (2014), Chapter 9, Figure 9.2 showing approximate location of proposed site in relation policy considerations for wind energy projects.

Figure 9.3 of the county development plan identifies areas of the county where wind energy developments are '*Accepted in Principle*', '*Open to consideration'* and '*Normally discouraged'* (Figure 15.8 refers).

The proposed development is entirely situated in an area designated as '*Open to Consideration*'. These areas are *"locations that may have potential for wind farm developments but there are also some environmental issues to be considered. This area has variable wind speeds and some access to the grid. Urban areas, metropolitan/town green belts, and Natural Heritage Areas (NHA's) within this area are not generally considered suitable for wind farm developments".* Objectives outlined within the Cork County Development Plan relating to areas identified as *'open to consideration'* are included below:

County Development Plan Objective ED 3-5: *Open to Consideration - Commercial wind energy development is open to consideration in these areas where proposals can avoid adverse impacts on:*

- *Residential amenity particularly in respect of noise, shadow flicker and visual impact;*
- *Urban areas and Metropolitan/Town Green Belts;*
- *Natura 2000 Sites (SPA and SAC), Natural Heritage Areas (NHA's) or adjoining areas affecting their integrity. Architectural and archaeological heritage;*
- *Visual quality of the landscape and the degree to which impacts are highly visible over wider areas.*

The nearest '*normally discouraged*' wind energy designation is situated to the north of the site and relates to the Blackwater River Special Area of Conservation (SAC). Although the site is not directly located within this designation, it is situated in the same visual context, and therefore it has the potential to influence the character of this area. Objectives outlined within the Cork County Development Plan relating to areas identified as *'normally discouraged'* are included below:

County Development Plan Objective ED 3-6: *Normally Discouraged - Commercial wind energy developments will be discouraged in these areas which are considered to be sensitive to adverse impacts associated with this form of development (either individually or in combination with other developments). Only in exceptional circumstances where it is clear that adverse impacts do not arise will proposals be considered.*

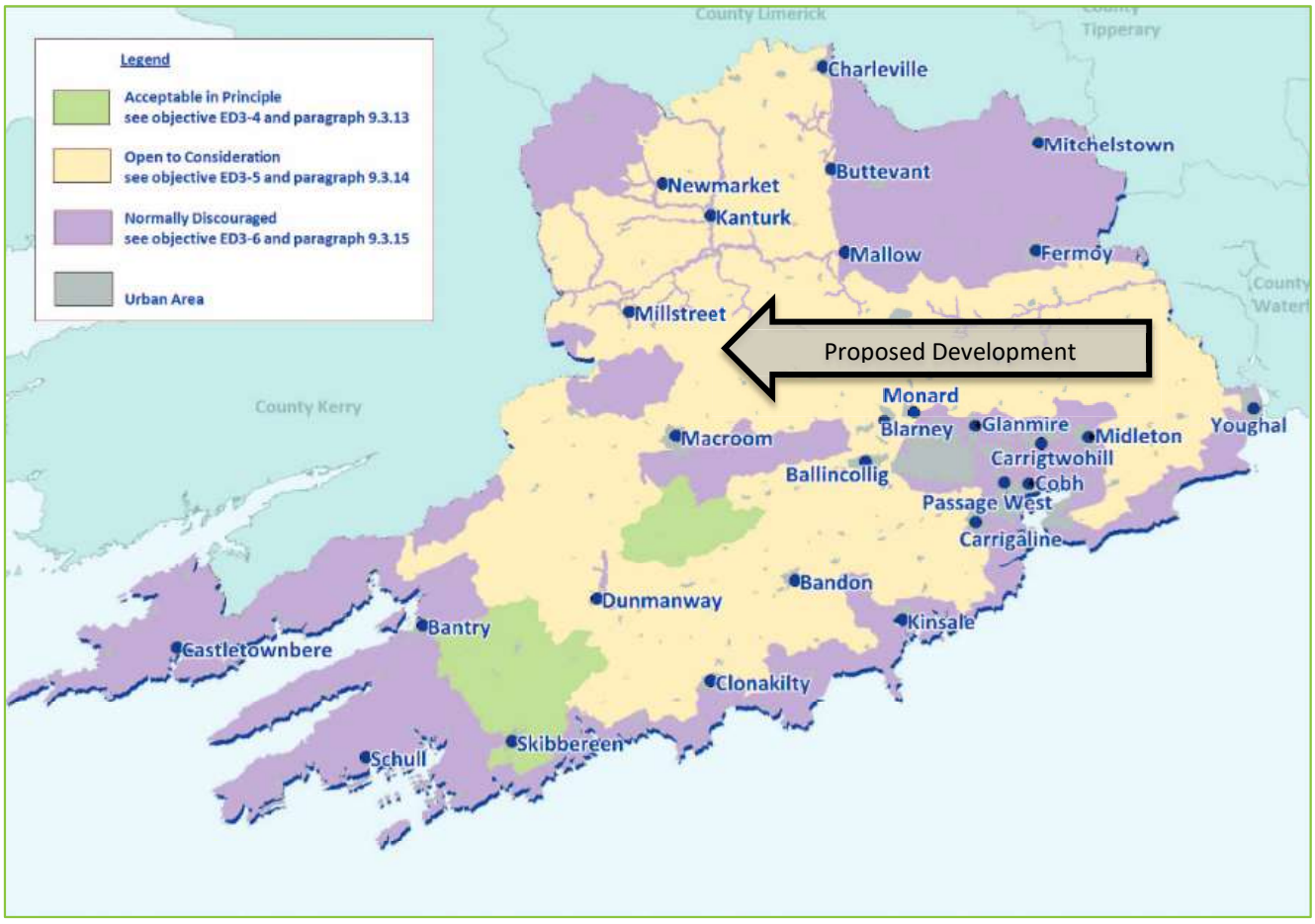

Figure 15.8: Excerpt from Cork County Development Plan (2014), Chapter 9, Figure 9.3 showing approximate location of proposed development in relation Cork's Wind Energy Strategy.

15.3.2.5 Ecological Designations

Ecological designations such as Special Areas of Conservation (SAC's), Special Protection Areas (SPA's) and Natural Heritage Areas (NHA's) are relevant to the landscape and visual assessment as they can identify areas that are likely to exhibit naturalistic character and low levels of built development. They also highlight areas to which landscape conservation values are attached and they are often associated with outdoor amenity facilities where people go to enjoy the landscape setting.

In this instance, there are a number of ecological designations throughout the study area which are included below.

- Boggeragh Mountains NHA – immediately east and west of the site
- Musheramore Mountains SPA – immediately west of the site
- Blackwater River SAC – c. 4km north of the site
- Killarney National Park, Macguillycuddys Reeks and Caragh River Catchment SAC – c. 10km west of the site
- The Gearagh SPA & SAC – c. 11km south of the site
- St. Gobnet's Wood SAC – c. 17km southwest of the site

15.4 Visual Baseline

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

15.4.1 Zone of Theoretical Visibility (ZTV)

A computer generated Zone of Theoretical Visibility (ZTV) map has been prepared to illustrate where the proposed turbines are potentially visible from. The ZTV map is based solely on terrain data (bare ground visibility), and ignores features such as trees, hedges or buildings, which may screen views. Given the complex vegetation patterns within this landscape, the main value of this form of ZTV mapping is to determine those parts of the landscape from which the proposed development will definitely not be visible, due to terrain screening within the 20km study area. The ZTV below is based on the max tip height of the proposed turbines as a worst-case scenario. In the case of a tip height ZTV map it is a reasonable worst case scenario as any lesser tip height will only begin to reveal less and less of the landscape has potential views of the turbines i.e., only lesser impacts.

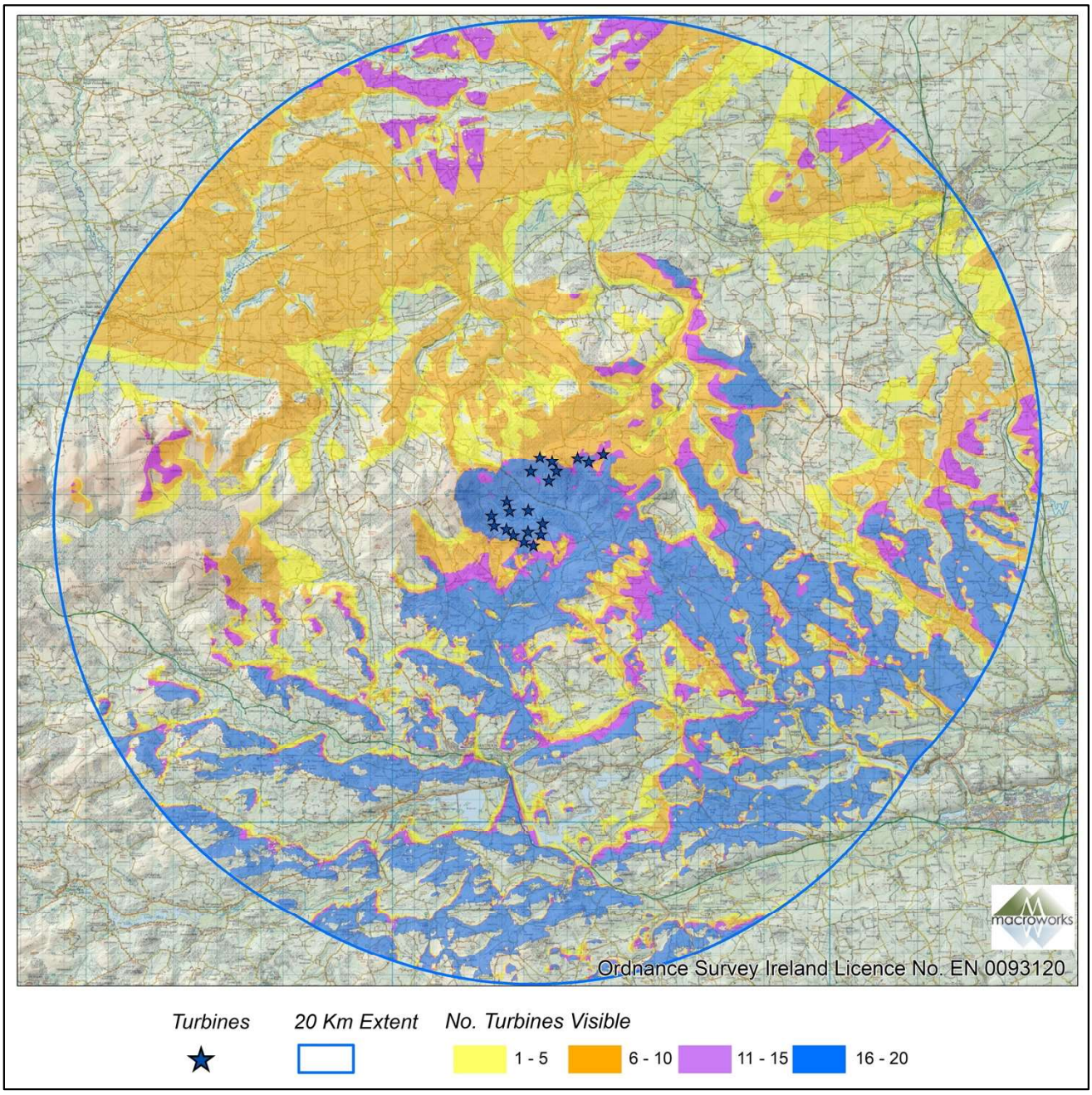

Figure 15.9: ZTV Map (Tip Height) for Ballinagree Wind Farm (See Appendix 15.2 for full scale annotated ZTV maps.

The following key points are illustrated by the 'bare-ground' ZTV map (Figure 15.9 refers);

- As a consequence of the elevated terrain surrounding the site to the north and west, the most notable areas of comprehensive theoretical visibility (blue ZTV pattern) are contained within the immediate landscape basin that the site is contained in, in addition to areas east and south of the site. Visibility throughout the western half of the study area is also heavily restricted due to the land form immediately west of the site, whilst visibility within the northern half of the study area is also limited due to the rolling hills north of Ballinagree. Both the nearby settlements of Ballynagree and Rylane have the potential for comprehensive visibility of up to 20 turbines.

- Aside from some elevated ridges and hilltop summits such as Mount Hillary, much of the visibility in the northern half of the study area relates to theoretical visibility of less than 10 turbines (orange/yellow pattern).
- There is limited potential for visibility along both the River Blackwater and River Lee corridors. Even where the ZTV identifies the potential for visibility along these river corridors, actual visibility is likely to be considerable less, as both of these river corridors are bound by dense mature riparian vegetation
- Settlements within the northern half of the study area will also be afforded theoretical visibility, although much of the visibility will be limited. Whilst the eastern outskirts of Millstreet will have no visibility, the central and western half of the town have the potential for visibility of up to 5 of the proposed turbines. Similarly, the small village of Banteer has the potential for intermittent visibility of up to 5 turbines, whilst Rathcool, Kanturk and the western outskirts of Mallow have the potential to be afforded views of up to 10 turbines (orange ZTV pattern).
- Within the southern and eastern half of the study area the ZTV pattern presents with a ripple like pattern highlighting the rolling nature of the terrain here, which principally consists of elongated ridges, river valleys and low rolling hills. Much of the comprehensive ZTV pattern (blue colour) here relates to the most elevated areas of the terrain, which is often not as populated as the low-lying valleys. In the wider southern half of the study area here will be no turbine visibility at The Gearagh and along large sections of the River Lee corridor.
- The small village settlements of Stuake (c. 9.5km east of the nearest proposed turbine) and Donoughmore (c. 10km east of the nearest proposed turbine) are situated in the south-eastern quadrant of the study area and have the potential for comprehensive visibility of all 20 of the proposed turbines. Surrounded by a number of rolling hills in the southwest quadrant of the study area, the settlement of Ballyvourney will afford no visibility of the proposed development. Macroom (c. 9 km south of the nearest proposed turbine) is the most notable settlement in the southern half of the study area and has the potential to afford intermittent visibility of up to 20 turbines. However, much of the ZTV pattern at Macroom is contained on the elevated north-facing slopes of the River Sullane valley, south of the town centre.

15.4.2 Theoretical Visual Intensity (TVI) Map

A simple description of the Theoretical Visual Intensity map is that it is a measure of the proportion of a 360º viewshed that would be occupied by the proposed turbines within the context of the surrounding terrain. Unlike normal ZTV mapping it takes account of scale in relation to distance and the proportion of each turbine visible above the terrain. For ease of comprehension, this is calibrated so that a value of 100 is placed on the view of one full turbine at 1km distance. This is not intended as a limit of acceptability or a key threshold. It should also be reiterated that like standard ZTV mapping, TVI mapping is only based on a bare-ground Digital Terrain Model and does not account for screening by vegetation, which can be substantial.

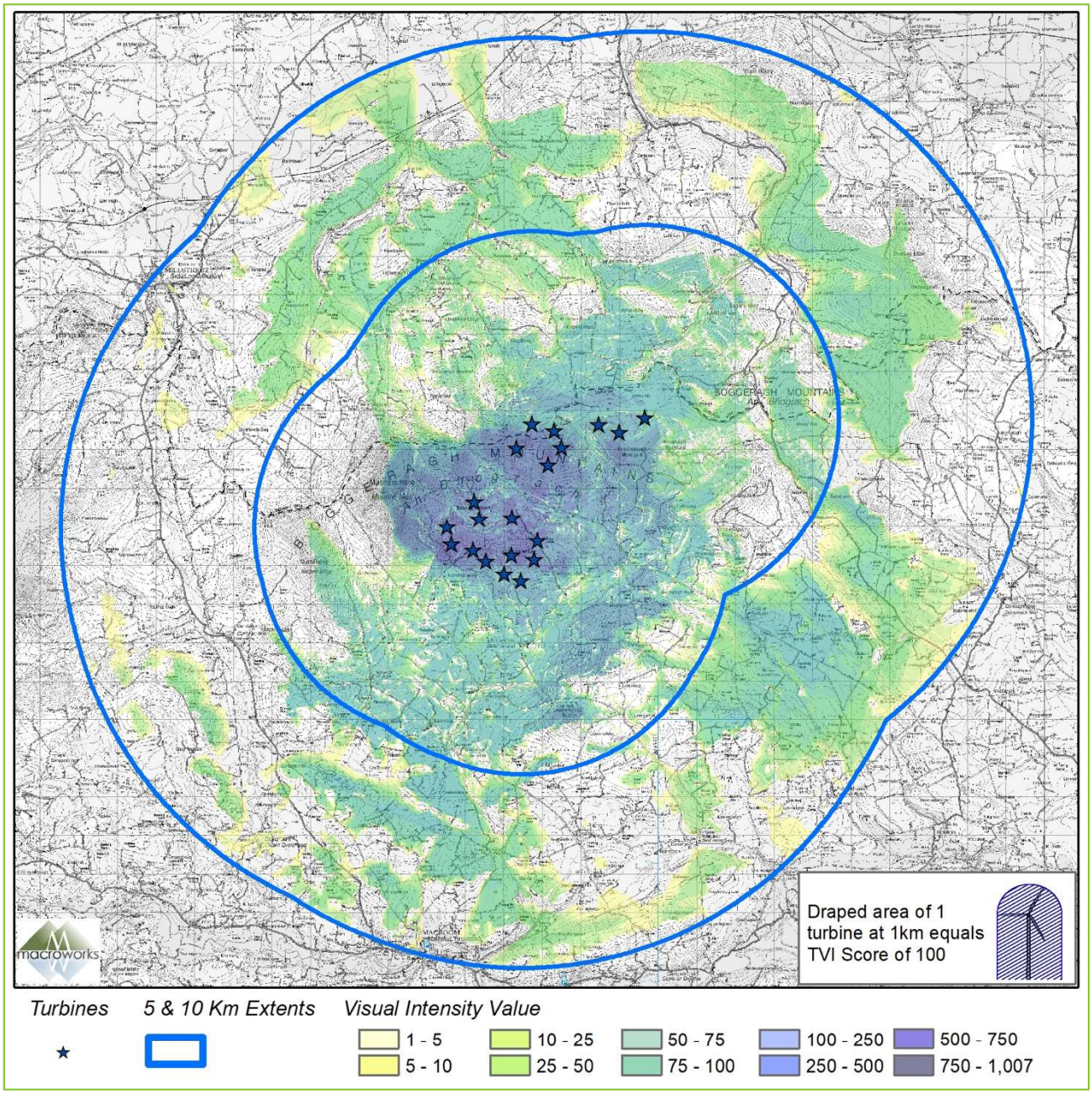

Figure 15.10: TVI Map for Ballinagree Wind Farm (See Appendix 15.2 for large scale map)

The following are a few key points from the ZVI mapping:

- As expected, the highest visual intensity values occur within the central study area and particularly in the area contained within the basin-like landscape formation within which the majority of the southern turbine array is located. The highest values (TVI scores of 500 +) often occur within c.1km of the nearest perimeter turbines and relate to Dominant or Highly Dominant visual presence judgements. It is important to note that the highest TVI scores tend to occur within the bounds of the array itself which has a very low population density.

