

ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR) FOR THE PROPOSED COOM GREEN ENERGY PARK, COUNTY CORK

VOLUME 2 – MAIN EIAR

CHAPTER 15 – LANDSCAPE AND VISUAL

Prepared for: Coom Green Energy Park Limited



Date: December 2020

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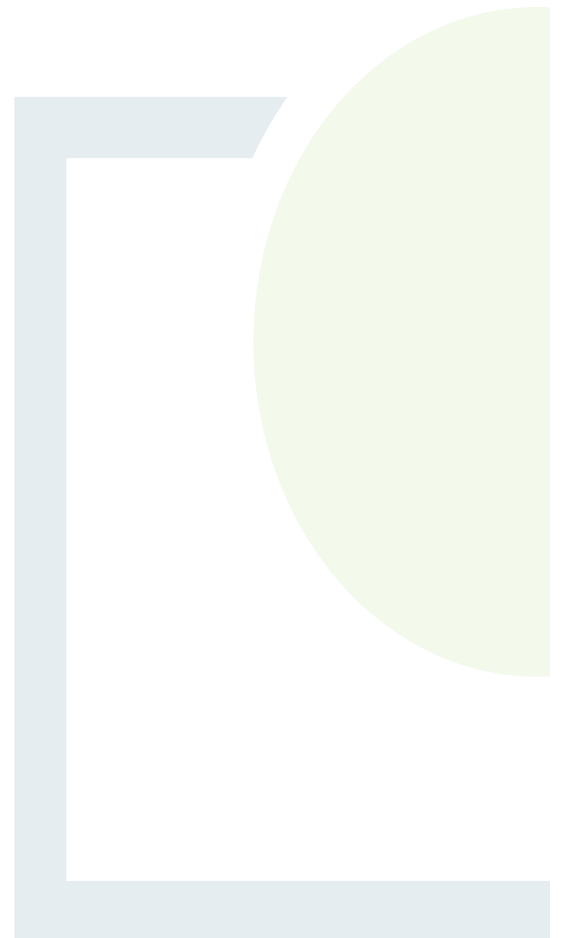


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15. LANDSCAPE AND VISUAL IMPACT ASSESSMENT

15.1 Introduction

This chapter describes the landscape context of the proposed Coom Green Energy Park (the Project) and assesses the likely landscape and visual effects of the scheme on the receiving environment. Although closely linked, landscape and visual impacts are assessed separately.

Landscape Impact Assessment (LIA) relates to assessing effects of a development on the landscape as a resource in its own right and is concerned with how the proposal will affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character.

Visual Impact Assessment (VIA) relates to assessing effects of a development 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 (LVIA) is concerned with additional changes to the landscape or visual amenity caused by the proposed project in conjunction with other developments (associated or separate to it), or actions that occurred in the past, present or are likely to occur in the foreseeable future.

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);
- European Commission Guidance on Environmental Impact Assessment of Projects 2017
- Landscape Institute and the Institute of Environmental Management and Assessment publication entitled Guidelines for Landscape and Visual Impact Assessment (2013).
- Scottish Natural Heritage (SNH) Guidance Note: ‘Assessing the cumulative impact of onshore wind energy developments’ (2012)
- Scottish Natural Heritage (SNH) Siting and Designing Wind Farms in the Landscape Version 3 (2017)

This assessment report was prepared by Richard Barker, Principal Landscape Architect at Macro Works Ltd. landscape and visualisation consultants. Relevant experience includes assessment of over 80 on-shore wind farm developments throughout Ireland, including five Strategic Infrastructure Development (SID) projects.

15.1.1 Definition of the Study Area

The Wind Energy Development Guidelines (2006) and the Draft Revised Wind Energy Guidelines (2019) both specify the same radii for examining the zone of theoretical visibility of proposed projects (ZTV).



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 169m high and, thus, the minimum ZTV radius recommended is 20 km from the outermost turbines of the scheme.

There are not considered to be any sites of national or international importance between 20 – 25km and thus, the radius of the Study Area will remain at 20km. Notwithstanding the full 20km extent of the LVIA Study Area, there will be a particular focus on receptors and effects within the Central Study Area where there is higher potential for significant impact to occur. When referenced within this assessment, the Central Study Area is the landscape within 5km of the site and the Wider Study Area refers to that part of the overall Study Area between 5-20km from the proposed 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.

This entailed the following:

15.2.1 Desktop Study

- Establishing an appropriate Study Area from which to study the landscape and visual impacts of the proposed development;
- Review of a Zone of Theoretical Visibility (ZTV) map, which indicates areas from which the development is potentially visible in relation to terrain within the Study Area;
- Review of the Cork County Development Plan (2014), particularly with regard to sensitive landscape and scenic view/route designations;
- Selection of potential Viewshed Reference Points (VRPs) from key visual receptors to be investigated during fieldwork for actual visibility and sensitivity;
- Consultation with the local community, project Archaeology, Architectural and Cultural Heritage specialist and the Local Authority in respect of sensitive VRP locations to be included in the assessment.

15.2.2 Fieldwork

- Recording of a description of the landscape elements and characteristics within the Study Area.
- Selection of a refined set of VRPs 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 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 or permitted.

Note that mitigation for commercial scale wind energy developments is principally based on the siting and design of turbines – attributes that are embedded in the proposed project that is presented in photomontages and assessed in respect of landscape and visual effects. Thus, the assessment of the proposed project contained herein is that of residual effects and is not divided between potential and residual effects.

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:

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.



Sensitivity	Description
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: 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.



Magnitude of Impact	Description
Negligible	Changes affecting small or very restricted areas of landscape character. This may include the limited loss of some elements or the addition of some new features or elements that are characteristic of the existing landscape or are hardly perceivable.

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

Table 15-3: Landscape Impact Significance Matrix

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

**Light grey shading indicates a level of impact that is considered to be 'significant' in EIA terms*

Note that potential beneficial landscape impacts are not accounted for in the tables and matrix above. This is on the basis that commercial scale wind energy projects are very unlikely to generate beneficial landscape impacts. In the rare instances that this might occur, by facilitating the rehabilitation of a degraded landscape (for example), the benefits are considered in the overall appraisal and the significance of impact would default to the lowest end of the range (Imperceptible).

15.2.5 Assessment Criteria for Visual Impacts

As with the landscape impact, the visual impact of the proposed project will be assessed as a function of 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 focussed on the landscape and on particular views;*
- *Visitors to heritage assets, or to other attractions, where views of the surroundings are an important contributor to the experience;*
- *Communities where views contribute to the landscape setting enjoyed by residents in the area; 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 focussed on their work or activity, not their surroundings and where the setting is not important to the quality of working life.*

Value of Views. To assess the amenity value of views, Macro Works use a range of criteria that might typically be related to high amenity value including, but not limited to, scenic designations. These are set out below:

- **Recognised scenic value of the view** (County Development Plan designations) 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. Recognised scenic value may also be apparent from non-designated sources such as guidebooks, touring maps, postcards etc).;
- **Views from within highly sensitive landscape areas.** Again, highly sensitive landscape designations are usually part of a county's Landscape Character Assessment, which is then incorporated with the County Development Plan and is therefore subject to the public consultation process. Viewers within such areas are likely to be highly attuned to the landscape around them;
- **Intensity of use, popularity.** Whilst not reflective of the amenity value of a view, this criterion relates to the number of viewers likely to experience a view on a regular basis and whether this is significant at county or regional scale;



- **Provision of elevated panoramic views.** This relates to the extent of the view on offer and the tendency for receptors to become more attuned to the surrounding landscape at locations that afford broad vistas.
- **Sense of remoteness and/or tranquillity.** Remote and tranquil viewing locations are more likely to heighten the amenity value of a view and have a lower intensity of development in comparison to dynamic viewing locations such as a busy street scene, for example;
- **Degree of perceived naturalness.** Where a view is valued for the sense of naturalness of the surrounding landscape it is likely to be highly sensitive to visual intrusion by obvious human interventions;
- **Presence of striking or noteworthy features.** A view might be strongly valued because it contains a distinctive and memorable landscape feature such as a promontory headland, lough or castle;
- **Historical, cultural or spiritual value.** Such attributes may be evident or sensed at certain viewing locations that attract visitors for the purposes of contemplation or reflection heightening the sense of their surroundings;
- **Rarity or uniqueness of the view.** This might include the noteworthy representativeness of a certain landscape type and considers whether other similar views might be afforded in the local or the national context;
- **Integrity of the landscape character in view.** This criterion considers the condition and intactness of the landscape in view and whether the landscape pattern is a regular one of few strongly related components or an irregular one containing a variety of disparate components;
- **Sense of place.** This criterion considers whether there is special sense of wholeness and harmony at the viewing location; 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 development 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 a proposed development within the available vista and is expressed as such i.e. minimal, sub-dominant, co-dominant, dominant, highly dominant.

For wind energy developments, visual presence is not necessarily synonymous with adverse impact.



A tourism study commissioned by Bord Fáilte in 2008 found that; *“Almost three quarters of respondents claim that potentially greater numbers of wind farms would either have no impact on their likelihood to visit or have a strong or fairly strong positive impact on future visits to the island of Ireland.”* 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 development 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 Value and Sensitivity

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 disorder 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 disorder 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 disorder 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 significance matrix in Table 15.5 below.

Table 15-5: Visual Impact Significance Matrix

Scale/Magnitude	Sensitivity of Receptor				
	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

**Light grey shading indicates a level of impact that is considered to be 'significant' in EIA terms*

**Note: The significance matrices provided above as Table 15.3 and Table 15.5 provide an indicative framework from which the significance of impact is derived. The significance judgement is ultimately determined by the assessor using professional judgement. Due to nuances within the constituent sensitivity and magnitude judgements, this may be up to one category higher or lower than indicated by the matrix.*

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 general description of the landscape context of the proposed development site and Wider Study Area is provided below. Additional descriptions of the landscape as viewed from each of the selected viewpoints are provided under the detailed assessments later.

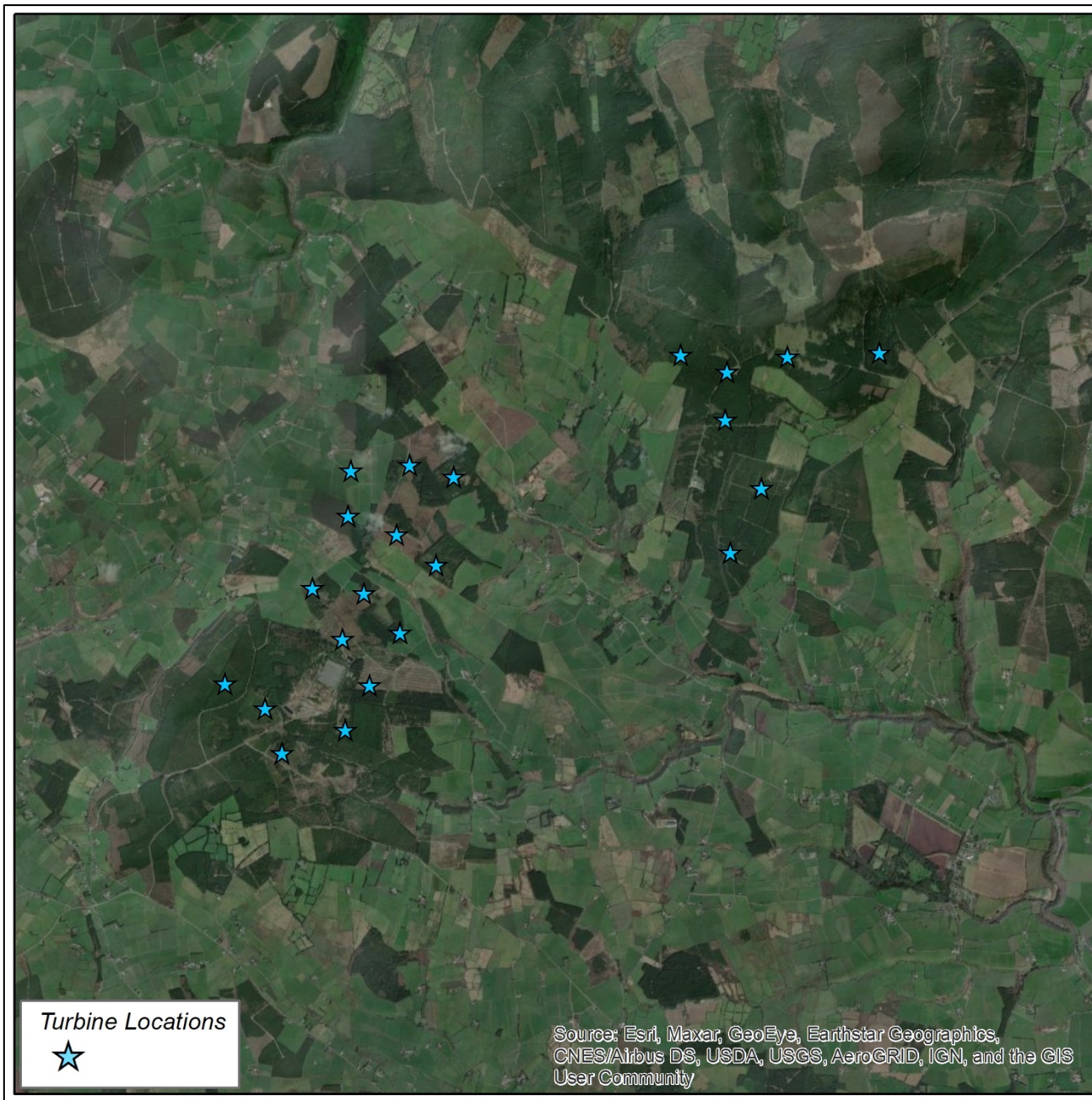


Figure 15.1: Aerial photography showing the landscape context of the site and its immediate surrounds

15.3.2 Landform and Drainage

The proposed development spans the southern and southwestern extents of the Nagle Mountains, south of the Blackwater River Valley. Both the Nagle Mountains and the Blackwater River valley are the most prominent landscape features within the Central Study Area and its wider surrounds. Reaching a height of approximately 420m AOD, Knocknaskagh Mountain is the highest peak within the Nagle mountains and several of the most northerly proposed turbines are situated along its southern slopes. North of the proposed development, the Nagle Mountains rapidly descend into the valley of the River Blackwater, which is oriented in an east-west direction and creates a distinct division in the landscape in the northern half of the Study Area. South of the Nagle Mountains, the terrain transitions to that of a landscape of rolling hills punctuated by a number of small river valleys.



The most notable of these rivers is that of the River Bride which starts its course just west of the northernmost turbines and continues in a south-easterly direction passing north of Glenville and continuing in an easterly direction where it exits the Study Area east of Rathcormac. The Coom River is another notable watercourse within the Central Study Area commencing south of the southernmost proposed turbines where it shortly after merges with the River Bride.