- Outside of the site and its immediate context, but still within the central study area, the TVI values tend to fluctuate between 50-500 with the highest values often relating to the most elevated parts of the central study area such as Burren Hill to the southeast of the site. Within this part of the study area, the elevation of the terrain plays almost as an important role as the distance to the turbines in relation to the TVI values, as clearer views of a higher proportion of turbines are often afforded from these locations. The highest values here are typically contained to the southeast and east of the site where the landscape basin is not as heavily enclosed by surrounding ridges such a Seefin to the north and Musheramore to the west. It is important to note that the small settlement of Ballinagree occurs to the south and is contained within an area that is relatively consistent with a TVI value of 100 or less.
- TVI scores of <100 predominate the remaining ground within 10km of the site except where no visibility occurs within the base of valleys and in the fringes around these gaps in visibility where it is likely that only blades will be visible above intervening terrain (yellow tones < 10 TVI score). In similar circumstances to the central study area, elevated ridgetops and hilltop summits within the wider study area up to 10km from the site achieve the highest TVI values as they have the potential to be afforded views of a higher number of turbines than the low-lying areas of terrain, but their scale (due to distance) is much reduced.

15.4.3 Route Screening Analysis (RSA)

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 and the Blackwater Way (Duhallow) within a 5km radius of the proposed turbines using a Digital Surface Model (DSM) and sample points every 25m along each road/waymarked route.

The RSA consists of three visibility scenarios: open visibility; partial visibility; and fully screened. In this instance, 'open visibility' is conservatively judged to occur if the view of a full blade rotation of any one single turbine is afforded. It is important to note that where 'Open View NE Cluster' or 'Open View of SW Cluster' is identified on Figure 15.11 below, this may relate to an open view (view of a full blade rotation) of only 1 turbine from either cluster and does not necessarily indicate that a view of all the turbines within the cluster will be afforded. Furthermore, where 'Open View of both Clusters' is identified, this may only relate to an open view of two turbines – one within each cluster. The open view category is analysed further below at Figure 15.13 and Figure 15.14 'Partial visibility' occurs when there is view of less than a full blade rotation of any particular turbine/s occurs. In this instance, the RSA has been broken-down by turbine cluster to illustrate whether visibility relates to one or both of the 'Seefin Ridge' and 'Ballinagree Basin' clusters. A 'Sceened View' relates to views where the proposed turbines are entirely screened by intervening built development or mature vegetation, or a combination of both.

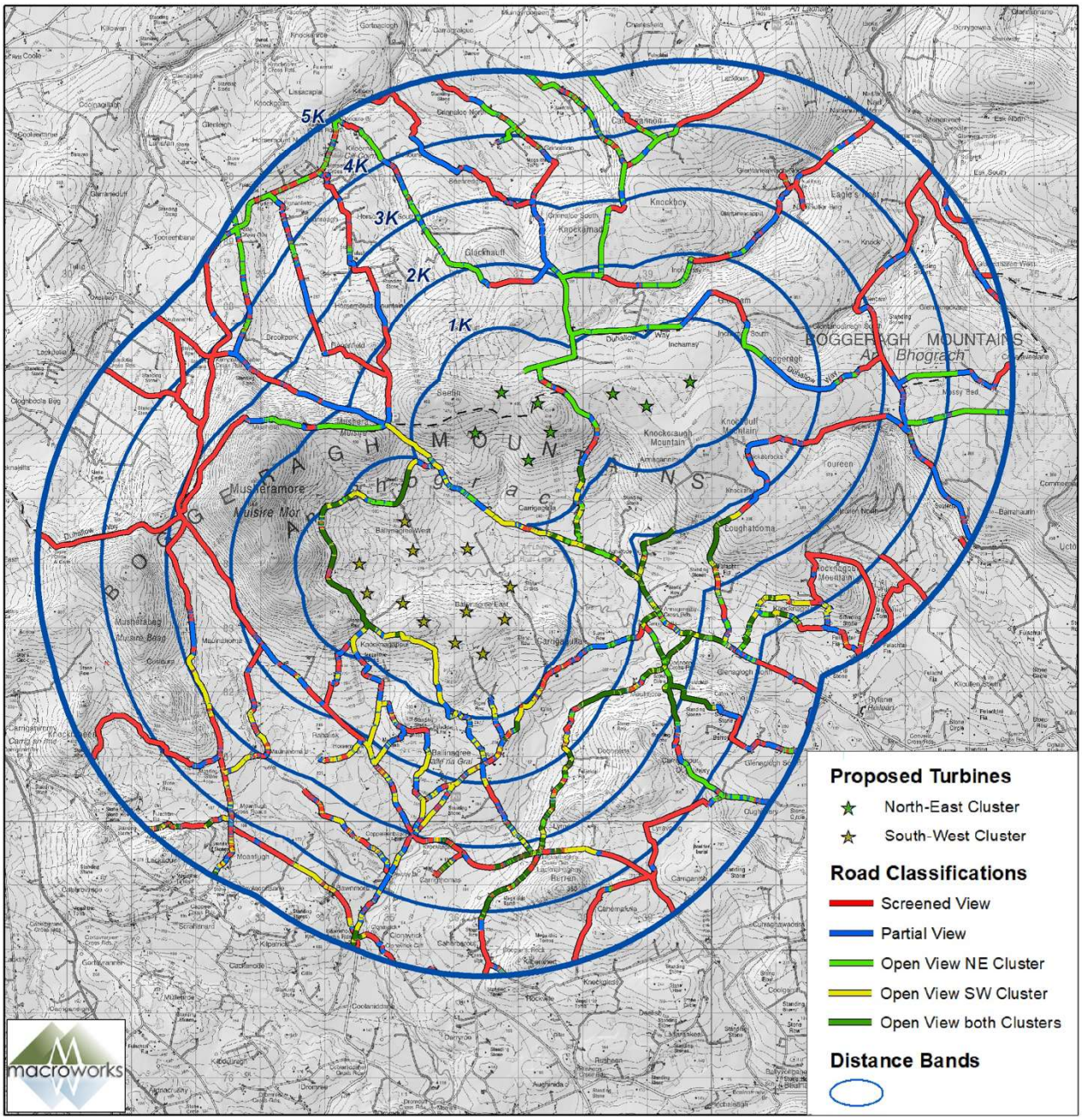

Figure 15.11: Route Screening Analysis (RSA) Map

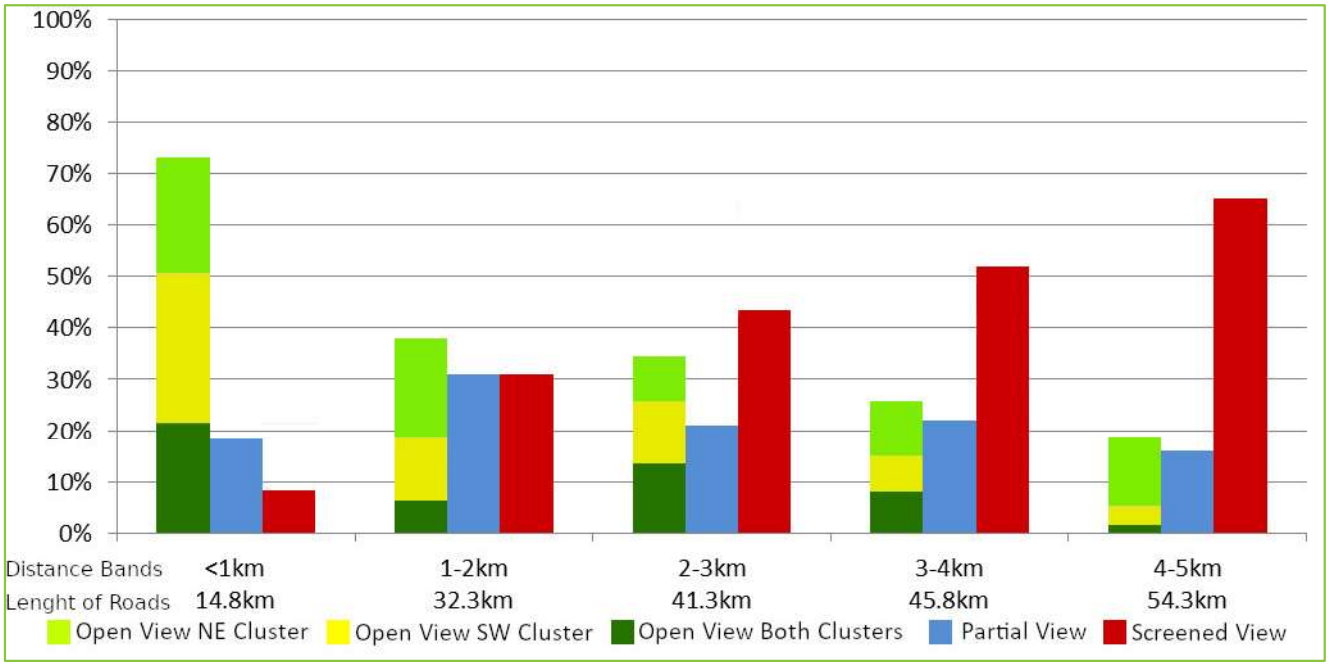

Figure 15.12: Graph illustrating results of Route Screening Analysis

The RSA map (Figure 15.11) and associated graph (Figure 15.12) illustrates a notable degree of wind farm screening from the surrounding regional and local road networks and from the Blackwater Way (Duhallow) national waymarked trail. Beyond 2-3km fully screened views dominate, whilst up to 2km from the proposed turbines open views of one or both clusters predominate. The most notable point to make is that beyond 2km, the rolling terrain combined with intervening layers of vegetation tend to restrict open and even partial views, with full screening more common than open or partial views of turbines, and in some cases screened views are more common than both open and partial views combined.

15.4.3.1 Screened Views

Screened views tend to increase with distance from the proposed development due to the combination of proportionally smaller turbines and additional layers of intervening vegetation generating comprehensive bands of screening to entirely eliminate turbine visibility from some parts of the study area. Whilst screened views are the least common in the <1km band at 8.4%, they become notably more prevalent in the 1-2km band where they are equal to partial views at 31%. Beyond 2km screened views are the most predominant reaching a total of 43.5% at the 2-3km band and then increasing again to 51.8% and 65.2% in the 3-4km and 4-5km bands respectively. As would be expected, screened views are most prevalent in the outer reaches of the 5k radius RSA study area. Some of the most notable areas of screened views occur along routes to the west of the site, west of Musheramore Mountain, however, much of this relates to terrain screening as opposed to screening by vegetation. Aside from the routes to the west, the degree of fully screened routes in the wider surrounds of the 5km radius is relatively consistent and does not apply to any particular area.

15.4.3.2 Partial Views

Partial views never tend to dominate and instead are typically one of the most uncommon forms of view to be afforded in each of the distance bands.

Partial views only surpass screened views in the <1km distance band where they account for 18.6% of afforded views. The highest percentage of partial views occur in the 1-2km band where both partial and screened views each account for 31% of the afforded views. Beyond the 2km, partial views remain similar ranging between 16.1% - 22.1% of the afforded views. This reflects the rolling and heavily vegetated nature of the central study area, where blade tips have the potential to be viewed above rolling ridgelines and dense blocks of commercial conifer forest. In similar circumstances to screen views, partial views are not limited to one specific segment of the 5km RSA study area, but instead are relatively dispersed throughout it.

15.4.3.3 Open Views

As would be expected, open views dominate in the immediate surrounds of the turbines up to 1km. Within the 1km band, open views of the SW cluster are the most prominent, accounting for 28.9% of afforded views, whilst open views of the NE cluster account for 22.7% of turbine visibility. Open visibility of both clusters is at its highest in the <1km band accounting for 21.5% of all afforded views. Open views of both clusters combined primarily occur to the south of the NE cluster and east of the SW cluster where the basin-like landscape formation is less enclosed by the surrounding rolling ridges. A notable concentration of routes with open visibility of both clusters occurs east of the River Laney where the terrain ascends from the river valley allowing for open locally elevated views of the turbines within the basin and along Seefin ridge. A notable area of open visibility of both clusters also occurs along a locally elevated road that sweeps to the southwest of the SW cluster on the elevated east/northeast facing slopes of Musheramore Mountain and looks across the basin towards Seefin ridge. As anticipated, open views of the SW cluster are generally contained in the southern half of the 5km RSA study radius, whilst open views of the NE cluster are contained in the northern half of the RSA study area. Open views are the most dominant form of visibility up to 2km, however, they are surpassed by screened views from 2km onwards and decrease with further distance from the site.

As the methodology used for the RSA requires only a view of the full blade set of one turbine to record an ‘open view’ of the project, it is useful to analyse the ‘open view’ set in more detail to establish how many turbines are actually visible in each instance (see Figure 15.13 and accompanying graph at Figure 15.14)

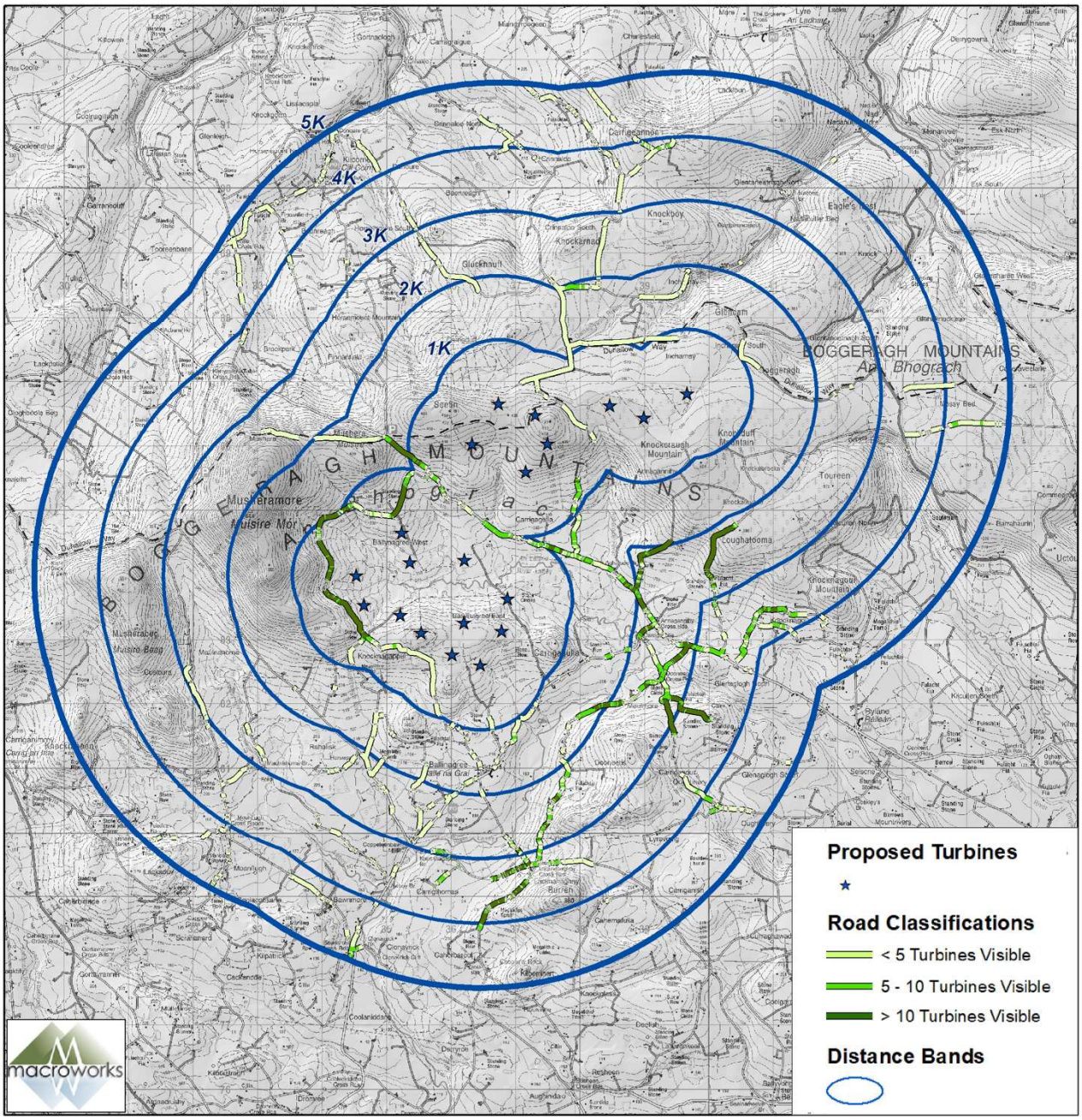

Figure 15.13: Map of Route Screening Analysis for 'Open Views'