A number of other distinctive landscape features also occur within the Wider Study Area and include the Boggeragh Mountains which are situated along the eastern periphery of the Study Area. The foothills of the Ballyhoura Mountains also pierce the northern periphery of the Study Area whilst several rivers and streams emanate from the uplands within the Ballyhoura Mountains and flow through the northern portions of the Study Area. The most notable of these includes the River Awbeg, the Brogoge River and the River Funshion, all of which drain into the River Blackwater north of the proposal site. A number of notable watercourses also flow through the southern extents of the Study Area the most prominent of which is that of the River Lee which flows through the centre of Cork City just under 18km south of the nearest turbine. The Blarney River flows through the settlement of Blarney in the southwest quadrant of the Study Area just over 10km from the site at its nearest point.

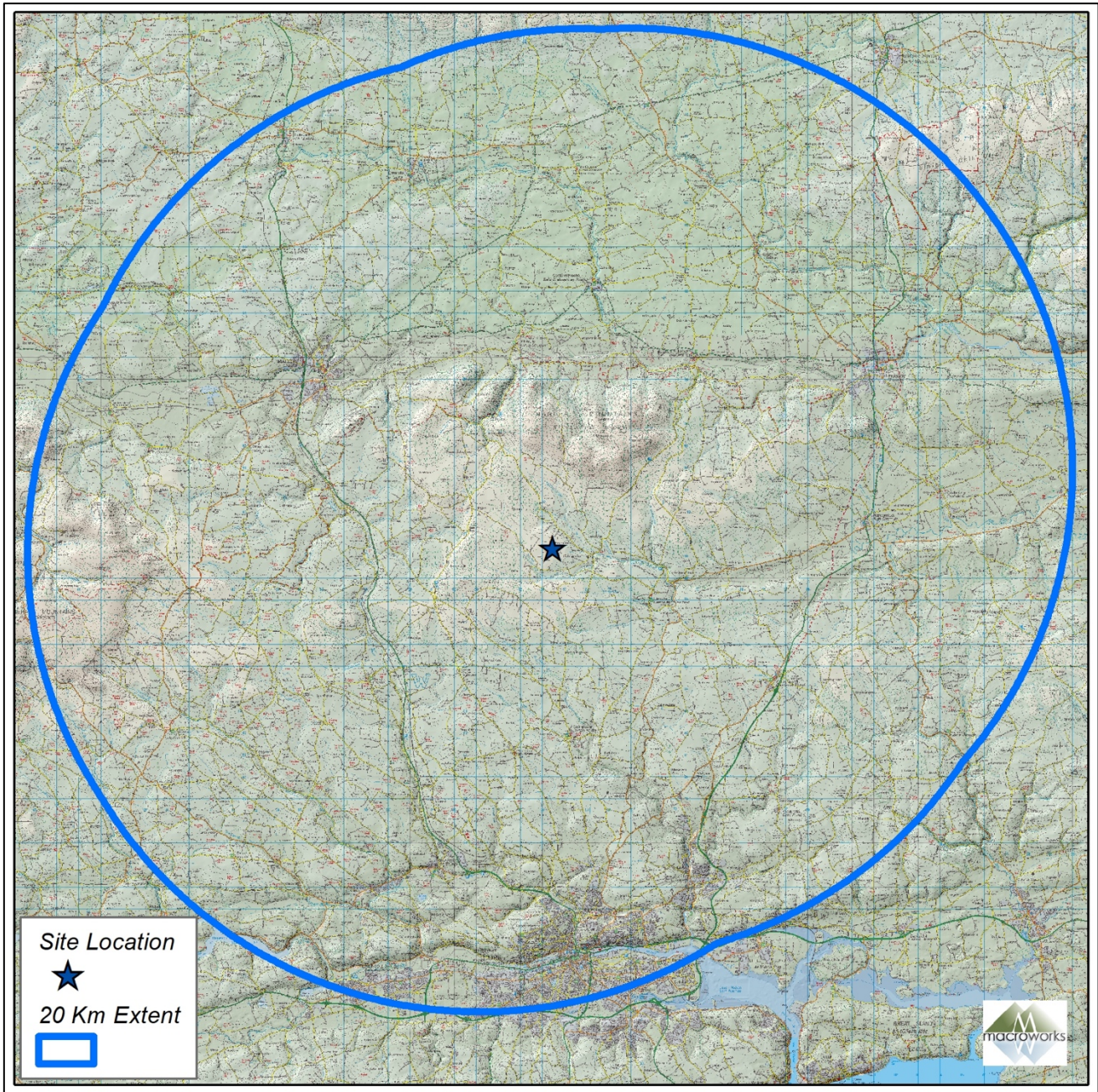


Figure 15.2: Terrain shadow map illustrating the nature of the landform contained within the Study Area.

15.3.3 Land Use and Land Cover

Whilst a large portion of the Central Study Area is occupied by commercial forestry plantations, the most prominent land use within the Study Area is that of agricultural farmland. The site itself is situated within rolling terrain cloaked in commercial conifer plantations that are encircled by productive agricultural farmland defined by hedgerows and tree lines. The proposed Bottle Hill turbine cluster is located around the landfill site, which itself is surrounded by commercial conifer plantations. Smaller blocks of commercial forestry plantations are also found in the wider environs of the Study Area and often relate to the elevated portions of rolling hill or ridges. Linear corridors of riparian woodland also occur within the Study Area and are often found flanking the meandering corridors of the numerous rivers and streams in the wider surrounds of the proposal site.



Whilst a relatively low rural population exists in the immediate surrounds of the site, several large urban settlements occur within the wider extents of the Study Area and include Cork City and its environs, Mallow and Fermoy. These settlements represent a notable proportion of urban land use within the context of the Wider Study Area.

Additionally, the corridors of several major transport corridors of the M8, N20, N72 and the Dublin-Cork railway line are also notable infrastructural land uses within the Wider Study Area.