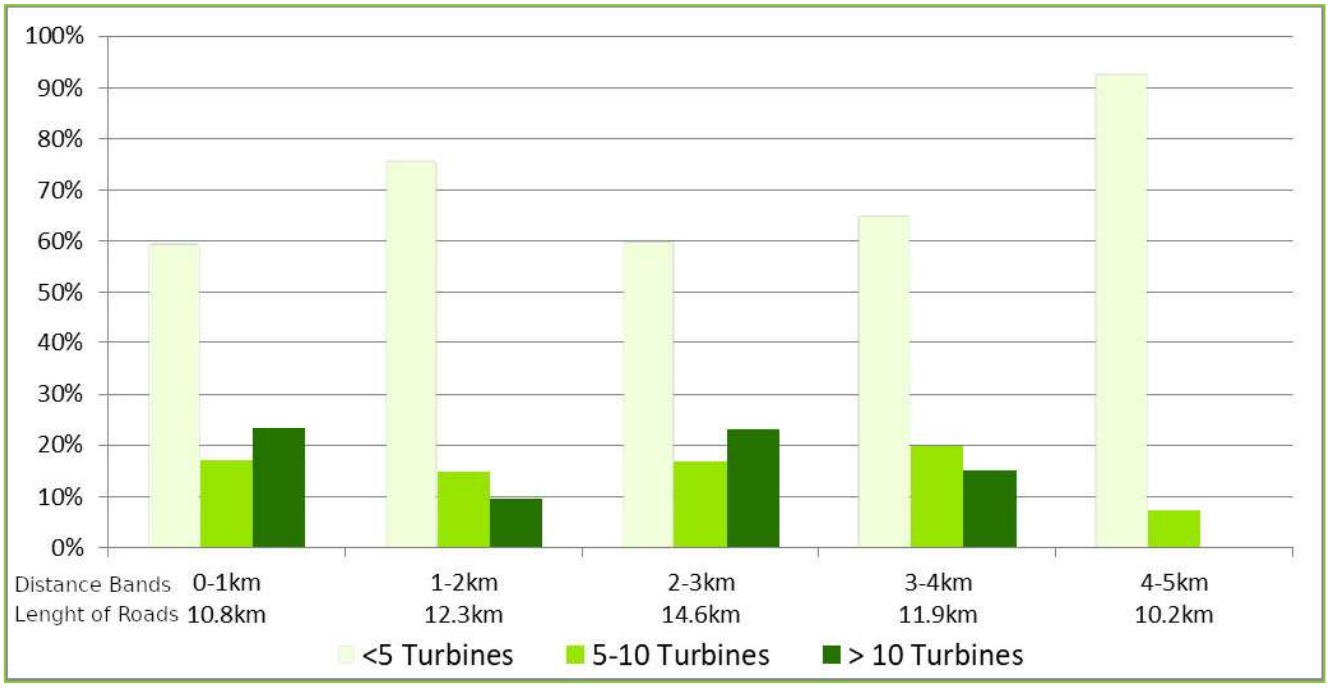

Figure 15.14: Graph illustrating RSA results for 'Open Views'

As per Figure 15.13 and Figure 15.14 above, within the open view category views of less than 5 turbines dominate in all distance bands. This principally relates to the land form of the site where the Seefin ridge will heavily screen the SW cluster of turbines within the basin when views are afforded from the northern half of the 5km RSA study radius. Conversely, when viewing the site from the south, the Seefin ridge and its surrounding hills will notably screen many of the turbines in the NE cluster resulting in a predominance of visibility of less the 5 turbines. Nevertheless, open views of between 5-10 turbines and >10 turbines are still afforded throughout the RSA study area, and much of this is contained along the elevated hills east of the River Laney valley and along the local road that traverse the northeast facing slopes of Musheramore Mountain to the southwest of the SW cluster of turbines. The highest potential for open views of more than 10 turbines occurs in both the <1km band and 2-3km band whilst there is a notable decrease in the 1-2km distance band. Beyond the 4km band, but within the RSA study radius, views of more than 10 turbines are entirely eliminated and views of between 5-10 turbines account for only 7.3% of the overall site visibility.

Overall, the RSA analysis identifies that there will be limited potential for clear views of all of the proposed turbines aside from some intermittent elevated local roads that occur in the near surrounds of the site. Instead, the proposed turbines will often be viewed as two separate clusters, with the Seefin ridge and Musheramore Mountain heavily screening notable areas of the site.

15.4.4 Visual Receptors

15.4.4.1 Centres of Population and Houses

The nearest centre of population in relation to the proposed development is the small rural village of Ballinagree situated c. 1.5km south of the nearest proposed turbine. The small village of Rylane is located just outside of the central study area along the L2758 local road some c. 5.5km east of the site.

The small rural villages of Lyre and Nad are situated c. 5km to the north and northwest of the site, whilst the settlement of Rathcool is situated just over c. 8km to the north of the site. Situated along the Finnow River, Millstreet is the nearest large town to the proposed development and is located just over c. 8km to the northwest of the site at its nearest point. The small village of Aghabullogue is situated just over c. 9km southeast of the site, whilst one of the most notable settlements within the study area, Macroom, is located just north of the River Lee and is situated some c.9km south of the proposal site at its nearest point.

15.4.4.2 Transport Routes

The most notable major routes in relation to the proposed project include the N72, N22 and N20. All of these occur within the wider study area with the N22 the nearest of the three and situated just under 10km south of the nearest turbine where it passes through the settlement of Macroom. The N72 crosses the northern half of the study area in a general east-west direction and is situated just under 12km north of the site at its nearest point. The N20 national primary route briefly enters the study area in its easternmost periphery oriented in a general north-south direction and is situated just over 17km from the wind farm site at its nearest point.

A modest network of regional roads also traverse the central and wider study area. The nearest of these to the project is the R579 regional road situated some c.2.8km northeast of the site at its nearest point. The R582 occurs to the southwest of the site where it links the settlements of Macroom and Millstreet and is located c.5.4km from the development. The R619 is situated in the eastern half of the study area and connects the settlements of Mallow, Donoughmore and Coachford, and is located some c.9km east of the site at its nearest point. A network of regional roads also occur south of the River Lee corridor and include the R584, R587 and R590. Northwest of the site, the R583 extends out from Millstreet in a north-westerly direction where it links back to the N72 and is located just over 7km from the site at its nearest point. In the wider northern half of the study area, north of the N72 a number of regional roads also exist and includes the R577, R580 and R576.

The site itself is bound by a network of local roads, the nearest of which is the L2758 which bisects the site in a general east-west direction. A number of other local roads and local road laneways also traverse the near surrounds of the site.

A section of the national railway line passes through the northern half of the study area and is located just over 8km northwest of the site at its nearest point, where it passes north of the small village of Rathcool.

15.4.4.3 Tourism, Recreational and Heritage Features

Although it is contained outside of the principle 20km radius study area, Blarney Castle (24km southeast) is incorporated into the assessment in this instance due to its value as an internationally renowned and very popular heritage based tourist attraction. Much of its popularity relates to ‘kissing the Blarney Stone’, which is contained within its ramparts some 40m above ground level. This requires visitors to climb to the top of the castle where they are also treated to broad views of the surrounding countryside between the ramparts.

The nearest and most notable recreation feature to the site is the 94km Blackwater Way (Duhallow) which stretches from the borders of County Waterford all the way to County Kerry and follows the corridor of the River Blackwater for much of its course. Within the study area it diverges from the corridor of the blackwater, enters the 20km study radius south of Mallow, before traversing the 20km study extents in a westerly direction where it passes through the central areas of the site along the L2758 local road.

The route continues in a westerly direction past the site where it traverse the north and west facing slopes of Musheramore Mountain and passes south of the settlement of Millstreet. The Blackwater Way exits the study area north of the Paps Mountains in County Kerry.

The Slí Ghaeltacht Mhuscrai is another notable National Waymarked Trail within the study area and extends south from the settlement of Millstreet passing just over c. 10km to the west of the site at its nearest point. The 50km waymarked trail connects Millstreet and Kealkill in County Kerry, and passes through the village of Ballyvourney in the southwest quadrant of the study area.

Other walking trails within the study area include the Mount Hillary National Loop Walks situated some c. 9km north of the site whist the Claragh Loop walks situated to the south of Millstreet are located just over 7.3km northwest of the site at their nearest point. Within the wider southern half of the study area along the banks of the River Lee are the Coachford Greenway and Farran Wood walks, which are situated just over 14km southwest of the site at their nearest point. Warrenscourt Forest situated adjacent to the Buingea River is located c.15km south of the site and encompasses a number of walking trails and picnic area

Millstreet County Park, an educational, cultural and eco-tourism destination is situated to the west of Mursheramore Mountain and some 2km west of the site at its nearest point.

Both the River Lee and Blackwater River are associated with recreational amenity within the wider study area and are commonly used for water based amenities such as rowing and fishing and walking. Located along the River Lee, the Gearagh is a nature reserve that encompass popular walking trails. Ballyhass lakes are situated just over 16km northwest of the site and include an activity centre and is one of Irelands leading trout fisheries. Ballyhass Coachford, a sister site of Ballyhass Mallow, also includes numerous outdoor and water based activities and is located on the banks of the River Lee c. 13km southeast of the site.

Mallow racecourse is also situated in the northeast quadrant of the study area some 16km from the site and hosts numerous race meetings throughout the year.

A number of heritage features are also located throughout the study area ranging from demesne landscapes, church and graveyard remnants, castles and holy wells. The nearest of these to the proposed development is St. Johns Well situated on the western slopes of Musheramore Mountains just under c.1km west of the site. Drishane Castle is located just to the north of the turbine delivery route and a temporary storage area is proposed at the roadside at the edge of its demesne lands.

It is understood that there is a reasonably high concentration of Bronze Age archaeological features within 5km of the site (31 extant wedge tombs, stone circles, stone rows and stone pairs according to Chapter 14 – Archaeology, Architectural and Cultural Heritage). Of particular note are two stone circles (ref. CO049-007 and CO049-008), which are contained within the site and are celestially oriented towards the ridgeline just to the west of the site. In terms of landscape and visual receptor relevance, it should be noted that both stone circles are contained within private lands, are not overt features and are not frequented by visitors. Similarly, the other archaeological features within 5km do not discernibly contribute to landscape character or visual amenity irrespective of their archaeological value.

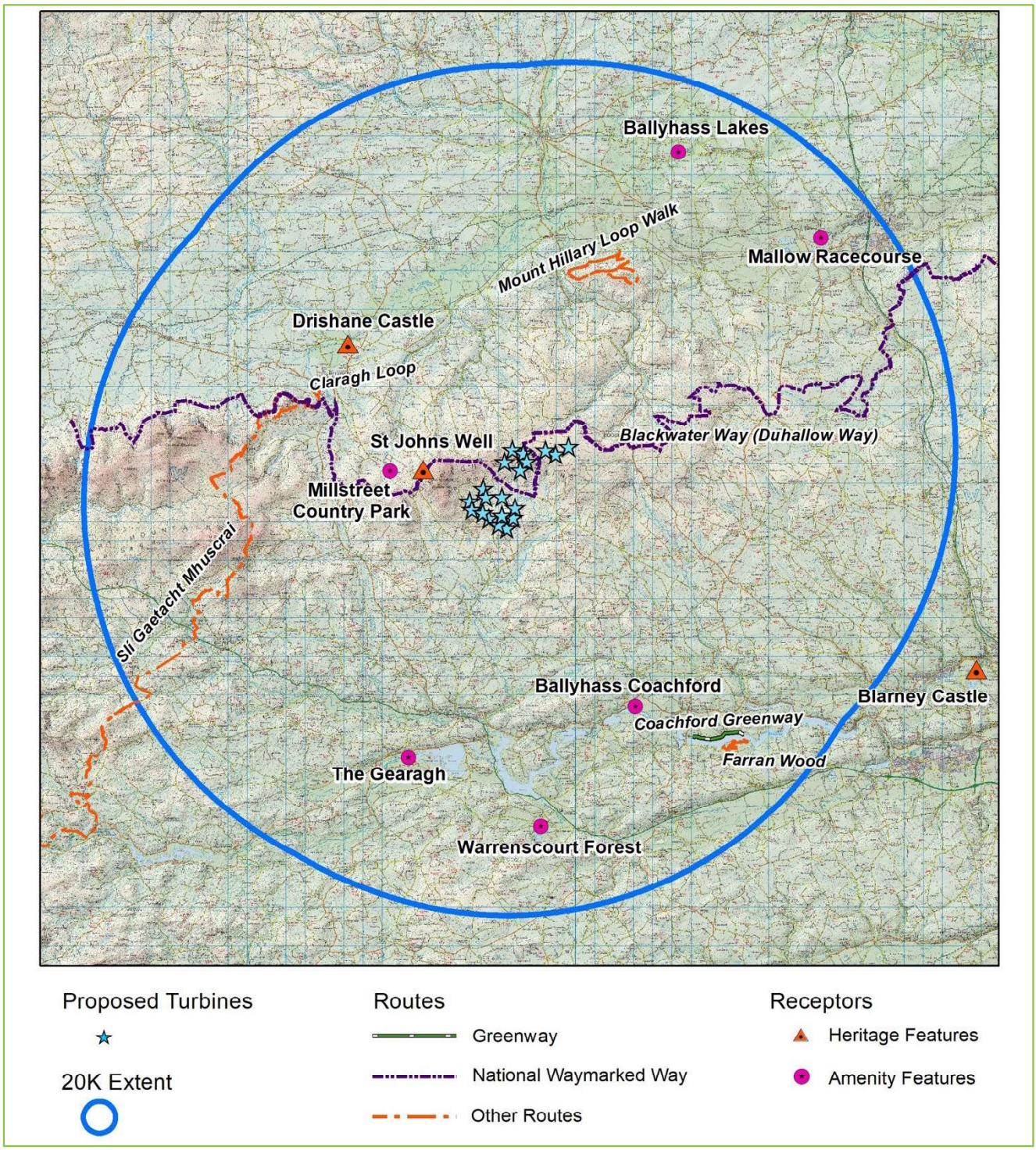

Figure 15.15 Amenity and heritage features within the study area.

15.4.5 Views of recognised scenic value

Views of recognised scenic value are primarily indicated within County Development Plans in the context of scenic views/routes designations, but they might also be indicated on touring maps, guide books, road side rest stops or on post cards that represent the area.

All of the scenic routes and views that fall inside the ZTV pattern (see Figure 15.15) 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.

15.4.5.1 Cork County Development Plan 2014

Section 13.7 of the current Cork County Development Plan relates to 'landscape views and prospects' and states that the *"scenery and landscape is of enormous amenity value to residents and tourists and constitutes a valuable economic asset".*

It is important to note that section 13.7.2 of the current Cork County Development Plan differentiates between the sensitivity of designated scenic routes depending on whether they traverse 'High Value Landscapes' where it states; *"It is important to protect the character and quality of those particular stretches of scenic routes that have special views and prospects particularly those associated with High Value Landscapes"*. This is relevant in this instance as the nearest and most relevant scenic routes are not contained within a 'High Value Landscape' (refer to Figure 15.6) where views of the proposed development might be afforded.

All identified views situated within the 20km study radius are included in Table 15.5 below in addition to their rationale for selection/omission as a viewpoint for this assessment.

Table 15.5 Rationale for selection of scenic designations within the Cork County Development Plan

Cork CDP ref:	Relevance to visual impact appraisal?	VP ref no. herein
S14	**Yes Relevant** - Views oriented in the direction of the site.	VP13
S18	**Yes Relevant** - Views oriented in the direction of the site.	VP12
S19	**Yes Relevant** - Views oriented in the direction of the site.	VP14/VP19
S20	**Yes Relevant** - Views oriented in the direction of the site.	VP12, VP16, VP17, VP18, VP20 & VP24
S21	**Not Relevant** – Very limited potential for theoretic turbine visibility. Views of turbines highly unlikely.	-
S22	**Yes Relevant** - Views oriented in the direction of the site.	VP25
S23	**Not Relevant** – Majority of scenic route located outside of ZTV	-
S24	**Not Relevant** – Very limited potential for theoretic turbine visibility. Views of turbines highly unlikely.	-
S26	**Not Relevant** – Large sections of scenic route located outside of ZTV. Sections of route that pass through ZTV pattern were assessed during site visits and have very limited potential for turbine visibility.	-
S35	**Yes Relevant** - Views oriented in the direction of the site.	VP33
S36	**Yes Relevant** - Views oriented in the direction of the site.	VP34

Cork CDP ref:	Relevance to visual impact appraisal?	VP ref no. herein
S37	**Not Relevant** – Majority of scenic route located outside of ZTV. Small sections of route that pass through ZTV have very limited potential for turbine visibility.	-
S38	**Yes Relevant** - Views oriented in the direction of the site.	VP31

Due to the proximity and potential visual exposure of the proposed project, the most relevant scenic routes identified above are S18, S19 and S20, all of which occur within the central study area. Whilst clear views are afforded from the S22 scenic route it is further than 5km from the nearest turbine and is located outside of the central study area. Thus, there is a limited potential for significant impacts to occur. The most relevant scenic routes are those within the 5km of the site.

Relevant Development Plan Objectives relating to scenic designations include;

GI 7-1: General Views and Prospects

"Preserve the character of all important views and prospects, particularly sea views, river or lake views, views of unspoilt mountains, upland or coastal landscapes, views of historical or cultural significance (including buildings and townscapes) and views of natural beauty as recognized in the Draft Landscape Strategy."

GI 7-2: Scenic Routes

"Protect the character of those views and prospects obtainable from scenic routes and in particular stretches of scenic routes that have very special views and prospects identified in this plan." [It should be noted that there is no further reference to *very special views and prospects* anywhere else in the plan]

GI 7-3: Development on Scenic Routes

a) *"Require those seeking to carry out development in the environs of a scenic route and/or an area with important views and prospects, to demonstrate that there will be no adverse obstruction or degradation of the views towards and from vulnerable landscape features. In such areas, the appropriateness of the design, site layout, and landscaping of the proposed development must be demonstrated along with mitigation measures to prevent significant alterations to the appearance or character of the area.*

b) *Encourage appropriate landscaping and screen planting of developments along scenic routes which provides guidance in relation to landscaping. See Chapter 12 Heritage Objective HE 46"*

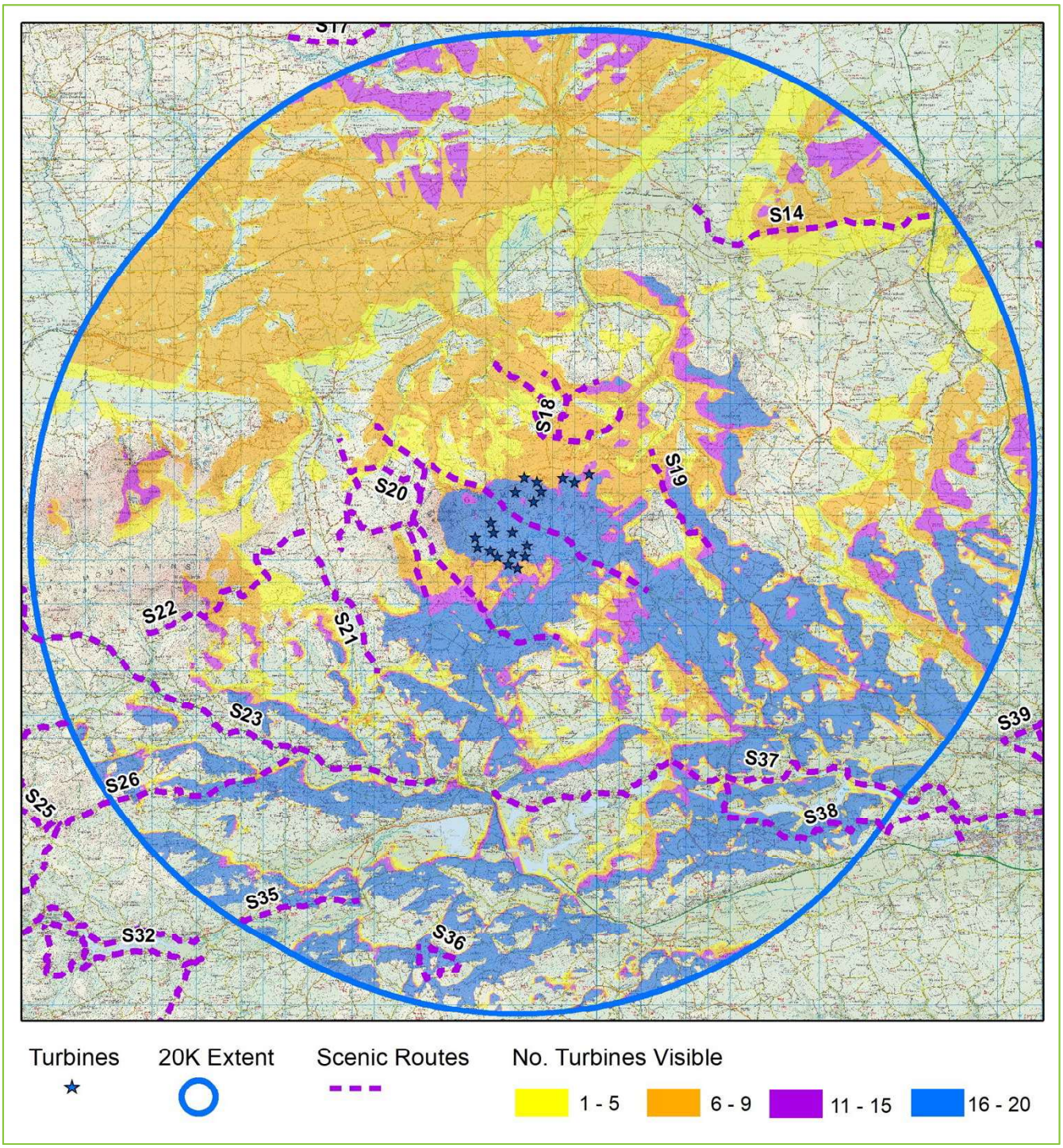

Figure 15.16: Extract from Cork County Development Plan 2014 Volume 4 - Map Browser showing designated scenic routes in the Cork CDP in relation to the proposed turbines.

15.4.5.2 Draft Cork County Development Plan 2022-2028

As discussed in Chapter 4, Policy, the Draft County Development Plan does not propose any changes to the Landscape Character Assessment, scenic designations and associated policies and objectives.

15.4.5.3 Kerry County Development Plan 2015-2021: Views and Prospects

The current Kerry County Development Plan includes subsection 12.4 which relates to 'views and prospects' within the county and states that *"these views and prospects are important to the amenity of the County and to its tourist industry"*. There are no designated scenic views in County Kerry within the 20km study radius.

15.4.6 Identification of Viewshed Reference Points as a basis for Assessment

The results of the ZTV analysis provide a basis for the selection of Viewshed Reference Points (VRP's), which are the locations used to study the landscape and visual impact of the proposed wind farm in detail. It is not warranted to include each and every location that provides a view of this 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, a variety of receptor locations was selected that are likely to provide views of the proposed wind farm from different distances, different angles and different contexts.

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

- Key Views (from features of national or international importance) (KV);
- Designated Scenic Routes (SR) and Views;
- Local Community views (LCV);
- Centres of Population (CP);
- Major Routes (MR); and
- Amenity and heritage features (AH).

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

Key Views (KV)

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 Designated Views (SR)

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

Local Community Views (LCV)

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

Centres of Population (CP)

VRPs are selected at centres of population primarily due to the number of viewers that are likely to experience that view. The relevance of the settlement is based on the significance of its size in terms of the Study Area or its proximity to the site. The VRP may be selected from any location within the public domain that provides a clear view either within the settlement or in close proximity to it.

Major Routes (MR)

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 proposed 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 proposal 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.

Amenity and Heritage Features (AH)

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

The Viewshed Reference Points selected in this instance are set out in Table 15.6 and Figure 15.6 below.

Table 15.6: Selected Viewshed Reference Points (VRP's)

VRP No.	Location	Representative of:	Distance to nearest turbine	Direction of view
VP1	R576 at Kanturk	CP, MR	16.4km (T21)	S
VP2	R577 at Boherbue	CP, MR	17.3km (T15)	SE
VP3	N72 west of Mallow	MR, CP, SR	17.2km (T21)	SW
VP4	Local cemetery at Banteer	AH, CP, MR	11.0km (T21)	S
VP5	N72 at Dromskehy	MR	11.8km (T15)	S
VP6	Mount Hillary	AH	9.2km (T21)	SW
VP7	L1120 at Rathcool	CP, MR	8.0km (T15)	S/SE
VP8	R582 at Millstreet	CP, MR	9.8km (T1)	SE
VP9	Local road at Horsemount North	LCV, CP	4.7km (T15)	SE
VP10	Blackwater Way (Duhallow) at Glannaharee East	AH	6.9km (T21)	SW
VP11	Local road at Inchamay South	SR, LCV	1.6km (T21)	S
VP12	L2758 at Ballynagree East	SR, AH, LCV	1.2km (T14)	E/S
VP13	Millstreet Country Park	AH	4.9km (T1)	E
VP14	R579 at Barrahaurin	SR, MR, LCV	3.4km (T21)	W
VP15	Local road a Ballinagree Upper	LCV	1.0km (T1)	E
VP16	Local road at Mushera	SR, LCV	2.9km (T1)	E
VP17	L2758 at Carrigagulla (1)	SR, LCV, AH	1.1km (T10)	N/W
VP18	L2758 at Carrigagulla (2)	SR, LCV	1.8km (T10)	N/W
VP19	R579 regional road at Barrahaurin	SR, MR	6.5km (T21)	W
VP20	L2758 at Glenaglogh North	SR, LCV	2.9km (T10)	W/NW
VP21	Donoughmore New Cemetery	CP, AH	9.4km (T21)	W
VP22	Local road northeast of Ballinagree	LCV	1.0km (T5)	W/NW
VP23	Residential estate east of Rylane	CP	6.2km (T8)	W/NW
VP24	Local road at Rahalisk	SR, LCV	2.1km (T4)	N
VP25	Local road at Labbadermody	SR	12.6km (T2)	E
VP26	Local road southwest of Ballinagree	CP, LCV	2.1km (T5)	N/NW
VP27	Local road at Bawnmore	LCV	4.3km (T4)	N
VP28	Local road at Aghabullogue	CP	9.6km (T5)	NW
VP29	Sleaveen Road, Macroom	CP	10.3km (T5)	N
VP30	Local road at Kilnamartyra	CP	13.9km (T2)	NE

VRP No.	Location	Representative of:	Distance to nearest turbine	Direction of view
VP31	L2202 local road south of the River Lee	SR	15.9km (T5)	NW
VP32	N22 at Dunisky	MR	13.8km (T5)	N
VP33	Local road at Carrignaneelagh	SR	17.8km (T4)	NE
VP34	Tirelton	SR, CP	17.7km (T5)	N

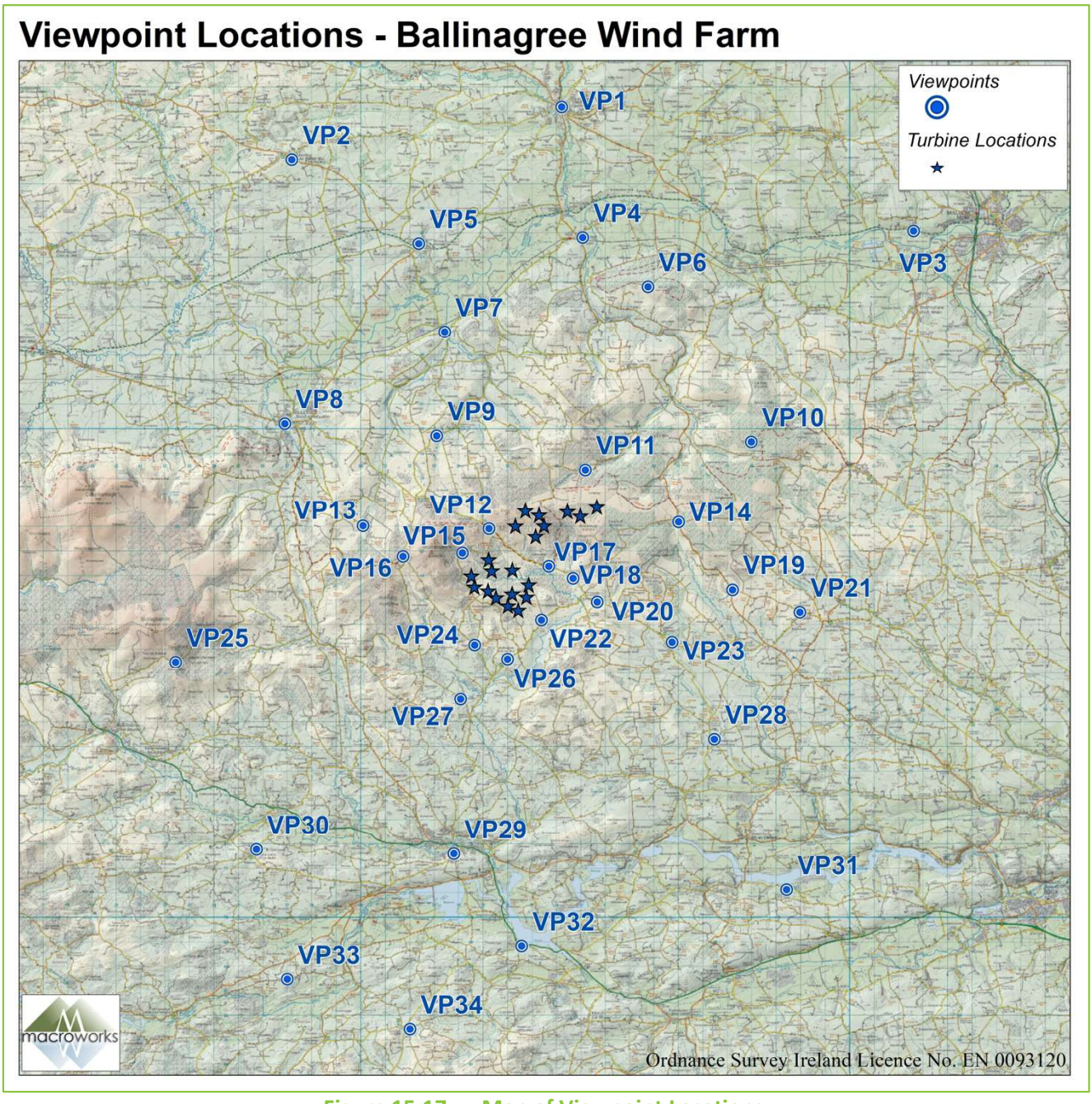

Figure 15.17 Map of Viewpoint Locations

15.5 Potential Impacts

Based on the assessment criteria employed herein, potential significant impacts are considered most likely to occur in instances where highly sensitive landscape and visual receptors coincide with high order landscape and visual effects (see descriptions Table 15.1, Table 15.2 and Table 15.4. From Macro Works previous experience of this type of proposed development in a rural setting, it is considered that potentially significant landscape and visual impacts have the potential to occur in the following ways.

Landscape Impacts

a) Irreversible physical effects on sensitive landscape features
b) Disruption of existing land use patterns
c) Incongruous change to areas of sensitive landscape character

Visual Impacts

a) A combination of visual and spatial dominance as seen from highly sensitive receptor locations. This is most likely to occur within 1-3km of the proposed development.
b) Visual clutter and ambiguity as seen from highly sensitive receptor locations. This can occur at any distance, but tends to occur beyond 2-3km as turbines can become stacked in perspective and a more two dimensional layout is perceived.
c) A combination of both of the above effects.

From baseline studies and early stage assessment specific to the proposed project, some of the most highly sensitive physical landscape receptors are considered to be the River Blackwater and River Lee, both of which are situated in the wider northern and south half of the study area respectively. There is limited potential for visibility from the Blackwater River within the study area. Much of the river corridor is enclosed by dense riparian vegetation and there are no notable walking trails that occur along its path within the study area. Nearest representative view is VP3 Located c. 600m north of the river Blackwater and west of Mallow.

Whilst a degree of landscape sensitivity is also associated with some of the more local landscape features such as the uplands that contain the site, these are not considered to be highly sensitive landscape receptors which is further reflected in the Cork County Development Plan where they are located within landscape character types identified with ‘medium’ sensitivity classification.

The most sensitive visual receptors are likely to be the designated scenic routes identified in the Cork County Development Plan in addition to the Blackwater Way (Duhallow), which are sensitive receptor locations on the basis that they represent a notable degree of scenic and recreational amenity.

15.6 Mitigation Measures

Given the highly visible nature of commercial wind energy developments it is not generally feasible to screen them from view using on-site measures as would be the primary form of mitigation for many other types of development. Instead, landscape and visual mitigation for wind farms must be incorporated into the early stage site selection and design phases.

In this instance, the two main forms of landscape and visual mitigation employed were:

- Mitigation by avoidance and design – reverse ZTV analysis
- Buffering of Residential Receptors

15.6.1 Mitigation by Avoidance and Design

Macro Works have been involved in the proposed project since 2017 when early-stage feasibility studies took place. One of the main mitigation measures brought forward from these early-stage feasibility studies was to locate the southwestern cluster of the proposed development within the forested basin landform to the northwest of the village of Ballinagree, to reduce the visual exposure of the proposed project to receptors in the surrounding landscape. Whilst the design evolved to include an array of turbines along Seefin ridge to the north of the basin, it was still considered important to utilise the Musheramore ridge to screen the proposed development for visual receptors such as the scenic routes to the east of the site and from the settlement of Millstreet northwest of the site.

During early-stage assessments, a preliminary set of visuals was captured which included two key viewpoints to the west and northwest of the site, one (VP3) to represent the settlement of Millstreet and another (VP6) to represent a section of the S20 scenic route and Blackwater Way (Duhallow). Reverse ZTV maps were prepared from each of these representative views as the preliminary set of visuals identified that turbine T1 presented in isolation along Musheramore ridge from both viewpoints as illustrated in Figure 15.17 and Figure 15.18 below. Unlike standard ZTV maps, reverse ZTV maps can identify areas within the site in which turbines can be placed so as not to be visible from a particular location, or visible to a particular degree (i.e., hub height and above). As a result of this analysis, turbine T1 was removed from the turbine array which entirely eliminates visibility of the proposed project from VP6 and notably reduced the visual exposure of the proposed project from VP3. Subsequently, turbine T2 was also removed from the cluster as it lay in a prominent / outlier position and was the only turbine located above the local road that traverses the upper slopes of Musheramore within the basin.

Even though the emerging layout now included an elevated array of turbines located across the nearby Seefin ridge the, same principle of siting all of the turbines in the southwestern cluster within the landscape basin insofar as possible was still relevant. This is on the basis that the two turbine clusters have a contextual separation that belies their relative close proximity to each other (1.5km between nearest turbines). The Seefin turbines are a linear ridgetop array that serves as a perceptual extension to the existing Boggeragh Wind Farms, whereas the Ballinagree basin turbines are nestled into a lower section of landscape within predominant southerly viewshed. Maintaining this perceptual separation between the clusters was promoted during the design refinement process to avoid the sense of a development that sprawled across different landscape contexts.

A series of design refinements saw the project range from 19 to 24 turbines at various tip heights and rotor diameters.

Preliminary sets of visuals were produced comprising of wireframe montages representing a variety of receptors, viewing distances and viewing angles, which were compared on the basis of; the visual presence of the proposed turbines, the aesthetics of the proposed project, and the visual relationship of the proposed wind farm with the surrounding existing wind energy developments. A final layout comprising 20 turbines at a max tip height of 185m was then generated from this iterative design process.