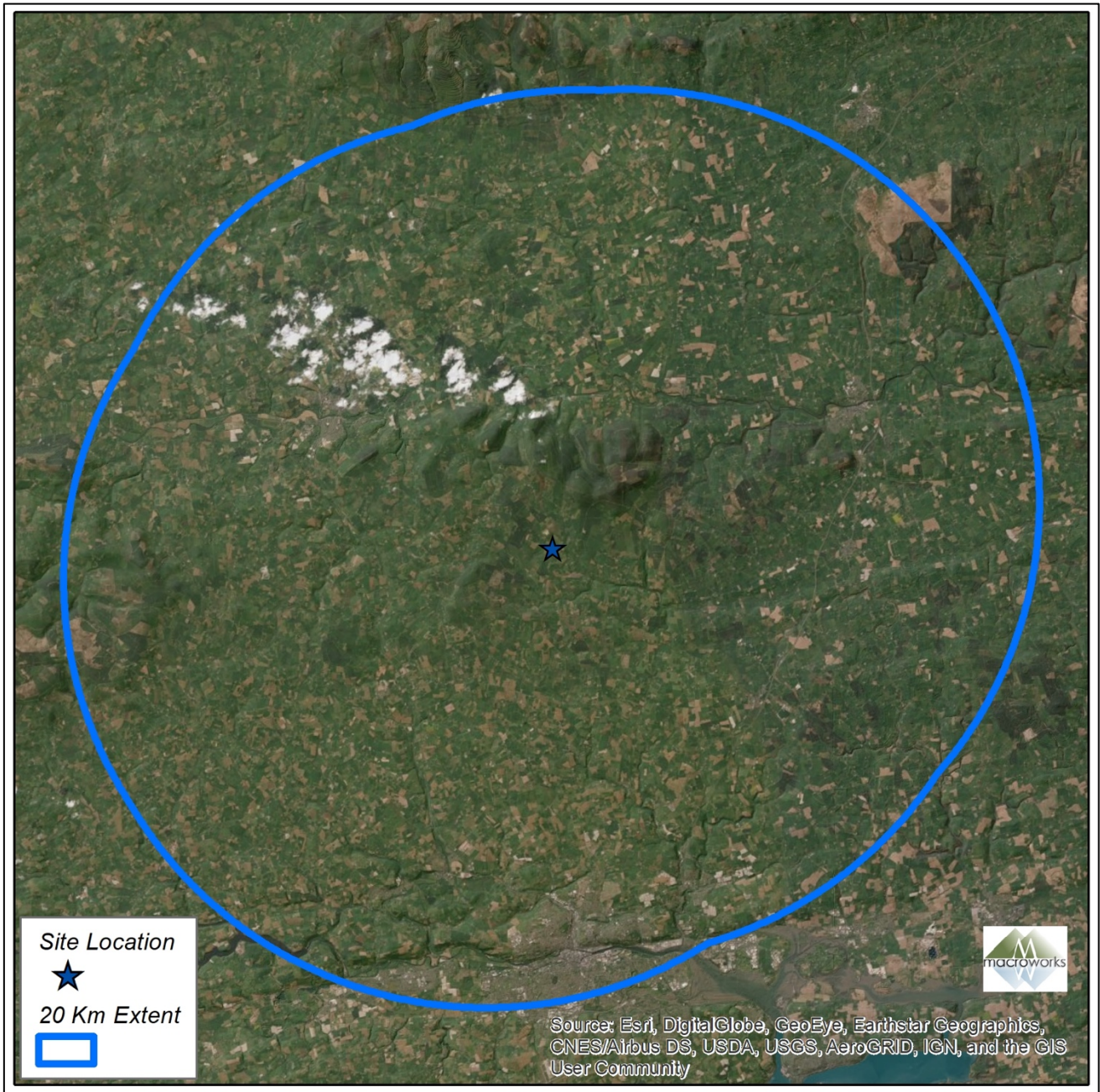


Figure 15.3: Aerial photograph showing the landscape context of the Wider Study Area.



15.3.4 Landscape Policy Context and Designations

15.3.4.1 Department of Environment, Heritage and Local Government Wind Energy Development Guidelines (2006) and Draft Revised Wind Energy Guidelines (2019)

The Wind Energy Development Guidelines (2006) and Draft Revised Wind Energy Guidelines (2019) both provide guidance on wind farm siting and design criteria for a number of different landscape types. While it is considered that the proposed turbines are situated in the ‘*Transitional Marginal Landscapes*’ landscape type the surrounding landscape, especially to the south and southwest, is applicable to the ‘*Hilly and Flat Farmland*’ landscape type.

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 that which is considered most applicable. The Guidance specifically states (p47);

“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 ...”.

Siting and design recommendations for the ‘*Transitional Marginal Landscapes*’ and ‘*Hilly and Flat Farmland*’ landscape types include the following:

Table 15-6: Guidance for Wind Farms in the ‘*Transitional Marginal Landscapes*’ landscape type (DoEHLG Wind Energy Development Guidelines – 2006)

Criteria	Guidance
Location	<i>“typically be located on ridges and peaks, a clear visual separation will be achieved from the complexity of lower ground.”</i> <i>“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 ”</i>
Spatial Extent	<i>“...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.”</i>
Spacing	<i>“All options are possible, depending on the actual landscape characteristics.”</i> <i>“...irregular spacing is likely to be most appropriate, given the complexity of landform and land cover typical of these landscapes....”</i>
Layout	<i>“...location of wind energy developments on ridges suggests a linear or staggered linear layout whereas on broader hilltops they could be linear or clustered. Grid layouts are less likely to succeed....”</i>
Height	<i>“In small-scaled enclosed areas, short turbines are preferred in order to avoid their spatial dominance.....However where the upper ground is relatively open and visually extensive, taller turbines may be more appropriate.”</i>



It is important to note that the Wind Energy Guidelines acknowledge that ‘Transitional Marginal’ landscapes can occur within enclosed upland valleys, or a more open and extensive transition between lowland farming and mountain moorland areas. The landscape in this context is more reflective of the latter. This has important implications for the interpretation of the guidance in respect of ‘spatial extent’ and ‘height’ which is understandably cautious for enclosed and intimate landscape settings and less so for broad scale open areas.

Table 15-7: Guidance for Wind Farms in the ‘Hilly and Flat Farmland’ landscape type (DoEHLG Wind Energy Development Guidelines – 2006)

Criteria	Guidance
Location	<p><i>“Although hilly and flat farmland type is usually not sensitive in terms of scenery, due regard must be given to houses, farmsteads and centres of population.”</i></p> <p><i>“Location on ridges and plateaux is preferred...”</i></p> <p><i>“Elevated locations are also more likely to achieve optimum aesthetic effect.”</i></p>
Spatial Extent	<p><i>“This can be expected to be quite limited in response to the scale of fields and such topographic features as hills and knolls”</i></p>
Spacing	<p><i>“The optimum spacing pattern is likely to be regular, responding to field pattern...However ... a balance will have to be struck between adequate spacing to achieve operability and a correspondence to field pattern.”</i></p>
Layout	<p><i>“The optimum layout is linear, and staggered linear on ridges and hilltops but a clustered layout would also be appropriate on a hilltop”</i></p>
Height	<p><i>“Turbines should relate in terms of scale to landscape elements and will therefore tend not to be tall. However, an exception to this would be where they are on a high ridge or hilltop of relatively large scale.”</i></p>

As with the guidance for ‘Transitional Marginal’ landscapes, the guidance for ‘Hilly and Flat Farmland’ is cautious in terms of spatial extent and height of wind energy developments, but only where this relates to potential scale disparity with surrounding topography or landscape patterns / elements. Whereas, this is a broad scale landscape context in comparison to most farmland areas. Overall, it is considered that the design of the proposed project is in accordance with the guidance for this varied landscape setting and does not conflict with any of the guidance that could be applied.

One of the most notable changes in the Draft Revised Wind Energy Development Guidelines (2019) from its predecessor, is the introduction of a residential amenity setback from the curtilage of neighbouring dwellings, which is based on 4 X tip height buffer distance. The current Wind Energy Guidelines (2006) provide for a 500m setback from residential dwellings. As no neighbouring dwellings fall within 750m of nearest turbines for the proposed development the setback is 50% greater than the requirement for the current Guidelines. Furthermore, the residential amenity setback for the Draft Revised Guidelines is also complied with (minimum setback 676m from 169m tip height turbines), which also gives a considerable buffer to account for ‘curtilage’ of dwellings, as specified by the Draft Revised Guidelines.



15.3.4.2 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 within the northwest corner of the Landscape Character Type LCT 13b – ‘Valleyed Marginal Middleground’ (Figure 15.4-15.5 refers) and is recognised as having; Medium landscape sensitivity; Medium Landscape Value; and Local Landscape Importance.

The westernmost portions of the proposed development lie adjacent to LCT 10b – Fissured Fertile Middleground whilst the northernmost areas of the proposed development are situated immediately adjacent to the boundary of LCT 5 - Fertile Plain with Moorland Ridge. LCT 10b is recognised as having; Medium landscape sensitivity; Low Landscape Value; and County Landscape Importance, whereas LCT 5, associated with the Blackwater Valley, is assigned Very High landscape sensitivity; Very High Landscape Value; and County Landscape Importance.

Within the Cork Landscape Strategy (2007), LCT 13b – ‘Valleyed Marginal Middleground (Glenville and Environs)’ is described as a landscape that is; “valued for agriculture while the more marginal upland areas are particularly used for commercial forestry. Topographically this landscape comprises low rounded hills of old red sandstone enclosing fairly broad undulating river valleys. The river in this area is the upper part of the River Bride.