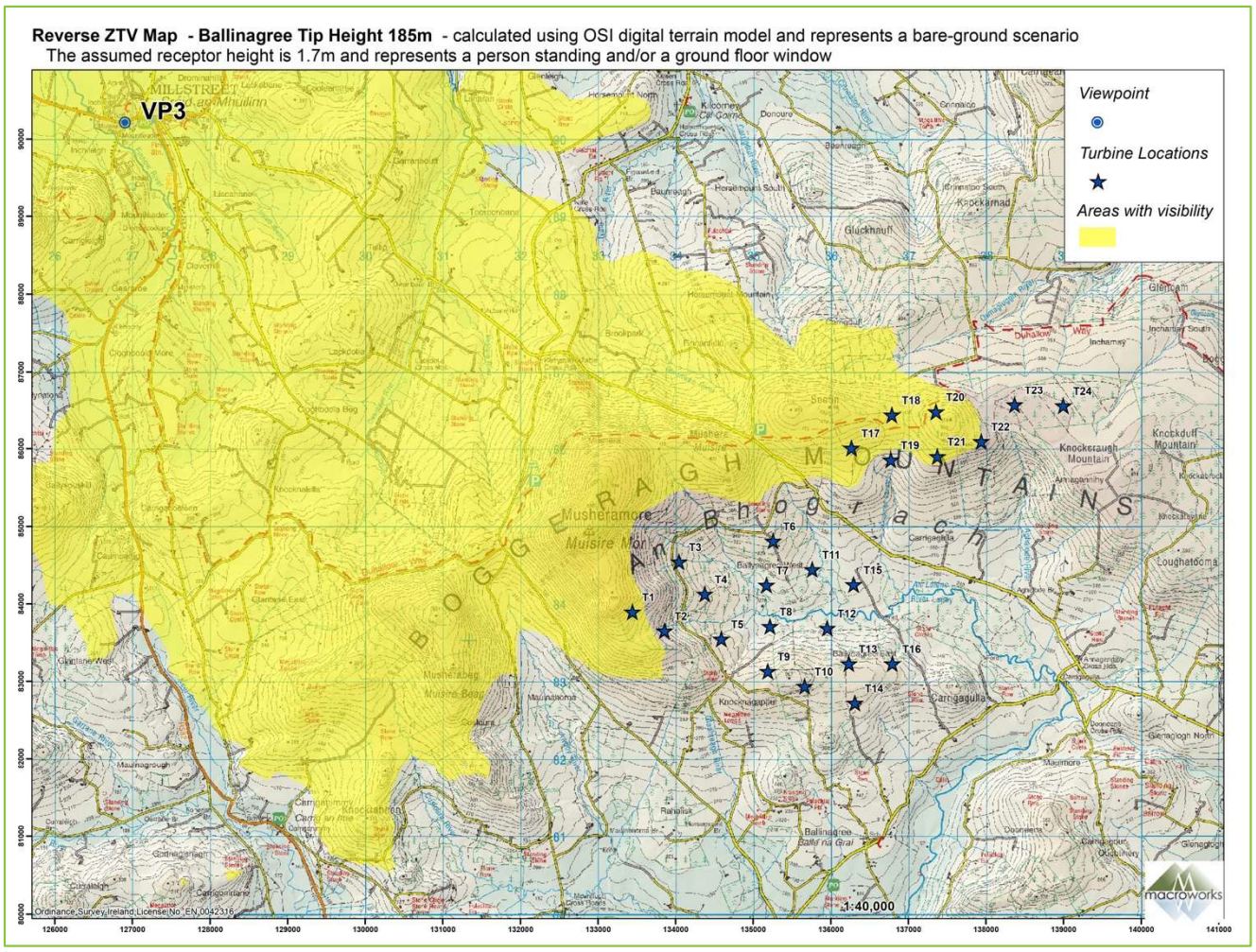

Figure 15.18: Reverse ZTV from Millstreet for early stage design. Note: turbines outside of the yellow pattern are not visible from selected VPs

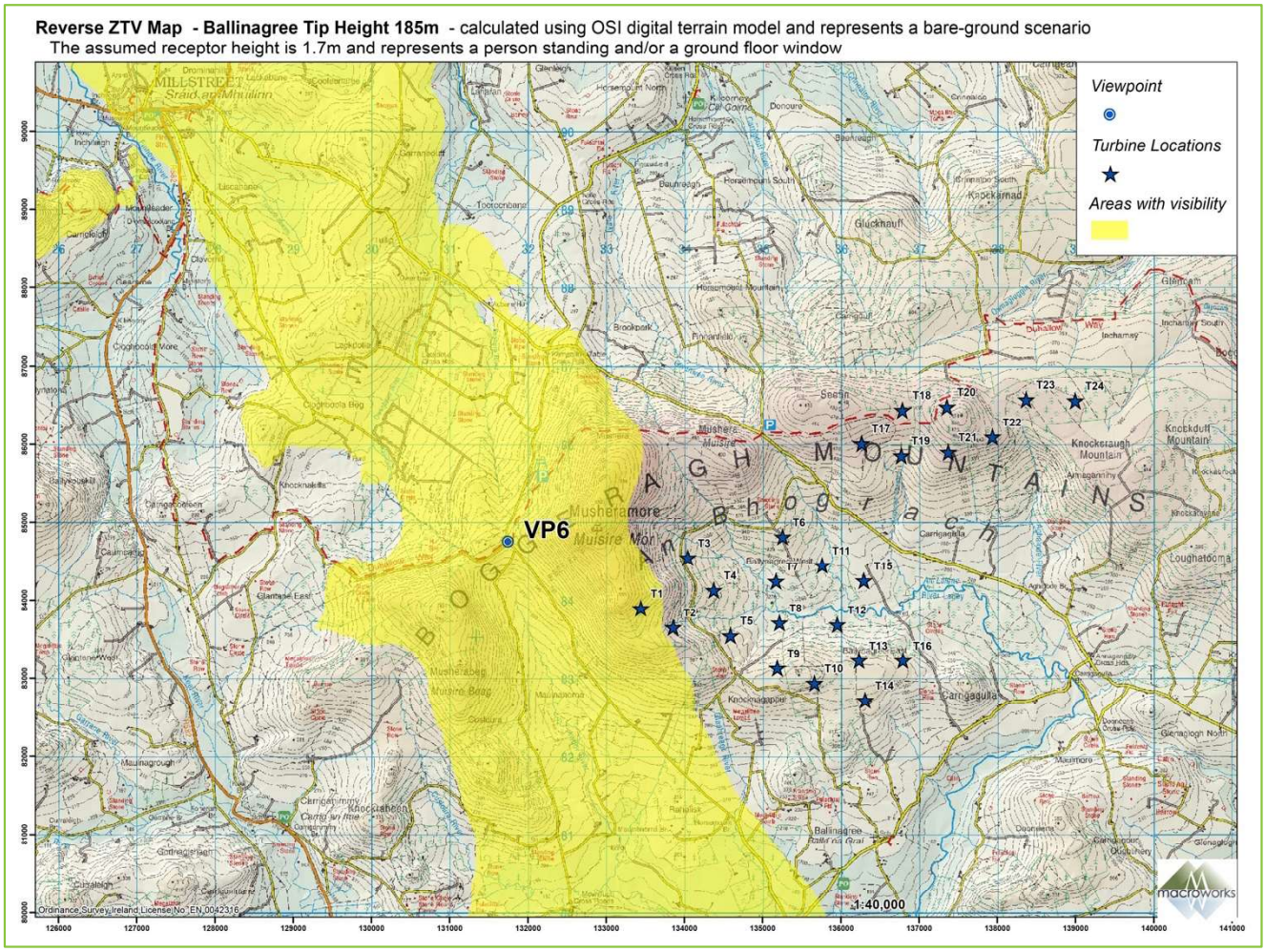

Figure 15.19: Reverse ZTV from S20 scenic route and Blackwater Way (Duhallow) for early stage design. Note: turbines outside of the yellow pattern are not visible from selected VPs

15.6.2 Buffering of Residential Receptors

For the proposed Ballinagree Wind Farm, the minimum distance of any turbine from the nearest residential receptor is 809m, which is in excess of the draft Wind Energy Development Guidelines (2019) minimum set back of 500m and the setback distance of 4 times the tip height of the proposed turbines. In this instance the setback for visual amenity purposes would be 740m from residential receptors on the basis of the 185m high turbines.

Variation in residential buffer distances within the nearest kilometre has a much more noticeable effect on perceived turbine scale than when it occurs in the context of more distant views. This is due to the law of perspective – that doubling the distance to an object halves its perceived height. The reduction factor is even more pronounced when considered in the context of the 'swept area' of turbine blades and not just their tip height. This exponential 'scale in relation to distance scenario is illustrated in Figure 15.20 below.

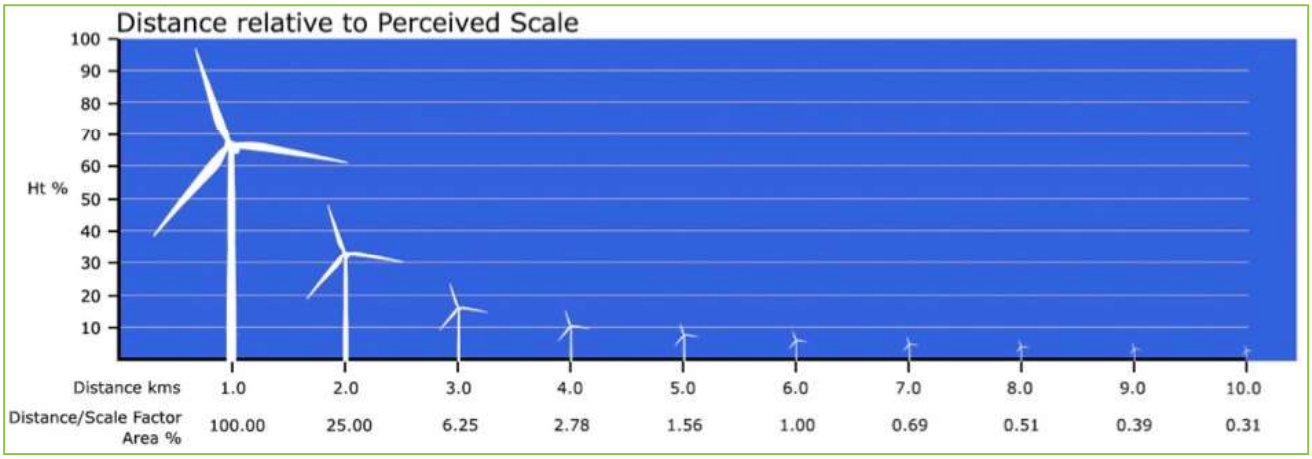

Figure 15.20: Turbine 'scale in relation to distance' relationship

15.7 Residual Landscape Effects

15.7.1 Landscape Character, Value and Sensitivity

Effects on landscape character will be considered at both the localised scale of the site and its immediately surrounding landscape as well as the broader scale of the Study Area.

Central Study Area (< c. 5km from nearest turbines)

The proposed project has a sizable site area and is located within the Boggeragh Mountains in northwest Cork. The proposed turbines are located in two clusters and can be distinctly defined by their immediate landscape context. The northern cluster is situated across the rolling ridges of Seefin Hill whilst the southern cluster is located at a lower elevation within a broad landscape basin that contains the River Laney. This broad basin-like formation in the terrain is enclosed by Seefin ridge and its surrounding peaks to the north and Musheramore Mountain and its surrounding foothills to the east and south. Musheramore Mountain is the most elevated summit in the Boggeragh range and acts as a notable focal point within the surrounding landscape where it is primarily cloaked in moorland. There is a notable contrast in the land use of Musheramore Mountain and the other upland terrain within the Boggeragh complex which is principally contained in a mix of extensive conifer forest and rolling pastoral farmland. Whilst the most elevated hills within the Boggeragh range present with some upland characteristics, much of the Boggeragh complex pertains to a transitional landscape character where there is little sense of the naturalistic. Instead, the Boggeragh complex is viewed as an intensively managed working rural landscape where existing wind energy developments and large-scale commercial forestry activities strongly contribute to its character.

The rolling landscape to the north and east of the northern turbine array highlights the productive upland character of the Boggeragh Mountains, where large-scale existing wind energy developments and commercial forestry activities are the dominant but complementary land uses on upper slopes and ridges, transitioning to pastoral farmland further downslope. Much of the settled parts of the northern half of the central study area are contained within the foothills of the Boggeraghs where the settlement pattern is that of a dispersed rural population of farmsteads and small linear clusters of dwellings. The landscape basin containing the southern turbines clusters encompasses a slightly more remote and tranquil character due to its enclosed nature and low rural population, much of which is contained along the lower-lying sections of the L2758 local road that traverses the basin in a general east-west orientation.

Aside from the upland sections of the Musheramore Mountain, there is little sense of the naturalistic in the southern portions of the central study area. Instead, similar working rural characteristics are prevalent, albeit wind energy development is not as frequent here as it is in the northern and eastern extents of the Boggeragh complex. The only notable settlement within the entire central study area is that of Ballinagree which is situated in an area of rolling farmland southeast of the landscape basin. Whilst the basin itself is sparsely populated, a modest but dispersed rural population exists to its south and east where the terrain transitions to that of rolling farmland.

There is a notable degree of designated scenic amenity within the central study area which relates to the S18, S19 and S20 scenic routes in the current Cork County Development Plan. The development plan has identified scenic routes S18 and S19 with an "overall landscape value" of 'Medium', with the S20 scenic route categorised with a combined 'Medium' and 'High' value. Both S19 and S20 are located along sloping valley sides and are characterised by views of surrounding hills cloaked in conifer forest, rolling farmland and wind turbines. S20 is the most extensive scenic route as it runs across numerous local road corridors in the central study area and one section passes directly through the landscape basin that contains the southern turbine cluster. In all instances, the most highly scenic parts of these routes relate to those sections that traverse elevated areas of terrain where broad distant views are afforded. There is also some sense of recreational amenity within the central study area which is principally related to the Blackwater Way (Duhallow) that traverses the Boggeragh complex in a general northeast by southwest direction and crosses many of its upland hills and ridges including the northern and western slopes of Musheramore Mountain. There is also some sense of heritage, but at a more localised scale, which presents in the form of a number of standing stones, ringforts and holy wells. Whilst this is understood to be of considerable importance to the heritage record, it is not currently overt or strongly associated with the perceived character of this landscape.

With regard to landscape designations, the transitional nature of this landscape context is further reflected within the current Cork County Development Plan, where the central study area comprises of up to five landscape character types. The most relevant of this is that of LCT15b – 'Ridged and Peaked Upland' within the majority of the site is contained and it is classified with a 'Medium' landscape sensitivity, 'Medium' landscape value and 'County' level of importance. The northernmost extents of the site and northern portions of the central study area comprise of LCT 14b – 'Fissured Marginal and Forested Rolling Upland' and is similarly classified with a 'Medium' landscape sensitivity, 'Medium' landscape value but a 'local' level of importance. In contrast to this, the southern tip of the site and areas within the southern extents of the central study area are contained in LCT 13a which classified with a 'High' landscape sensitivity; 'High' landscape value; and 'County' landscape importance. Other LCTs in the central study area include LCT 11 – 'Broad Marginal Middleground Valleys' located to the northwest of the site and LCT 10b – 'Fissured Fertile Middleground' situated to the east of the site. The more sensitive of the two is that of LCT11 which is classified with a 'High' landscape sensitivity; 'High' Landscape Value; and 'Local' Landscape Importance. As identified above, the central study area is located at the confluence of a number of landscape character types that are comprised of a variety of landscape features with a wide range of values and sensitives. However, it is important to note that none of the LCTs have been classified as 'High Value Landscapes' (HVL) within the current County Development Plan, which are considered to be the "most valuable" landscapes within the county.

Overall the site and central study area is considered to be that of a transitional upland landscape setting where values are most associated with the subsistence of the rural economy as opposed to any highly susceptible naturalistic values. Whilst there is a notable concentration of designated scenic routes within the study area, much of this scenic amenity relates to elevated broad views across a working landscape as opposed to view more sensitive naturalistic and tranquil landscape settings. There is also some association with recreation in the central study area, principally relating to the Blackway Way (Duhallow). There is also a strong sense that this is an intensively managed working rural landscape where commercial conifer forestry and existing wind farm developments strongly contribute to the working character of this rolling upland landscape.

Consequently, the site and central study area are considered to have a **Medium** landscape sensitivity which is generally consistent with the current Cork Landscape Character Assessment classifications, albeit there are some features of higher sensitivity such as Musheramore Mountain.

Wider Study Area (c. 5-20km)

The northern and southern wider study area have similar characteristics and comprise of similar landforms and land uses. In the wider northern half of the study area, the Boggeragh Mountains descend towards a low rolling landscape where the dominant land use is that of pastoral farmland. Some of the most notable landscape features include Mount Hillary and the broad valley of the River Blackwater which flows through the northern half of the study area in a general easterly direction. There is also a notable presence of existing wind energy development and commercial forestry along the foothills of the Boggeragh Mountains in the wider northern and eastern half of the study area which highlights the robust working nature of the landscape here. The principal land use in the southern half of the study area is also that of pastoral farmland, whilst broad river valleys are also a prominent landscape feature, the most notable of which is the River Lee valley and flows in an easterly direction towards Cork City. Within the wider western half of the study area, there is something of a divergence from the typical low rolling landscape that occurs in much of the wider study area to the north, south, and east. Here the Derrynasaggart Mountains rise up near the Cork – Kerry county border where some of the more dramatic upland landscapes within the entire study area are contained. While some of the low rolling foothills and surrounding valleys are cloaked in a patchwork of pastoral farmland, the more elevated areas in the wider western half of the 20km study area are contained in extensive areas of conifer forest and mountain moorland and present with some sense of the naturalistic. This sense of the naturalistic is somewhat muted along the Cork – Kerry border to the south of the settlement of Millstreet where there is a notable presence of existing wind energy development.

Whilst the predominant character of the wider study area is that of a productive working rural landscape setting, it also comprises a considerable number of medium to small-scale towns and village settlements, the most notable of which include Mallow, Kanturk, Millstreet and Macroom. These are linked by a network of busy major routes including the N20, N22, and N72. The national railway line also passes through the northern half of the study area. Nonetheless, whilst the dense network of busy transport routes impart something of a utilitarian character on some of the wider study area, there is also a notable concentration of scenic designations, the large majority of which are contained in the wider southern half of the study area and relate to the River Lee corridor and the elevated rolling hills further to the south.

There are also some heritage qualities associated with the wider study area, with many of these heritage features located within or near many of the town and village settlements and include Macroom Castle and Carrigadrohid Castle. A number of smaller-scale heritage features are also dotted throughout the wider study area and include demesne landscapes, wedge tombs, and standing stones. Any sense of recreational amenity within the wider study area typically relates to the uplands and to the broad river corridors such as the River Lee. A number of looped walks are contained on Mount Hillary in the northern half of the study area, whilst the Blackwater Way traverses the eastern and western half of the study area where it passes through a mix of rolling farmland and elevated ridges. A section of the Slí Gaeltacht Mhuscrai (refer to VP25) also passes through the wider western half of the study area where it traverses the foothills of the Derrynasaggart Mountains and the settlement of Ballyvourney.

The wider study area also encompasses a number of LCTs outlined in the current Cork County Development Plan. One of the most sensitive of these is that of LCT8 – ‘Hilly River and Reservoir Valleys’ which has been classified with a ‘High’ landscape sensitivity; ‘High’ landscape value; and ‘National’ landscape importance.

This landscape character type is also identified as a 'High Value Landscape', which are those landscapes considered to be the "most valuable" landscapes in the county. Furthermore, a large majority of the landscape within County Kerry in the wider western half of the study area has been classified as 'Rural Secondary Special Amenity' as a consequence of its relatively remote upland nature.

Owing to the reasons outlined above, it is considered that the wider study area is principally that of a productive rural landscape that comprises of some highly anthropogenic features such as busy nationally primary and secondary routes, the national railway line corridor and a strong presence of existing wind energy developments. Nonetheless, there is a notable pastoral aesthetic and a degree of rural tranquillity throughout the study area, which also includes some highly sensitive landscape features such as the River Lee valley in addition to the Derrynasaggart Mountains. For the reasons outlined above, the wider study area is generally considered to be of a **Medium** landscape sensitivity, but with occasional landscape features and areas of higher and lower sensitivity.

15.7.2 Magnitude of Landscape Impacts

The physical landscape as well as the character of the proposed development and its central study area (<5km) is affected by the proposed wind turbines as well as ancillary development such as access and circulation roads, areas of hard standing for the turbines, borrow pits, grid connection and the substation compounds. By contrast, for the wider landscape of the study area, landscape impacts relate exclusively to the influence of the proposed turbines on landscape character. The aspects of the proposed development that are likely to have an impact on the physical landscape and landscape character are described in Chapter 3 (Description of Proposed Development) with construction processes described in the Construction and Environmental Management Plan (CEMP) at Appendix 3.1.

15.7.2.1 Construction Stage Effects on the Physical Landscape

It is considered that the proposed wind farm development will have a modest physical impact on the landscape within the site as none of the proposed development features have a large 'footprint' and land disturbance/vegetation clearing will be relatively limited. The topography and land cover of the proposed site will remain largely unaltered with construction being limited to tracks, areas of hard standing for the turbines, the on-site substation compound, temporary site construction compound, proposed met masts and borrow pits. Excavations will tie into existing ground levels and will be the minimum required for efficient working. Any temporary excavations or stockpiles of material will be re-graded to marry into existing site levels and reseeded appropriately in conjunction with advice from the project ecologist.

The finalised internal road layout has been designed to avoid environmental constraints, and every effort has been made to minimise the length of necessary roadway by utilising and upgrading existing forestry tracks. Furthermore, the road layout has been designed to follow the natural contours of the land wherever possible reducing potential for areas of excessive 'cut and fill'. There will be an intensity of construction stage activity associated with the access tracks and turbine hardstands consisting of the movement of heavy machinery and materials, but this will be temporary/short term in duration and transient in location. The construction stage effects on landscape character from these familiar and dispersed surface activities will be minor.

There will be one 110kV on-site substation compound constructed to collect the generated power from the proposed development before distributing it to the existing network substation at Clashavoon. The 110kV on-site substation will be located in an area of conifer forest and will have dimensions of 150m x 105m.

The proposed sub-station compound will comprise of two single storey buildings with pitched roofs and will have a concrete render finish. The proposed substation compound, which will be enclosed by a 2.5 metre high steel palisade fence, will be heavily screened by the surrounding conifer forest with only intermittent views of the substation potentially afforded from the L2758 local road to the north and only the proposed masts will be visible from other surrounding road and residential receptors. The most notable construction stage landscape impacts resulting from the proposed on-site substation relate to the construction of concrete foundations to facilitate that substation building. Overall, these construction stage effects are relatively minor and compare to the construction of an industrial farm shed.

All internal site cabling will be underground and will follow site access tracks without the need for trenching through open ground. Indeed, the land cover of the site will only be interrupted as necessary to build the structures of the proposed wind farm and to provide access. Impacts from land disturbance and vegetation loss at the site are considered to be modest in the context of this landscape setting. Some forest felling will be necessary to accommodate the construction of some turbines, hardstands, crane pads, access tracks and the proposed onsite substation. All forestry that is removed (88ha) will be subject to forest replanting provisions.

Two permanent meteorological (Met) masts will be erected on site and will comprise of 100m high lattice steel masts with a shallow concrete foundation. The most notable construction stage effects here relate to the minor amount of ground excavation required to facilitate the shallow foundations for the steel mast structure. The proposed project also includes the use of 15.05km of track that will be made available for use as recreational amenity trails for community use. Tracks that will be built and/or upgraded for the construction and operation of the wind farm will be made available as a recreational amenity during the operational phase of the project. 15.05 km of tracks shall be made available as recreational amenity trails for community use and shall include trail signage and way-markers.

The grid connection cabling will run underground from the onsite substation across a combination of private lands and public roads generating land disturbance and associated movement of machinery and stockpiling of materials. The proposed grid connection route will include for directional drilling at up to 4 no. location to cross existing watercourses. No overhead lines are required for this connection. Connection works will involve the installation of ducting, joint bays, drainage and ancillary infrastructure and the subsequent running of cables along the existing road network. This will require delivery of plant and construction materials, followed by ground excavation laying of cables and subsequent reinstatement of trenches, and will result in minor and very localised construction stage landscape effects.

Site activity will be at its greatest during the construction phase due to the operation of machinery on site and movement of heavy vehicles to and from site. This phase will have a more significant impact on the character of the site than the operational phase, but it is a ‘short-term’ impact that will cease as soon as the proposed development is constructed and becomes operational (approximately 18-24 months from the commencement of construction).

There will be some long term/permanent construction stage effects on the physical landscape in the form of turbine foundations and hardstands, access tracks and a substation, but only the on-site and off-site substation and are likely to remain in perpetuity as part of the national grid network. It is likely that with the exception of some residually useful access tracks, all other development features will be removed from the project site and it will be reinstated to agricultural or forestry use upon decommissioning. Thus, the construction stage landscape effects of the proposed development are largely reversible.

There will be some construction stage effects on landscape character generated by the intensity of construction activities (workers and heavy machinery) as well as areas of bare-ground and stockpiling of materials as identified in the Construction and Environmental Management Plan (CEMP) in Appendix 3.1.

Such effects will be temporary/short term in duration and are, therefore, not considered to be significant. Of particular note, is a temporary construction laydown site at the roadside of the R583 within the eastern extents of Drishane Castle demesne lands. This location is currently used as a large agricultural field and is at considerable physical and visual remove from the Castle itself and the formal gardens. Again, the effects will be temporary and reversible and are not deemed to be significant.

15.7.2.2 Operational and 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 a characteristic feature of the immediate and wider study area, most notably to the north of the site where a number of existing large-scale wind energy developments are located across the Boggeragh Mountains. An existing wind energy development is also located at Burren Hill some 3.5km south of the site, whilst a number of existing wind farms are located within the wider western half of the study area. The effect, therefore, is one of intensification and extension of an established land use in this landscape and not the introduction of a new and unfamiliar feature.

In terms of scale and function, the proposed wind farm is well assimilated within the context of the central study area. This is due to the broad scale of the landform, landscape elements and land use patterns. These attributes prevent the height and extent of the proposed wind farm causing the type of scale conflict that can occur in more intricate landscape areas. The rolling hills and ridges in the immediate surrounds of the wind farm site have a notable utilitarian character due to the presence of the existing wind energy developments to the north, in addition to the large number of extensive commercial conifer plantations that occur within and around the site. Although the proposed development represents a stronger human presence and level of built development than currently exists on the site, it will not detract significantly from its productive rural character, which wind turbines are already a key component of.

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, albeit the proposed on-site substation will remain in perpetuity as part of the national grid infrastructure, in addition to residually useful access tracks.

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 operation 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 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.

In summary, there will be physical impacts on the land cover of the site as a result of the proposed development during the operational phase, but these will be relatively minor in the context of this productive rural landscape that comprises of existing wind energy developments and extensive areas of commercial conifer forest. The scale of the proposed development will be well assimilated within its landscape context without undue conflicts of scale with underlying land form and land use patterns.

For these reasons the magnitude of the landscape impact is deemed to be **Medium** with the Central Study Area within the landscape basin that contains the southern turbine cluster and **Medium-low** along Seefin ridge where there is a notable presence of existing wind farm development. Beyond 5km from the site, the magnitude of landscape impact is deemed to reduce to **Low** and **Negligible** at increasing distances as the wind farm becomes a proportionately smaller component of the overall landscape fabric.

15.7.3 Significance of Landscape Effects

The significance of landscape impacts is a function of landscape sensitivity weighed against the magnitude of the landscape impact. This is derived from the significance matrix (Table 15.3) used in combination with professional judgement. Based on the assessment described in Sections 15.7.115.7.2 the significance of landscape impact is considered to be **Moderate** throughout the Central Study Area.

For the wider study area (beyond 5km from the site), landscape impact significance is not considered to exceed **Slight** and will reduce to Slight and Imperceptible at increasing distances as the project becomes a progressively smaller component of the wider landscape fabric even in the context of higher sensitivity landscape units / features.

15.8 Residual Visual Effects

Table 15.7 below summarises the full textual assessment of visual effects for each Viewshed Reference Point (VRP) contained in Appendix 15.1. Whilst the 'receptor sensitivity analysis table' and full textual assessment for each VRP is normally contained within the landscape and visual chapter, in this instance, given the considerable number of VRPs, it is considered more prudent to place this material in a separate appendix and focus herein on the significance of the findings. The left hand side of the table incorporates statistical data associated with the view of turbines, whilst the right hand side contains professional judgements in respect of the view. It is important to note that the professional judgements are based on the effects experienced in relation to the view and are not directly influenced by the statistical data. These aspects are only combined within Table 15-10 in order to identify patterns of effect to better inform the conclusions of this assessment.

Table 15.7: Summary of Visual Effects at Viewshed Reference Points (VRP's)

VRP No.	Distance to nearest turbine km	No. of turbine nacelles visible	Visual intensity category (TVI)	Visual receptor Sensitivity (see appendix 15.1)	Visual Impact Magnitude	Significance of Visual effect
VP1	16.4km (T21)	6	0	Medium-Low	Negligible	**Imperceptible**
VP2	17.3km (T15)	8	0	Medium	Low	**Slight**
VP3	17.2km (T21)	0	0	Medium	Negligible	**Imperceptible**
VP4	11.0km (T21)	0	0	Medium	Negligible	**Imperceptible**

VRP No.	Distance to nearest turbine km	No. of turbine nacelles visible	Visual intensity category (TVI)	Visual receptor Sensitivity (see appendix 15.1)	Visual Impact Magnitude	Significance of Visual effect
VP5	11.8km (T15)	7	0	Low	Low	**Slight-imperceptible**
VP6	9.2km (T21)	7	26	High-Medium	Low	**Moderate-slight**
VP7	8.0km (T15)	7	46	Medium-low	Low	**Slight**
VP8	9.8km (T1)	0	0	Medium	Low-negligible	**Slight-imperceptible**
VP9	4.7km (T15)	4	52	Medium-low	Low	**Slight**
VP10	6.9km (T21)	8	68	Medium	Low-negligible	**Slight-imperceptible**
VP11	1.6km (T21)	8	198	Medium	High-Medium	**Substantial-Moderate**
VP12	1.2km (T14)	15	414	High-medium	High-medium	**Substantial-moderate**
VP13	4.9km (T1)	0	0	Medium	Negligible	**Imperceptible**
VP14	3.4km (T21)	2	3	Medium	Medium-Low	**Moderate-Slight**
VP15	1.0km (T1)	19	621	Medium	High-medium	**Substantial-moderate**
VP16	2.9km (T1)	0	0	High-medium	Negligible	**Imperceptible**
VP17	1.1km (T10)	20	578	Medium	High	**Substantial-moderate**
VP18	1.8km (T10)	19	356	Medium	High-medium	**Substantial-moderate**
VP19	6.5km (T21)	9	44	Medium	Low	**Slight**
VP20	2.9km (T10)	19	354	High-medium	Medium	**Moderate**
VP21	9.4km (T21)	18	6	Medium	Low	**Slight**
VP22	1.0km (T5)	6	167	Medium-low	High-Medium	**Moderate**
VP23	6.2km (T8)	15	132	Medium-low	Medium-low	**Moderate-slight**
VP24	2.1km (T4)	6	106	Medium	Medium	**Moderate**
VP25	12.6km (T2)	6	0	High-medium	Low	**Slight**
VP26	2.1km (T5)	14	162	Medium-Low	Medium	**Moderate**
VP27	4.3km (T4)	17	47	Medium-low	Medium-low	**Moderate-slight**
VP28	9.6km (T5)	8	0	Medium-low	Negligible	**Imperceptible**
VP29	10.3km (T5)	18	0	Medium	Low	**Slight**
VP30	13.9km (T2)	18	0	Medium	Low	**Slight**
VP31	15.9km (T5)	15	0	High-medium	Low	**Slight**
VP32	13.8km (T5)	12	0	Medium	Low	**Slight**
VP33	17.8km (T4)	19	0	High-medium	Low-negligible	**Slight-imperceptible**
VP34	17.7km (T5)	20	0	High-medium	Low-negligible	**Slight-imperceptible**

15.8.1 Impacts on Designated Views

With regard to the proposed project, there are a notable number of scenic routes located throughout the central and wider study area. The nearest and most relevant scenic routes that occur within the central study area include S18, S19 and S20. All three of these routes currently encompass views of existing wind energy developments from a range of distances and viewing angles, much of which relates to existing wind energy developments located within the Boggeragh complex. It is also important to note that the depicted viewpoints located along these scenic routes represent a static view. However, in reality, these routes are experienced as a journey and not as a series of fixed views. Thus, the representative viewpoints typically reflect the worst-case scenario in terms of turbine visibility. Furthermore, for many of these scenic routes, the proposed turbines have the potential to be heavily and, in some cases, entirely screened by surrounding terrain and vegetation.

Scenic Route S18

S18 'Mountain roads between Seefin and Nad' occurs along the northern foothills and upland rolling hills of the Boggeraghs and is located just over c. 1.5km to the north of the nearest turbine (T20) at its nearest point. VP11 was selected to represent this scenic route which is currently heavily influenced by both Boggeragh I & II Wind Farms and Carrigcannon Wind Farm. Turbines are a common, indeed defining, feature along this scenic route and are often viewed at a near distance. Whilst there is some sense of remoteness along this scenic route, the landscape here is predominately that of a productive upland landscape with little sense of the naturalistic. All 8 turbines of the northern cluster will be prominently visible from sections of this scenic route and will appear as an extension to the recently constructed Boggeragh II turbines which traverse a forested ridge to the east. The significance of visual impact from VP11 will be 'Substantial-moderate' on the basis that the visible turbines will be viewed here at a prominent scale and will fill one of the only gaps on the near ridge that currently does not contain existing turbines. Nonetheless, the turbines will present in a highly legible manner with very few aesthetics issues.

Scenic Route S19

S19 'Road from Glenaknockane towards Donoughmore' is located along a section of the R579 regional road on the eastern slopes of the Dripsey river valley. Whilst cross valley views are afforded towards the rolling forested slopes of the Boggeragh Mountains from this scenic route, the main aspect of visual amenity here stems from the views down the valley to the south which extend across a broad rolling landscape. This scenic route is represented by both VP14 and VP19. VP14 is located along the northern sections of this scenic route whilst VP19 is located at its southernmost tip. A clear view of the northern cluster will be afforded from the northern half of the route, where the near ridge will entirely screen the southern turbine cluster. A view of the proposed turbines will be afforded along the opposing ridgeline where they will be seen in the immediate context of the Boggeragh II turbines, and consequently, the proposed turbines will appear as an extension to an already established land use. Whilst both the northern and southern turbine clusters will be partially revealed at VP19, they are viewed at distances upwards of c. 6km and will present as modest scale features in a distant landscape backdrop. They are viewed as two separate clusters, with the northern cluster again presenting as an extension to the existing Boggeragh II Wind Farm. The significance of visual impact at VP14 and VP19 is deemed to be Slight. It is also important to note that some sections of this scenic route are located outside of the ZTV pattern and will afford no visibility of the proposed turbines.

Scenic Route S20

S20 'Roads at Mushera in the Boggeragh Mountains and roads from Mushera to Ballynagree, Lackdoha and Rylane Cross' is one of the most extensive scenic routes in the county as it traverses a sizable area of the Boggeragh Mountains where it passes through a variety of landscape types and through a number of contrasting land uses and landscape features. As a result of its sizeable extent, this scenic route is considered to have varying sensitivities and values. It is important to note that a considerable section of this scenic route, to the west of the proposed development will afford no visibility of the proposed turbines. Nonetheless, due to its broad nature, S20 is represented by a number of viewpoints including VP12, VP16, VP17, VP18, VP20, and VP24. VP12 illustrates one of the broadest and elevated views afforded from this route where it crosses a saddle in the western extents of the Boggeragh range between Seefin ridge and Musheramore Mountain. The significance of visual impact here was deemed 'Substantial-moderate' as a consequence of the dominant visual presence of the proposed development in combination with some negative aesthetic issues in which the northern turbines are visible partially rotating against Seefin ridge at a near distance. The southern turbine cluster is seen from here to occupy a large extent of the River Laney basin. However, due to the relatively loose arrangement of the turbines in the southern cluster, it is not considered that they will obstruct the view. Instead, it represents a notable visual intrusion, but one that still allows filtered views through the scheme towards the distant rolling terrain and it is the vastness of this view that is its key attribute rather than a sense of the naturalistic or the presence of any unique / distinctive features. In this respect the turbines contribute to the sense of scale and distance by generating diminishing perspective.

In contrast to VP12, VP17 and VP18 represent views from this scenic route along the L2758 local road in the lower-lying areas of the landscape basin that contains the southern turbine cluster. Here the turbines present intermittently on both sides of the road, however, there are few instances where clear views of the northern and southern cluster are afforded in combination. In the context of this low-lying remote rural area, both viewpoints are deemed to have a 'Substantial-moderate' visual impact significance, where the turbines have the potential to present with a visual envelope greater than 180º along some sections of this local road scenic route.

Further to the east and within an area of locally elevated terrain to the east of the Laney river valley, VP20 affords a clear view towards the southern turbine cluster, which appears relatively contained within the surrounding landscape basin. A clear uphill view of the northern turbine cluster is also afforded from here where the turbines are viewed well-spaced and in a clear and comprehensible manner. Although the southern turbine cluster appears in a prominent manner here, the turbines appear loosely arranged and do not appear over-scaled or out of place in the context of these broad forested slopes. Due to the scale of the southern cluster, the turbines are likely to visually compete and intrude on the view afforded towards the distinctive ridge of Musheramore Mountain further to the west. However, this represents a visual intrusion on the view of Musheramore, rather than obstruction and the turbines are all anchored in the lower portion of the basin having been kept away the upper slopes of Musheramore mountain. Consequently, the visual impact significance is deemed to be Moderate.

The western extent of the S20 scenic route is located on the western and southern edge of the Boggeragh Mountains and is represented by VP16 and VP24. VP16 has been used for illustrative purposes to show there will be no turbine visibility from the west-facing moorland slopes of Musheramore ridge which is a direct result of the mitigation measures employed during the early stages of the project's design process. Further to the southeast, VP24 identifies the degree of turbine visibility along the southern foothills of the Boggeragh range. Whilst up to 7 of the proposed turbines will be prominently visible here at a short distance to the north, much of the scenic amenity along this section of the S20 scenic route relates to elevated and more extensive views in the opposite direction - to the south along the Awboy river valley.