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. Some patches of fields which are on flatter ground at lower altitude are of higher fertility. Coniferous plantations are mostly located on higher ground, rising to, and covering, hill tops where soils are thinner.” Two landscape character areas occur within this LCT, those are LCA 6 Glenville – Moorland, Forested Ridge and Marginal Mosaic Upper Valley and LCA 5 Upper Bride – Marginal Mosaic Middle Valley.

LCT 10b – ‘Fissured Fertile Middleground’ is described as a having “*characteristics of both the flatter fertile farmland type (Fertile Plain with Moorland Ridge) and the higher marginal hilly or rugged type (Rolling Marginal and Forested Middleground). It comprises an area rising above adjacent plains with moderate to low relief of elongated interlocking hills forming sinuous rivers. It is an elevated landscape, which is sequentially fissured by these rivers and their valleys. Many of the rivers in the western parts extend beyond this landscape type and feed into the River Lee and Bandon River while those to the east head southwards to the sea.*” Landscape Character Areas (LCAs) within this landscape type include LCA 41 – The Mourneabbey (Rolling Patchwork Upper-Middle Valley) Landscape Character Area, which is located to the northeast of the landscape type and LCA 4 – Donoughmore/ Watergrasshill/ Dungourney (Fissured Patchwork Middleground) Landscape Character Area, which stretches from east to west.

LCT 5 – ‘Fertile Plain and Moorland Ridge’ occupies a substantial proportion of northeast Cork. This is a low lying landscape, which comprises an extensive area of predominantly flat or gently undulating topography along the River Blackwater, and which is contained in its periphery by low ridges. The latter include the southern slopes of the Ballyhoura and Galtee Mountains to the north, the northern slopes of the Nagles to the south and the western ridges of the Knockmealdown Mountains.....The landscape is also characterised by many old demesnes comprising, for example, high stone walls, broadleaf avenues and open parkland. Several large settlements are found within the area, including Mallow, Charleville, Mitchelstown and Fermoy, all of which developed on the basis of the high agricultural productivity of the surrounding countryside.....It is a “working” landscape, manifesting the human bond with the land through agricultural activity. Because of its flatness the landscape might be described as ‘calm’. While this even and vast extent can be best perceived from an elevated location, views are otherwise curtailed by the prevalent tall hedgerows when viewed on the plain.” Landscape Character Areas within this landscape type include; LCA 69 – Dromina/Charleville, LCA 62 – The Golden Vale and LCA 30 – Kilworth.

Other LCTs that occur within the Wider Study Area and are of less relevance to the proposed project include LCT 1 – ‘City Harbour and Estuary’ and LCT 6a and c – ‘Broad Fertile Lowland Valleys’,

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 while the proposed development itself is not situated in an area recognised as ‘high value landscape’, the landscape immediately north of the site falls within LCT 5 – Fertile Plain and Moorland Ridge, which is identified as ‘high value landscape’ (**Figure 15.7** refers).

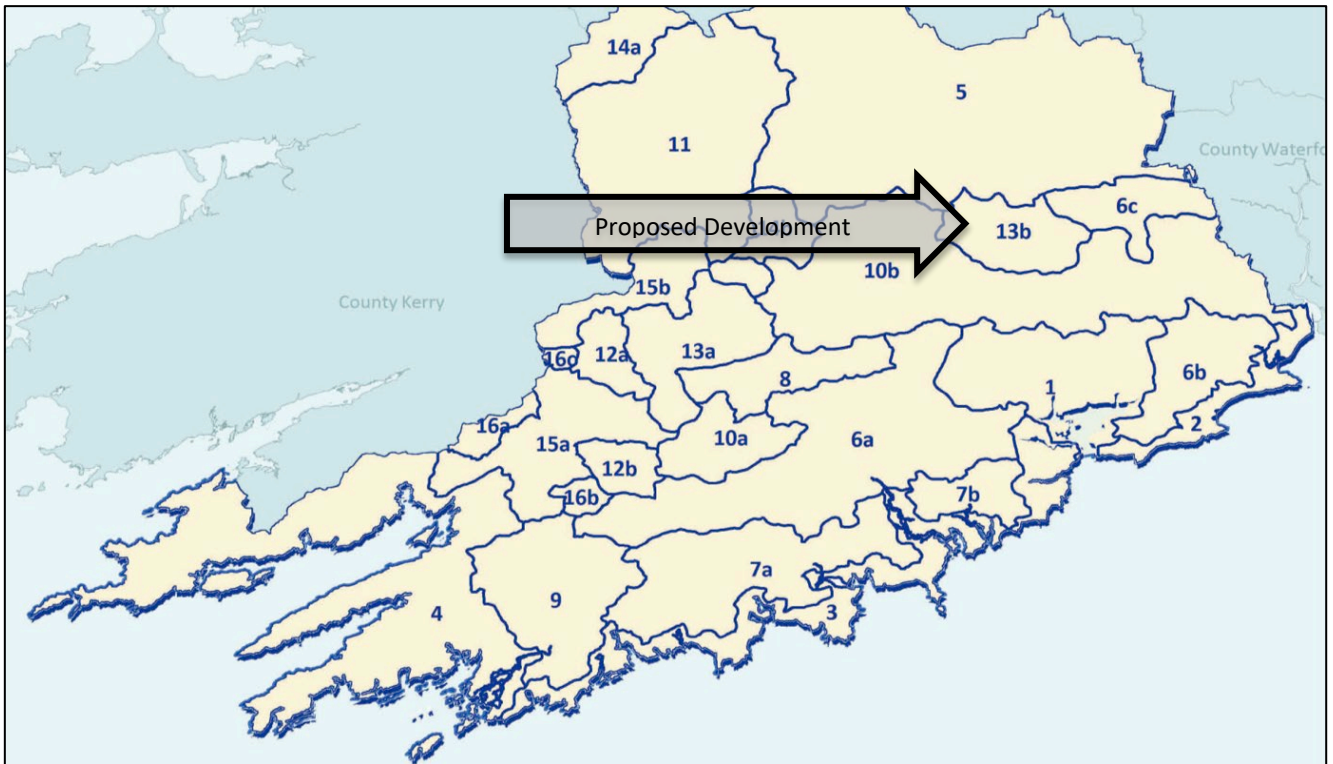


Figure 15.4: Excerpt from Cork County Development Plan (2014). Appendix E, Map 2 Landscape Character Types – Site located in LCT13b ‘Valleyed Marginal Middleground’

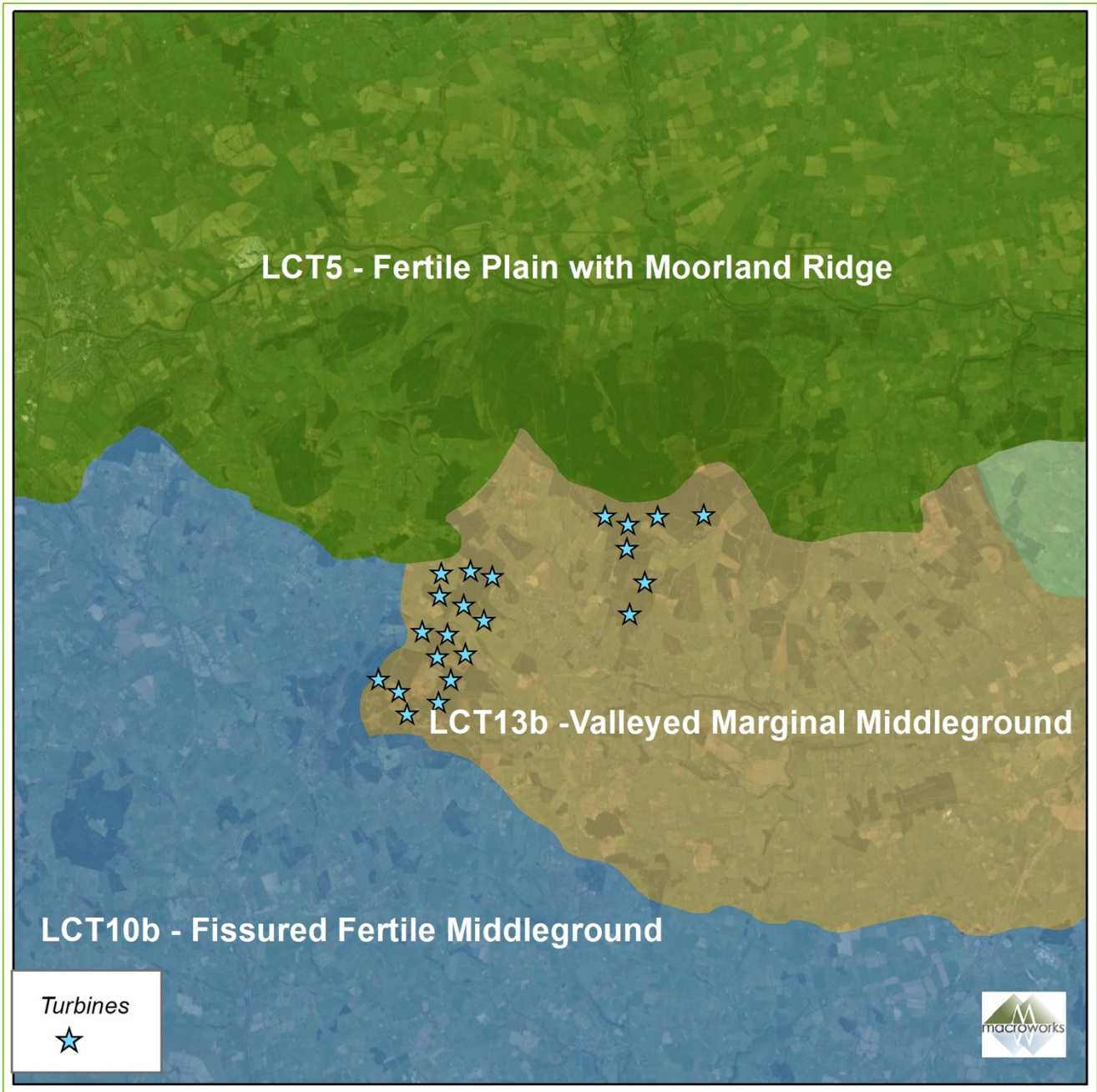


Figure 15.5: Excerpt from Cork County Development Plan (2014) map browser, showing transition between LCT5-‘Fertile Plain with Moorland Ridge’ (Green), LCT10b- ‘Fissured Fertile Middleground’ (Blue), LCT13b- ‘Valleyed Marginal Middleground’ (Orange)

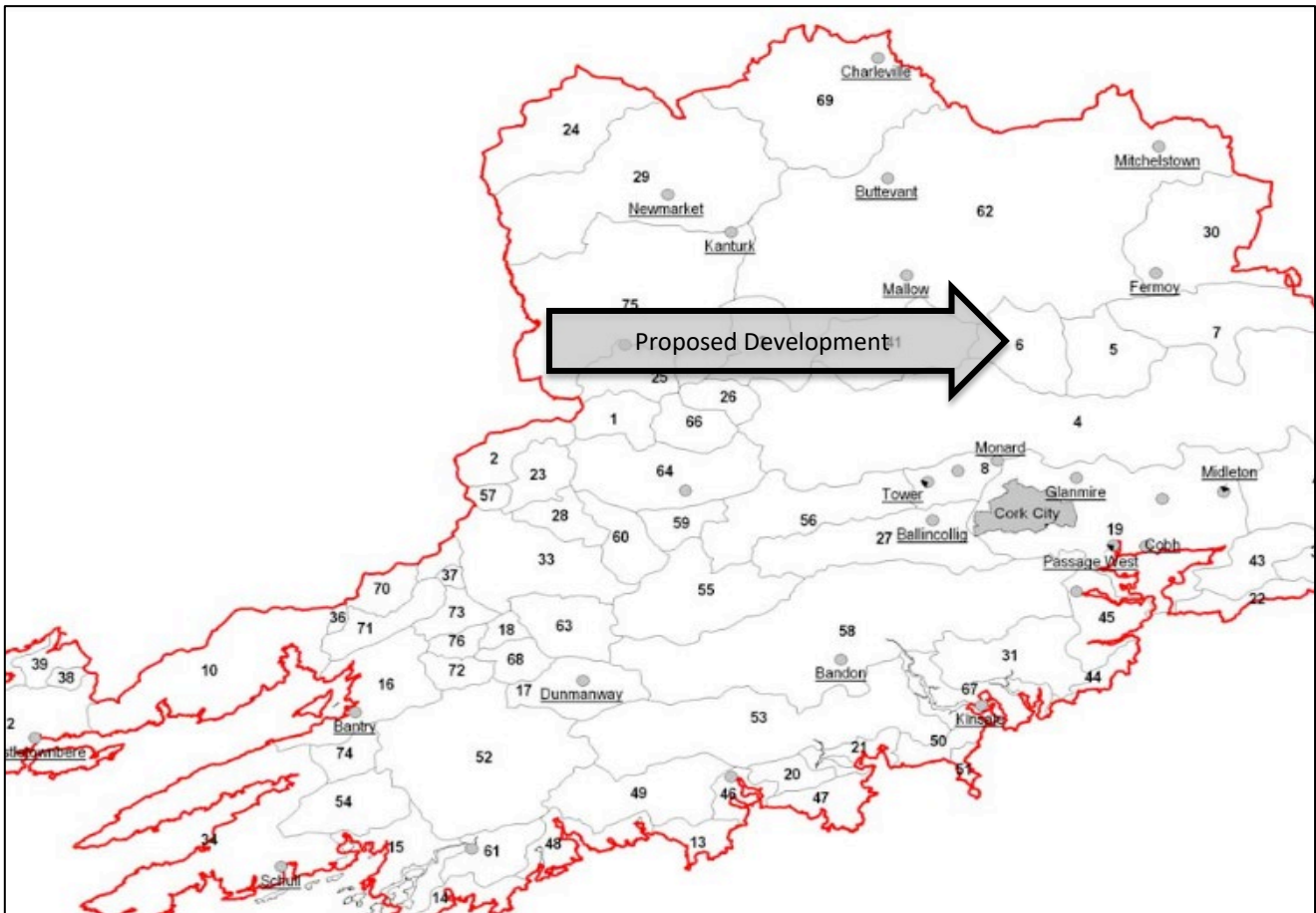


Figure 15.6: Excerpt from County Cork Draft Landscape Strategy 2007. Map 1 Landscape Character Areas – Site located within LCA6 ‘Glenville – Moorland, Forested Ridge and Marginal Mosaic Upper Valley’

A number of general recommendations are outlined in the Draft Cork County Landscape Strategy regarding LCT 13b – ‘Valleyed Marginal Middleground’, LCT 10b – ‘Fissured Fertile Middleground’ and LCT 5 – ‘Fertile Plain and Moorland Ridge’, some of which relate to the development in question:

LCT 13b – Valleyed Marginal Middleground

- *Preserve the unique setting and scenic and amenity values of the Bride/Bunaglanna river valley.*
- *Protect the setting of Glenville Manor while also recognising the potential of Glenville Manor as a unique heritage resource for the community*

LCT 10b – Fissured Fertile Middleground

- *Maintain and enhance views to and from areas of visual value including extensive uninterrupted views across open countryside.*
- *Maintain the visual integrity of the area which has retained a dominantly undisturbed upland character.*
- *Ensure the continued protection of the Shornagh Valley for its wildlife and natural heritage value while also ensuring its continued use as a popular amenity attraction for both locals and tourists.*
- *Develop amenity walks through Leamlara Wood while also continuing to protect it for its wildlife and natural heritage value.*



- Have regard to the impact of windfarms on the landscape. Such developments will need to be located and laid out in a sensitive manner.