Nonetheless, the near view of Musheramore Mountain is also a distinctive landscape feature here and enhances the sense of scenic amenity afforded to the north/northwest. From this section of the scenic route, the proposed turbines are notably offset from the more visually sensitive moorland sections of Musheramore ridge. This is again, a direct result of mitigation measures where turbines were eliminated from early design iterations as they appeared in an ambiguous manner in the same context as the more remote upland areas of Musheramore Mountain. Whilst the proposed turbines will appear as noticeable features along this section of the S20 scenic route and will likely draw the eye, they are visually offset from the distinctive Musheramore ridge and consequently, a visual impact significance of 'moderate' was assessed.

In similar circumstances to the proposed Ballinagree Wind Farm, the existing Derragh Wind Farm is located in the near vicinity of scenic route designations in County Cork, and is located only a short distance outside of the 20km study area to the southwest of the site. The existing Derragh turbines will be viewed at a prominent scale and from a near distance from sections of the S25 and S26 scenic routes. Nonetheless, the existing turbines will be viewed in the opposite direction to the main aspect of visual amenity from these routes, and thus, they are not considered to unduly impact on the scenic amenity of these routes.

The wider study area also encompasses a variety of other scenic designations outlined in the Cork CDP, some of which are elevated and will afford distant views of the proposed turbines (Scenic Routes S14, S22, S35, S36 and S38). Nevertheless, due to their distance from the proposed project in combination with the broad nature of many of these views, it is not considered that the proposed development will result in significant impacts at the scenic routes, and the significance of visual impact will range between ‘Slight’ and ‘Imperceptible’. It should also be noted that an area designated ‘Secondary Special Amenity Area’ in the Kerry CDP is located in the westernmost periphery of the study area. The only potential for turbine visibility here relates to rolling elevated hilltop summits at a distance of c.15km from the proposed site. Due to the broad nature of these views, combined with their considerable distance from the site, it is not considered that the proposed development will result in significant impacts here. Even if viewed from these elevated locations, the significance of visual impact will be no greater than ‘Slight-Imperceptible’

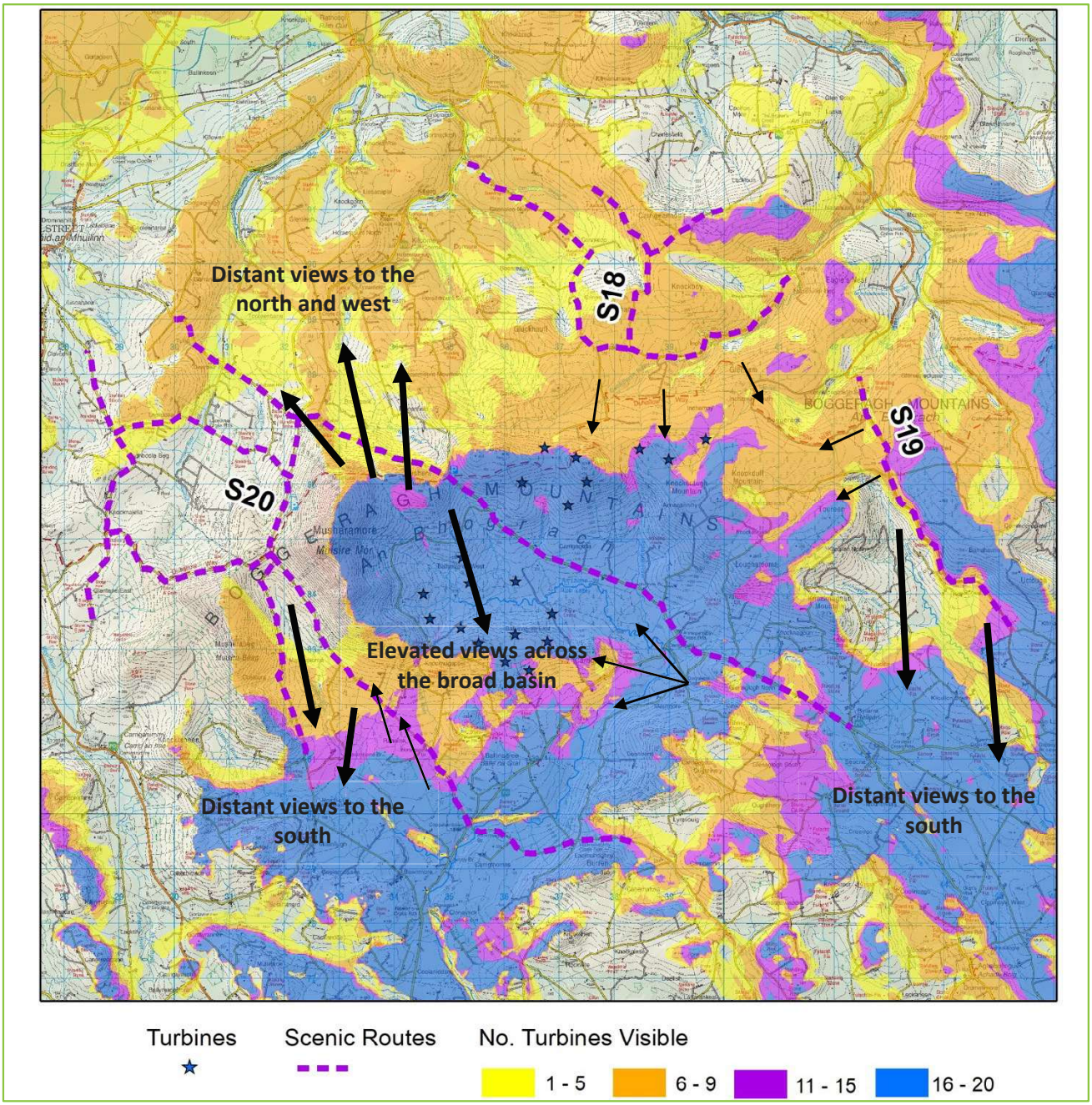

Figure 15.21: Map showing the main scenic amenity aspects of designated scenic routes within the study area and the primary orientation of these views.

15.8.2 Impacts on Local Community views

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

Up to 11 views were chosen to represent the local community, some of which also represent scenic routes, amenity features, and centres of population and include VP9, V12, VP14, VP15, VP17, VP18, VP20, VP22, VP24, VP26, and VP27. The sensitivity of these views ranges from 'Medium-low' to 'High-medium' with those of a higher sensitivity attributed to the designated scenic routes and/or amenity and heritage features such as the Blackwater Way (Duhallow). Of the 11 views, the highest significance of visual impact is 'Substantial-moderate' which generally relates to those views that are both representative of local community views, scenic designations and sections of the Blackwater Way (Duhallow).

Viewpoints VP12, VP15, VP17 and VP18 all incur an impact significance of 'Substantial-moderate' due to their near distance and clear views of the proposed turbines. VP12, VP17 and VP18 are all representative of the local community but similarly represent scenic designations and amenity features. VP12 affords an elevated view across the southern turbine cluster, whereas both VP17 and VP18 are located along the L2758 local road which traverses the lower-lying areas of the landscape basin. While both of the depicted views will afford clear visibility of turbines to the north and south of the local road corridor, this represents a worst-case scenario as much of this route is heavily enclosed by roadside vegetation. The only one of these views that solely represents the local community is that of VP15 where a long distance view is afforded across the broad basin that contains the River Laney and is dominated by extensive areas of existing conifer forestry. The southern turbine cluster will be visible here at a distance of c.1km and will be viewed contained within the broad River Laney basin, whilst the northern cluster appears clearly separated from the southern cluster where it presents along the Seefin ridge. Nonetheless, there are very few residential dwellings that will be afforded such views of the development as many of these are located at a much lower elevation within and below the River Laney basin.

In terms of the other local community views, 5 of these will are deemed to experience a visual impact significance of 'moderate' and include VP20, VP22, VP24 and VP26. Of these, VP20 will afford the clearest view of the proposed project from a locally elevated hill to the west of Laney river valley. Both the northern and southern turbine cluster appear distinctly separate here and a sense of visual respite is apparent which dilutes the broad scale of the proposed project. As identified within the TVI mapping, the visual prominence of the turbines is at its greatest within the landscape basin that contains the southern cluster. Viewpoints VP22, VP24 and VP26 are all located outside of this and will therefore only be afforded partial views of either turbine cluster. Nonetheless, the turbines will present at a reasonably large scale due to their near distance, but they will not appear incongruous in this productive rural context.

Whilst the turbines appear as tall and prominent features from many of these views, they do not present with any notable sense of overbearing nor will they appear out of place in this broad upland context where wind energy development is already a well-established land use. Consequently, it is not considered significant visual impacts will occur in respect of local community views.

15.8.3 Impacts on Centres of Population

Thirteen viewpoints were chosen to represent centres of population within the central and wider study area (VP1, VP2, VP4, VP7, VP8, VP9, VP21, VP23, VP26, VP28, VP29, VP30 and VP34), some of which were more specifically chosen due to their scenic designations such as VP3 and VP34. Centres of population are generally considered to be in the mid to low range of visual receptor sensitivity because they tend to be busy built environments where visual change is relatively commonplace, however, in this instance, some of the centres of population throughout the study area are elevated and afford broad panoramic backdrops which heighten their sensitivity (VP2, VP30, VP34).

Visual impact significance at centres of population range from 'Moderate' to 'Slight-imperceptible' which principally relates to the distance the settlement is located from the proposed Project.

The highest impacts will occur at the small village of Ballinagree, which is the nearest centre of population to the site. A 'moderate' impact significance is associated with the settlement of Ballinagree which has the potential for near distance views of some of the turbines within the southern cluster. Nonetheless, much of the turbine visibility will be afforded from the surrounding local road network, as opposed to the central areas of the settlement, and the full extent of the southern turbine cluster will be partially screened by the near southern ridge of the basin.

The second highest impact significance of 'Moderate-slight' occurs at VP23 which is from the small settlement of Rylane situated to the southeast of the site. Intermittent views of the northern cluster will be afforded through layers of intervening vegetation where the proposed turbines will appear along rolling ridges in combination with other existing wind turbines. The southern turbine cluster presents partially against Musheramore Mountain and will be a noticeable background feature from here. Nevertheless, whilst the proposed turbines will slightly increase the quantum of built development in view, it is not considered that the visible Ballinagree turbines will unduly impact the rural visual amenity of this scene.

The significance of visual impact ranges between 'Slight' and 'Imperceptible' at all other centres of population within the study area due to the low degree of visual exposure of the proposed project and/or the broad, long-distance nature of these views, in which turbines are already a familiar feature. As a result of the reasons outlined above, it is not considered that the proposed project will result in significant visual impacts at centres of population within the study area.

15.8.4 Impacts on Major Routes

The most notable major routes include the N20, N22, and N72 all of which are contained within the wider study area and will have limited potential to afford clear views of the proposed turbines as much of their corridors are flanked by dense roadside vegetation. Three viewpoints were chosen to represent these major routes within the study area (VP3, VP5 and VP32). VP3 and VP5 are both representative of views afforded in the direction of the site from the N72 national secondary route in the northern half of the study area. VP3 also represents a section of a scenic route extending west from Mallow contained on the N72. Both of these views reflect the low degree of visual exposure of the proposed project from the N72 corridor and result in a visual impact significance no greater than 'Slight-imperceptible'. Whilst a marginal increase in the visual presence of the proposed turbines is noted along the N22 (VP32) in the southern half of the study area, views of the proposed project will only occur as fleeting glimpses as the ZTV pattern identifies small isolated road sections where there is potential for turbine visibility. The visual impact significance at VP32 is therefore deemed to be 'Slight'.

As a result of the reasons outlined above, it is not considered that any significant visual impact will occur in respect of major route receptors.

15.8.5 Impacts on Heritage and Amenity Features

Seven viewpoints were chosen to represent heritage and amenity features within the study area and include VP6, VP10, VP12, VP13, VP16, VP17 and VP21.

The Blackwater Way – Duhallow

Four of these (VP10, VP12, VP16, and VP17) were specifically chosen to represent the Blackwater Way (Duhallow) which traverses the study area and passes directly through the site.

Visual impact significance at these representative viewpoints ranged from 'Substantial-moderate' to 'Imperceptible', with those viewpoints situated nearest to the proposed turbines experiencing the higher order of impacts. Whilst the proposed turbines will have a dominant visual presence along sections of this waymarked trail, they will not obstruct views afforded of neighbouring ridges or distant mountains. Views of turbines at a near distance are also commonplace along sections of the Blackwater Way (Duhallow) in the Boggeragh Mountains, and therefore the proposed project will not appear as an uncharacterised feature. Furthermore, with reference to the permitted Boggeragh II Wind Farm immediately to the east of the site (Planning Ref: 10/08067), the Inspectors Report stated;

> *"The proposed development will involve the introduction of large structures into the landscape at a relatively near distance along part of the route. However, in the context of the assessment in relation to visual amenity and landscape above, I do not consider that the impact of the proposed development would significantly affect the recreational value of the walking route. I have no objection to the proposed development in this respect."*

Mount Hillary Looped Walk

VP6 is an elevated broad panoramic view afforded from the Mount Hillary Looped Walk. This is a broad sweeping panorama that affords a view across much of the Bogeragh Mountains where existing wind energy developments are perceived as one of the more common upland land uses. The northern cluster of proposed turbines appear evenly spaced and in a legible manner, albeit they will generate some sense of visual clutter in combination with the existing Boggeragh and Carrigcannon turbines. Nonetheless, the proposed turbines will be distant background features and the significance of visual impact is considered to be 'Moderate-slight'.

Donoughmore New Cemetery

VP21 is from Donoughmore New Cemetery at the settlement of Stuake where the proposed turbines will be visible in two clusters. The northern cluster appears in a slightly cluttered manner along a distant forested ridge, whilst the southern cluster is partially visible along distant rolling terrain. Whilst there are some minor aesthetic issues here associated with the stacked view of the northern turbines, these are considerably diluted by the broad nature of the afforded view and the modest perceived scale of the turbines from this distance. As a result, the proposed turbines will be viewed as distant background features and are considered to have an impact significance no more than 'Slight'.

Blarney Castle

Blarney Castle was also identified as a potential receptor due to its heritage and touristic values. A wireframe montage was generated to assess the potential for turbine visibility from Blarney Castle shown in Figure 15.21 below. Whilst there is some potential for distant brief glimpses of the proposed development from the upper levels of the Castle, this will be barely discernible from this distance of c. 24km to the nearest turbine. As a result, this visual receptor was omitted from further assessment on the basis that it was clear that the visual impacts would be imperceptible.

Figure 15.22: Wireframe overlay from the Blarney Castles ramparts showing the potential for turbine visibility.

15.8.6 Summary of Visual Impacts

Based on the visual impact assessments outlined in section 15.8.1 - 15.8.5 above, the significance of visual impacts for the 'Centre of Population', 'Major route' and 'Amenity and Heritage Feature' receptor categories are generally in the mid to low range aside from some sections of the Blackwater Way (Duhallow). Only in respect of the 'Designated Scenic Routes' and 'Local Community Views' are impacts considered to be higher, however, these impacts are not considered to be significant. It is also important to note, that none of these views classified with higher impacts are located within the 'high value landscape' designation in the Cork CDP.

The most notable impacts are likely to occur along the sections of the S20 scenic route which pass immediately north of the southern turbine cluster on the L2758 local road, and are representative of 'Designated Scenic Routes', 'Local Community Views' and 'Amenity Features'. The proposed project will be one of the most prominent and distinctive features in the landscape from here, however, this is slightly diminished by the degree of roadside vegetation that occurs along the lower-lying sections of this route, and will have a notable screening effect. This is also only one small section of the overall S20 scenic route, which also encompasses large sections where the proposed turbines will be entirely screened. Nonetheless, when openly visible, the turbines will present as large-scale features and will have a highly dominant visual presence, but they are not considered to obstruct the views afforded from this scenic route. Some of the clearest and most prominent views of the proposed project will also be afforded from a local road laneway (VP15) that traverses the eastern and south-eastern slopes of Musheramore Mountain. Nonetheless, the proposed turbines are considered to be well accommodated in this broad working upland setting that is primarily characterised by upland land uses such as commercial conifer forestry, existing wind energy development and pastoral farmland. Furthermore, it is not considered that the proposed turbines will appear over-scaled here, especially in the context of the extensive areas of forestry and broad rolling upland hills that encompass the site and its surrounds. Despite the overall scale and broad visual envelope of the project when viewed from here, there is still a strong sense of visual permeability through the proposed project as a result of its relatively loose arrangement within the basin below, which is consistent with the Draft Wind Energy Development Guidelines 2019 which states "*irregular spacing is likely to be most appropriate, given the complexity of landform and land cover typical of these landscapes, and the absence of extensive swaths of fields of regular and rectilinear pattern*" in relation to the 'Transitional Marginal Landscapes' landscape type.

Overall, it is not considered that the proposed project will result in significant visual impacts, albeit there will be some localised areas in the immediate proximity of the southern turbine cluster that will experience impacts that are close to significant. Furthermore, this is a robust working upland context that is strongly characterised by existing extensive forestry and large-scale wind energy development. Thus, it is considered that the site and its surrounds can accommodate an additional large-scale wind energy development.

15.9 Turbine Dimension Envelope Consideration

As a result of a recent high court decision relating to the degree of flexibility for the likes of turbine dimensions that are put forward at planning stage, it is now considered necessary to be more specific in terms of the design envelope being applied for and to ensure that the range of options is adequately assessed in the EIAR. For the landscape and visual assessment the pertinent aspect of the design envelope relates to the turbine dimensions used to prepare the photomontages, upon which, the visual impact assessment is based.

In all previous wind energy projects, Macro Works have taken the approach of using the highest possible tip height and hub height combination. This is on the basis that a viewer who can see a hub rising above a skyline ridge is likely to feel they are seeing more of the turbine than when the hub is screened from view (i.e., in the case of a lower hub / longer blade combination). That premise is based on the hub being perceived as the key and central component of a turbine in a figurative sense. However, there is also some merit to the argument that a larger rotor diameter / lower hub balances out the higher hub / shorter blade scenario, especially as the rotor diameters have been getting proportionately greater over recent years. Therefore, in this instance, a different approach was taken where the specimen turbine used for the photomontages that informed the visual impact assessment employed the maximum tip height dimension of 185m with a median hub height of 107.5m and maximum rotor diameter of 155m. The reason for this very subtle alteration in approach is that any variation from the specimen turbine, in the form of an adjusted rotor diameter / hub height ratio, will see a minimal departure from the specimen turbine dimensions.

In order to examine the range of potential turbine dimensions, Macro Works prepared comparative photomontages at three of the previously selected viewpoints to represent short and mid-distance views of the development in differing contexts. Two of the views also represent the highest levels of visual impact assessed for the proposed development. It was not considered necessary to use long distance views (10km+) for this comparative exercise as any variation in turbine dimensions are even less likely to be read at longer distances. The comparative scenarios used include;

- Specimen Turbine – 107.5m hub, 155m rotor diameter, 185m tip height (as used for the visual impact assessment herein)
- Alternative Scenario 1 - 102.5m hub, 155m rotor diameter, 180m tip height
- Alternative Scenario 2 - 110.5m hub, 149m rotor diameter, 185m tip height

As can be seen from the comparative photomontages (Contained at the end of the Photomontage Set, Contained in Volume 4 of the EIAR) the variation in turbine dimensions is very difficult to discern across the three scenarios even with considerable scrutiny. This is unsurprising as the variation in hub height is 5m or less from the specimen turbine. There is also a potential 5m departure from the specimen turbine in terms of tip height, but this would result a reduction in overall height (i.e., the visual impact would not increase). Whilst the variation in rotor dimeter is 6m between the specimen turbine and Alternative scenario 2, this only translates as a variation of 3m in blade length.

Regardless of whether the difference between the alternative turbine dimensions presented in the comparative photomontages can be discerned or not, it is clear that there is not a material difference in the level of visual impact between them and certainly not a higher impact than the base-case used for the submitted LVIA. Thus, the submitted LVIA is deemed to comfortably cover the range of potential turbine dimension options proposed and it is not considered necessary to prepare separate photomontages / assessments at all viewpoints for all possible turbine dimensions within the range.

15.10 Do Nothing Scenario

In a Do-Nothing scenario the existing conifer plantations that cloak the majority of the site would continue to be managed through rotations of commercial conifer planting and harvesting.

15.11 Cumulative Impacts

The Scottish Natural Heritage (SNH) Guidance relating to 'Assessing the Cumulative Effects of Onshore Wind Farms (2012) identify that cumulative impacts on visual amenity consist of combined visibility and sequential effects. The same categories have also been subsequently adopted in the Landscape Institute's 2013 revision of the Landscape and Visual Impact Assessment Guidelines. 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 a subsequent consideration of cumulative impacts with other forms of notable development (existing or permitted), particularly within the Central Study Area.

> *'Combined visibility occurs where the observer is able to see two or more developments from one viewpoint. 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 effects occur when the observer has to move to another viewpoint to see different developments. The occurrence of sequential effects may range from frequently sequential (the features appear regularly and with short time lapses between, depending on speed of travel and distance between the viewpoints) to occasionally sequential (long time lapses between appearances, because the observer is moving very slowly and / or there are large distances between the viewpoints.)'*

Cumulative impacts of wind farms tend to be adverse rather than positive as they relate to the addition of moving manmade structures into a landscape and viewing context that already contains such development. Based on guidance contained within the SNH Guidelines relating to the Cumulative Effects of Wind Farms (2005) and the DoEHLG Wind Energy Guidelines (2006), 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 in relation to 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 development 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 15.8 below provides Macro Works' criteria for assessing the magnitude of cumulative impacts, which are based on the SNH Guidelines (2012).

Table 15.8: Magnitude of Cumulative Impacts

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.

15.11.1 Cumulative Impact Assessment

There are 10 operational wind farms and 4 permitted wind farms contained within the study area. These are set out in Table 15.9 below in

Table 15.9: Cumulative Wind Farms within the study area

Wind Farm Name	Number of turbines	Distance and Direction from proposed site	Status
Boggeragh Wind Farm I+II	44	c. 0.86km east and north	Operational
Carraigcannon Wind Farm	10	c. 4km north	Operational
Bawnmore Wind Farm I	5	c. 4km southwest	Operational
Bawnmore Wind Farm II	6	c. 4.4km south	Operational
Esk Wind Farm	14	c. 5.5km northeast	Operational
Coomacheo Wind Farm II	8	c. 10.2km west	Operational
Caherdowney Wind Farm	3	c. 11km west	Operational
Gneeves Wind Farm	15	c. 11km west	Operational
Coomacheo Wind Farm I	16	c. 12.1km west	Operational
Clydaghroe Wind Farm	2+2	c. 13.9km southwest	Operational and Permitted
Knocknamork Wind Farm	7	c. 15.1km southwest	Permitted
Barnadivane Wind Farm	10	c. 19km south	Permitted
Cleanrath Wind Farm	5	c. 19.1km southwest	Permitted
Garranereagh Wind Farm	4	c. 19.3km south	Operational

15.11.2 Cumulative Impact Assessment

The appraisal of cumulative impacts with other wind energy developments is based on the cumulative ZTV maps and wireframes provided at **Appendix 15.2**. Given the absence of other tall structures within the study area, it is considered that there is no potential for in combination effects with other types of development.

15.11.2.1 Nature of Cumulative Visibility

The nature of cumulative visibility within the study area is analysed in Table 15.10 below using the same viewpoints that are used for the main visual impact assessment.

Table 15.10: Nature of cumulative visibility

VRP Ref.	Number of other wind farms potentially visible	Nearer or further than the Proposed Development	Combined View (within a single viewing arc - 90°)	Succession View (within a series of viewing arcs from the same location)	Sequential View (view of different developments moving along a linear receptor)
VP1	3	Nearer and similar distance	Yes	-	-
VP2	5+	Nearer and further	Yes	Yes	-
VP3	4	Nearer and similar distance	Yes	Yes	Yes
VP4	2	Nearer and similar distance	Yes	Yes	-
VP5	5	Nearer, further and similar distance	Yes	Yes	Yes
VP6	5+	Nearer, further and similar distance	Yes	Yes	-
VP7	2	Nearer and similar distance	Yes	-	-
VP8	1	Further	-	Yes	-
VP9	2	Nearer and similar distance	Yes	Yes	-
V10	4	Nearer, further and similar distance	Yes	Yes	Yes
VP11	2	Nearer, further and similar distance	Yes	Yes	Yes
VP12	1	Further	Yes	-	Yes
VP13	-	-	-	-	-
VP14	3	Nearer, further and similar distance	Yes	Yes	Yes
VP15	2	Further	Yes	-	-
VP16	1	Further	-	-	Yes
VP17	1	Further	-	Yes	Yes
VP18	1	Further	-	Yes	Yes
VP19	2	Near and further	Yes	Yes	Yes
VP20	3	Near, further and similar distances	Yes	Yes	Yes
VP21	2	Nearer and further	Yes	Yes	-
VP22	-	-	-	-	-
VP23	1	Nearer	Yes	-	-

VRP Ref.	Number of other wind farms potentially visible	Nearer or further than the Proposed Development	Combined View (within a single viewing arc - 90°)	Succession View (within a series of viewing arcs from the same location)	Sequential View (view of different developments moving along a linear receptor)
VP24	-	-	-	-	Yes
VP25	4	Near and further	Yes	Yes	Yes
VP26	1	Further	Yes	-	-
VP27	2	Further	Yes	-	-
VP28	3	Further and similar distance	Yes	Yes	-
VP29	3	Nearer and further	Yes	Yes	-
VP30	4	Nearer and further	Yes	Yes	-
VP31	5	Further and similar distance	Yes	Yes	Yes
VP32	2	Further and similar distance	Yes	Yes	Yes
VP33	5	Further and similar distance	Yes	Yes	Yes
VP34	5+	Further and similar distance	Yes	Yes	Yes

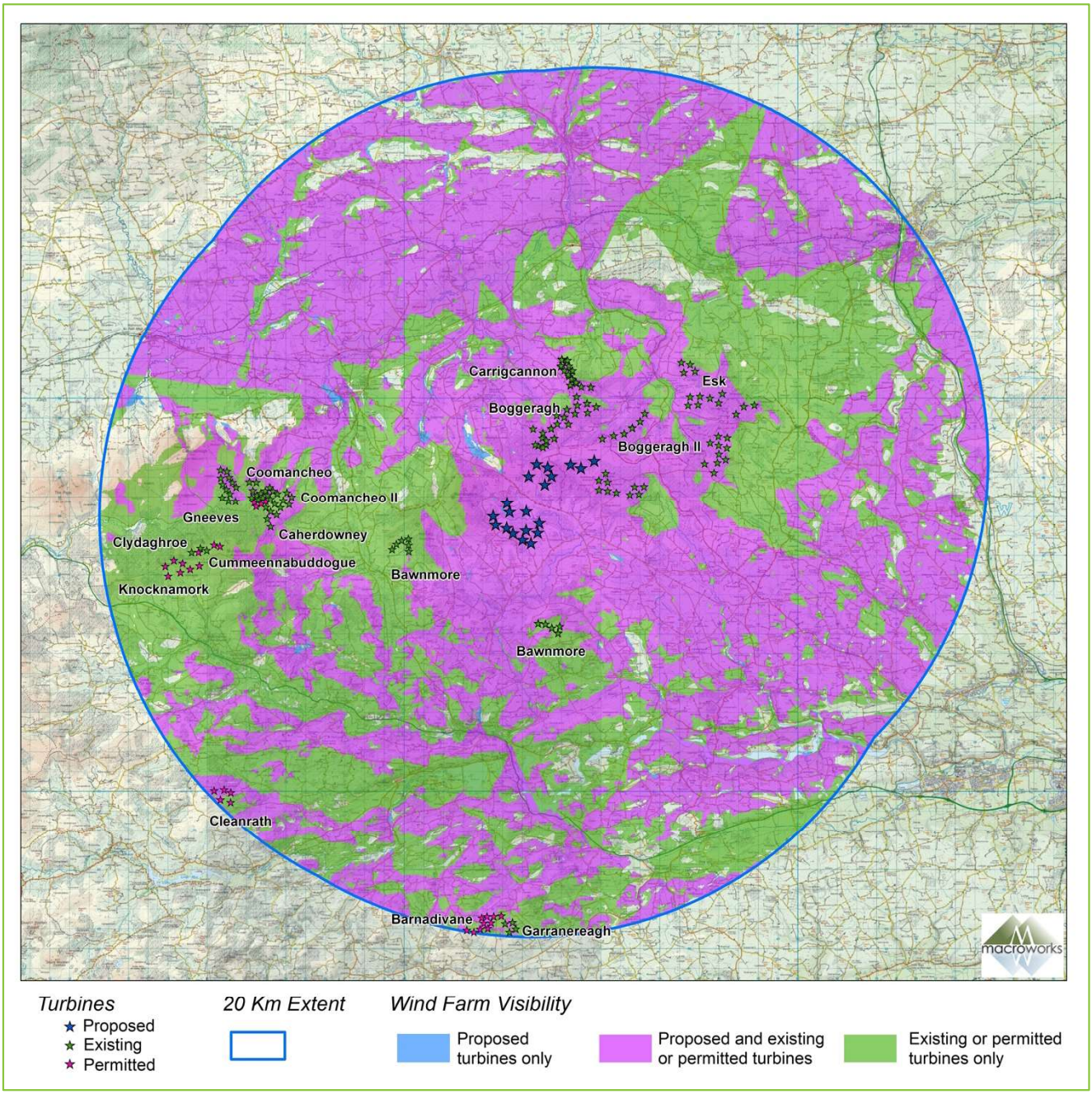

Figure 15.23: Cumulative ZTV Map (Tip Height) for Ballinagree Wind Farm identifying the potential for intervisibility of the proposed Ballinagree Wind Farm and existing and permitted wind farms within the study area (See Appendix 15.2)

15.11.2.2 Nature of Cumulative Visibility

Although the analysis contained in Table 15.10 and consideration of the Cumulative ZTV map in Appendix 15.2 relates principally to cumulative visual impacts (i.e., utilising the selected VP set), it also informs the closely related assessment of cumulative landscape impacts, particularly those relating to cumulative effects on the overall landscape character of the study area. The assessment below, therefore, relates to both cumulative visual effects and cumulative landscape effects.

The cumulative ZTV map (**Appendix 15.2**) shows the potential for cumulative visibility between the proposed turbines and all other existing wind farm developments within the 20km study area. At present there are 10 other operating wind farms within the study area in addition to 4 other permitted developments. For ease of assessment, the cumulative wind farms within the study area can be broken down into 3 clusters; existing developments within the Boggeragh Mountains, existing/permitted wind energy developments in the wider western half of the study area, and existing/permitted wind farms in the wider southern/south-western portions of the 20km study area. The ZTV map (based on a bare-ground scenario), identifies that the proposed Ballinagree Wind Farm has the potential to be viewed in isolation for only 0.3% of the study area which is principally related to the number of large-scale existing wind energy development situated immediately north and east of the site. It is also important to note that this is based on a bare ground scenario, and therefore, once existing screening is taken into consideration, this is likely to be considerably less. 8.2% of the study will have no potential view of proposed, permitted or existing turbines which highlights the established nature of wind energy within this part of Cork.

Table 15.10 above gives an analysis of the nature of cumulative visibility within the study area based on the selected VRP's. In almost all cases where the proposed project will be clearly visible, it will also be theoretically visible in combination with at least one other existing/permitted development. Within the central and wider study area, the proposed development will most often be viewed in conjunction with the existing Boggeragh I & II development which occur to the north and east. When viewing the proposed Ballinagree turbines from the north, the northern turbine cluster often appears as an extension to the existing Boggragh turbines as they are situated in the same landscape context along forested ridges. This is most notable at VP11 where the proposed and existing developments visually blend along the near ridge and appear as one consolidated array. In this respect, the visual assessment of the proposed windfarm is essentially a cumulative one as the existing Boggeragh turbines and Carrigcannon turbines are more often than not viewed in conjunction with the proposed turbines and their cumulative relationship is examined in each case. In some instances, a degree of visual ambiguity and scale conflict is apparent when viewing both the proposed northern Ballinagree turbine cluster in combination with the smaller existing Boggeragh and Carrigcannon turbines. In contrast to this, the southern cluster appears distinctly separated from all other existing wind farm developments in the Boggeraghs as they are visually separated by a number of surrounding ridges, and appear in a slightly different landscape context to those existing developments north and east of the site. Indeed, the proposed northern turbine cluster is likely to be viewed as an extension to the existing Boggeragh turbines, whilst the southern cluster will appear as a new and slightly discrete wind farm development.

Some of the more sensitive receptors within the study area include the scenic routes that traverse the central study area. All of these will afford views of existing turbines, with the existing development more prominent along some routes than others. Nonetheless, a strong sense of rural tranquillity remains despite the numerous turbines on view. Whilst the proposed turbines will heighten the intensity of wind energy development along these routes, it is not considered that these will unduly compromise the visual amenity afforded from such routes. Due to the relatively enclosed nature of the landscape basin that contains the southern cluster, the potential for visibility of cumulative wind farm developments is notably reduced, and in many cases, only filtered / partial views of turbines or turbine blade sets are visible along the surrounding ridgelines. Consequently, the potential for stacked and ambiguous views of the more sizable southern turbine cluster in combination with existing wind farm developments is heavily reduced. It is important to note that wind energy development is a well-established feature within the Boggeragh Mountains and strongly contributes to the robust working character of this landscape setting.

Within the wider western half of the study area is a notable cluster of existing and permitted wind energy developments. Views of these developments in combination with the proposed Ballinagree development are most likely to occur only from elevated locations within the study area and in the context of considerable separation distances so that they will be viewed as distinctly separate developments.

Similarly, a number of permitted and existing developments are located within the wider southern half of the study area but due to their considerable separation distance from the site, the proposed Ballinagree Wind Farm is not considered to notably contribute to a sense of wind farm proliferation here. This is principally a consequence of the landform of the southern half of the study area, which descends towards the broad River Lee valley. Within these low-lying parts of the study area, there is limited potential for clear views of the proposed Ballinagree turbines and the existing and permitted developments within the wider southern half of the study area. The most notable areas of inter-visibility will likely occur from elevated parts of the study area, where the considerable separation distance will be clear to the viewer.

In terms of sequential views, the proposed turbines have the potential to be visible along a number of key linear receptors within the study area. The most notable of these is the Blackwater Way (Duhallow) which traverses the Boggeragh Mountains and wider study area. Sequential cumulative impacts are highly likely to occur along this route as it passes through the northern turbine cluster and immediately north of the southern cluster. Nevertheless, wind energy development is a well-established feature along this section of this waymarked trail where existing turbines are already prominently visible at a near distance. The proposed development will not appear as an incongruous feature, however, it will increase the quantum of wind energy development along sections of this route that traverse the Boggeraghs. Sequential cumulative views also have the potential to occur on the N20, N22 and N72 routes within the wider study area. Nevertheless, the proposed turbines will only be briefly and intermittently visible along these routes, and more often than not, the proposed turbines will be entirely screened as these road corridors are often enclosed by dense roadside vegetation.

Overall, it is considered that the proposed Ballinagree turbines will almost always be viewed in combination with other wind energy developments, most notably the existing wind farm developments within the Boggeragh Mountains to the north and east of the site. Due to the scale of the project, it Is likely to generate some sense of wind farm proliferation within the Boggeragh Mountains, however, the Boggeraghs have a strong working character and are not considered to be highly unique on a regional or national level. From VP11, within the heart of the Boggeragh range, the proposed turbines will serve to occupy the only remaining undeveloped section of skyline to the southwest along this section of the local road, giving an increased sense of enclosure by wind farms. It should be noted that this is a remote section of local road which encompasses no residential dwellings. Further to the east and west along this local road, the proposed and permitted turbines are heavily screened by surrounding conifer forest plantations that abut the local road, and thus, this sense of enclosure will only be apparent for a short section of this route. Furthermore, any notable sense of enclosure is diminished by the broad valley that separates the proposed turbines from this local road section.

Overall, this is considered to be an intensively managed working landscape where wind existing energy development is already a strongly characteristic feature in combination with forest plantations and upland farming. With reference to Table 15.8 above, the proposed Ballinagree Wind Farm is considered to contribute an additional cumulative effect that is in the order of High-medium within the Boggeragh Mountains, which will reduce to Low in the wider surrounds of the study area where the proposed turbines will appear as an extension to the existing developments within the Boggeraghs.

In respect of cumulative impacts with other forms of development, there are no other large scale developments within the vicinity of the wind farm site.

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