LCT 5 – Fertile Plain and Moorland Ridge

- Recognise that the lowlands are made up of a variety of working landscapes that are critical resources for sustaining the economic and social well-being of the county.
- Protect the existing character and settings of villages and village nuclei that are under pressure from population growth, in particular villages like Castletownroche which have a unique historic setting.
- Continue to promote and protect Mallow Racecourse and the River Blackwater as the primary visitor attractions in this Landscape Type.
- Preserve the Blackwater Valley as a unique landscape setting for the main settlements of Mallow and Fermoy and improve public access by enhancing it as a key recreation and amenity source. Control development that will adversely affect distinctive linear sections of the Blackwater River Valley, especially its open flood plains, when viewed from relevant scenic routes and settlements.
- Protect and preserve the Awbeg River as a valuable resource for scenic amenity values.

Maintain and enhance the 18th Century estate landscapes and associated parkland and woodland to develop them as a tourist resource, for example, Doneraile Park in Doneraile.

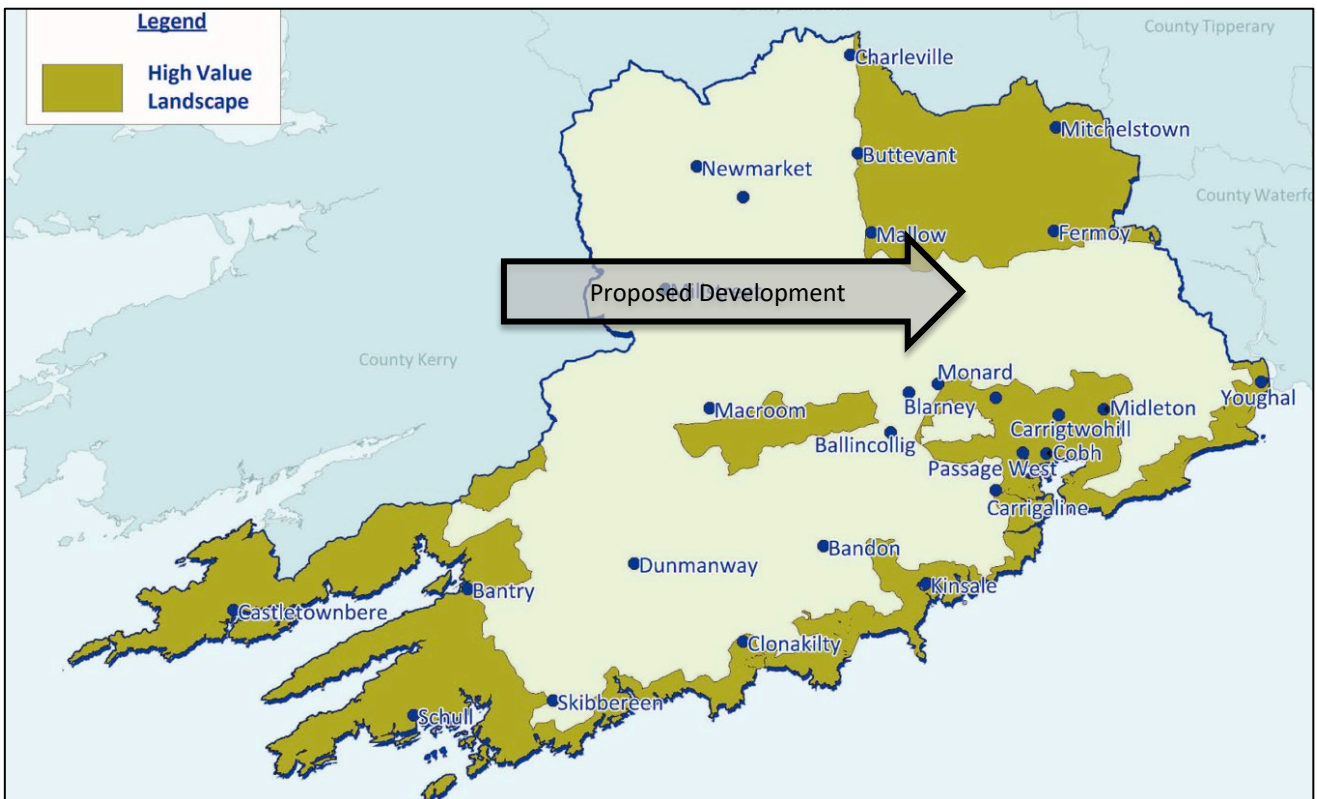


Figure 15.7: Excerpt from Cork County Development Plan (2014). Chapter 13, Figure 13.2 showing approximate location of proposed development in relation to high value landscapes.



15.3.4.3 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 (Figure 15.8 refers) and identifies areas likely to be most suitable for wind energy developments. Although the site is not situated within one of these identified as ‘likely to be most suitable’, it is neither situated in areas designated as important landscape (Medium or High).

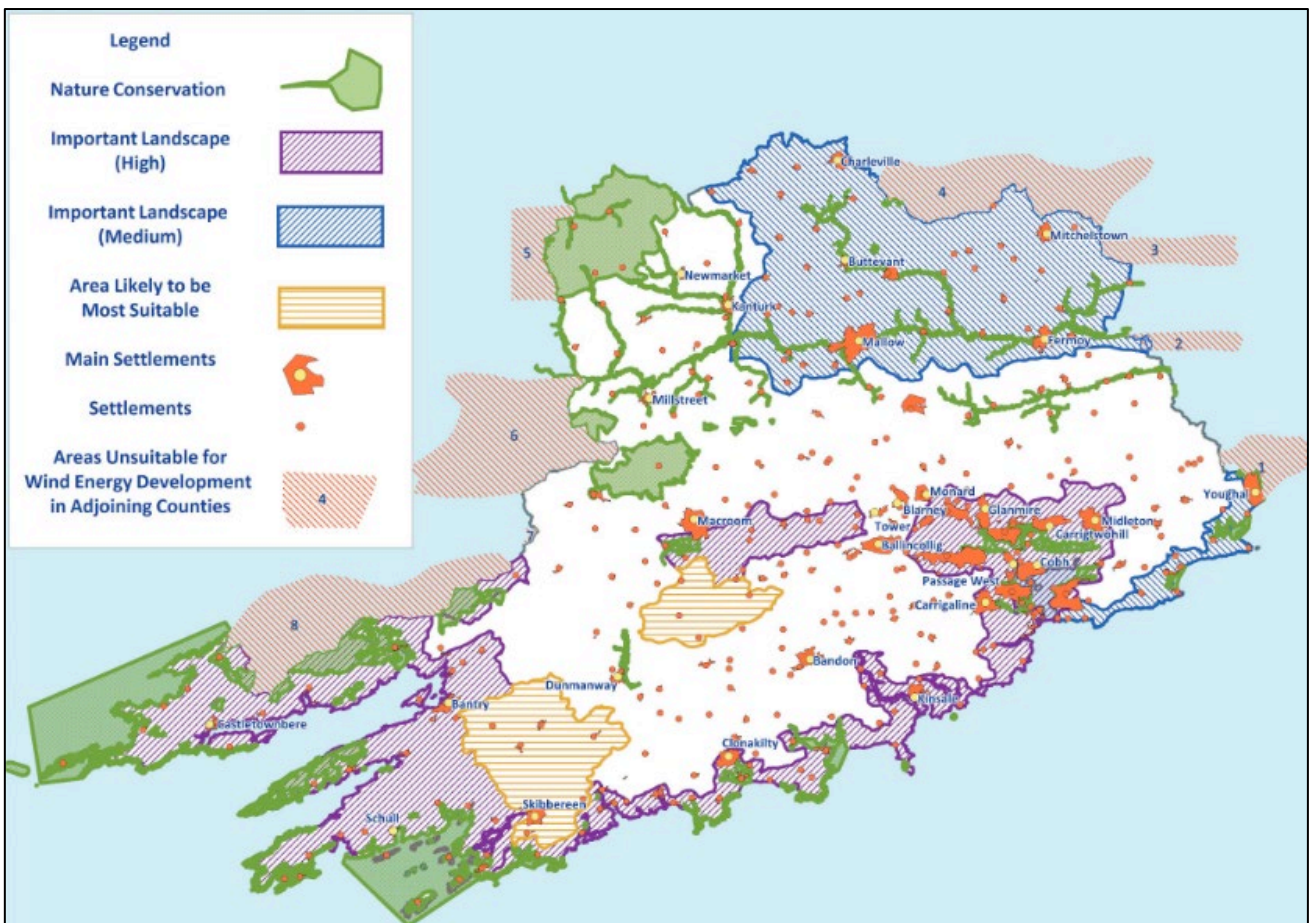


Figure 15.8: Excerpt from Cork County Development Plan (2014), Chapter 9, Figure 9.2 showing approximate location of proposed development in relation policy considerations for wind energy projects.



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 15.9 refers).

The proposed development is situated in an area designated as ‘Open to Consideration’ with some of the southernmost turbines situated in an area designated as ‘Urban Area’ though it should be noted that this correlates with the Bottlehill Landfill site, as opposed to a settled landscape.

Areas identified as ‘open to consideration’ 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.

It is important to note that the proposal site is located just south of an area that is identified as ‘important landscape (high)’ and where wind energy developments are ‘normally discouraged’. This area is associated with a designated high value landscape and LCT 5 - Fertile Plain and Moorland Ridge. Although the site is not directly located in an area with this designation, it is situated in the same visual context, and therefore it has the potential to influence the character of this area. Impacts on the landscape character of LCT5 and visual amenity from within it are assessed in sections in Section 15.5 of this chapter. 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.

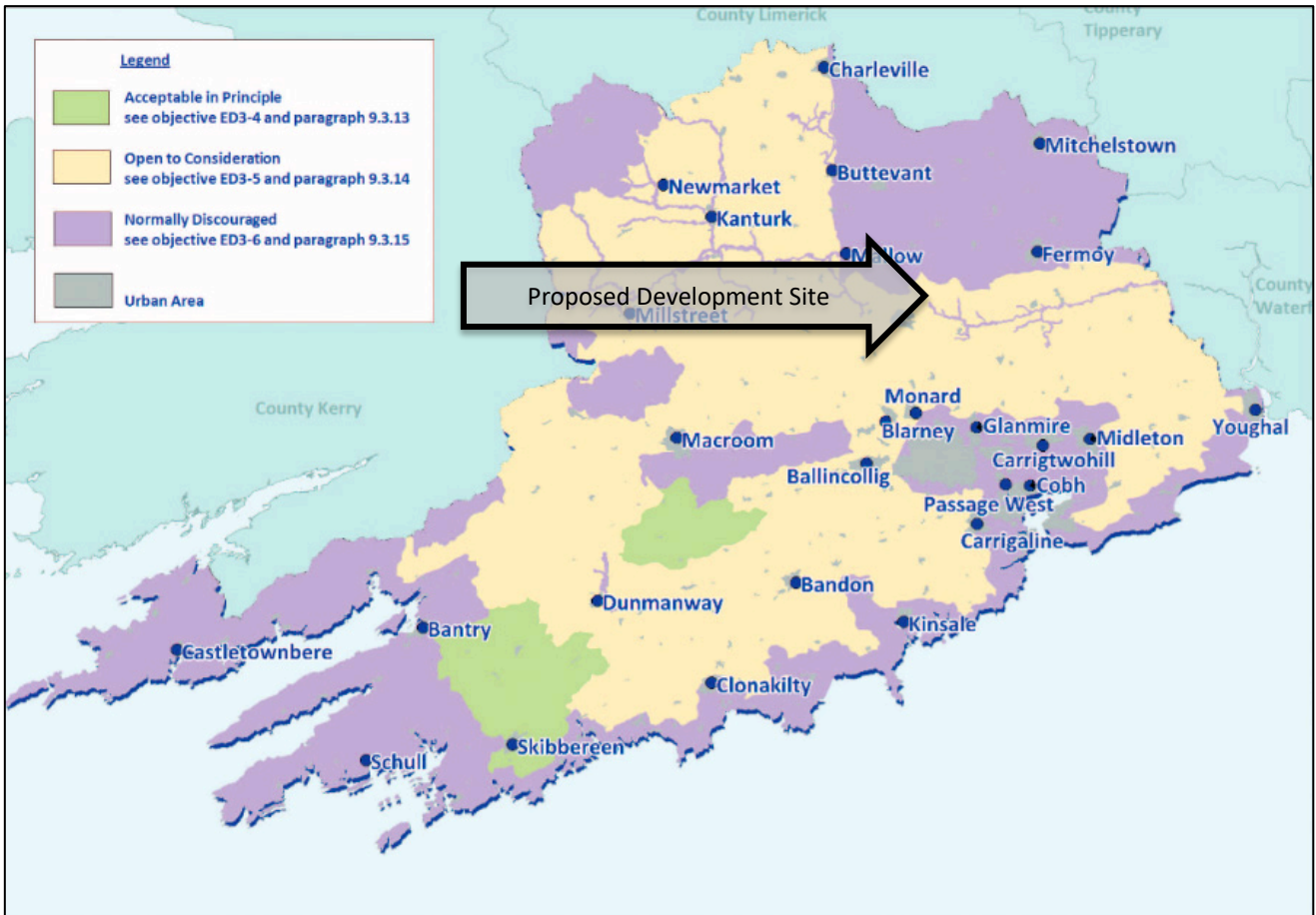


Figure 15.9: Excerpt from Cork County Development Plan (2014), Chapter 9, Figure 9.3 showing approximate location of proposed development in relation Cork’s Wind Energy Strategy.

15.3.4.4 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 two SPAs within the Study Area; the Blackwater Callows SPA; and the Ballynafagh Bog and Ballynafagh Lake SPA. The Blackwater River (Cork/Waterford) SAC also occurs within the Study Area. Part of the latter occurs within relatively close proximity to the site (c. 1 km), but relates to minor tributaries that do not have a strong influence on the central study area in terms of naturalistic character.

15.4 Visual Baseline

The visual baseline for the proposed development establishes both the nature of visibility within the Study Area and the important receptor locations from which the development might be viewed.

Only those parts of the Study Area that potentially afford views of the proposed development are of relevance to this part of the assessment.



Therefore, the first part of the visual baseline is establishing a ‘Zone of Theoretical Visibility’ (ZTV). This is usually the single form of computer generated visibility analysis used in establishing the visual baseline for wind farm developments, however, ZTV maps provide only a basic level of information.

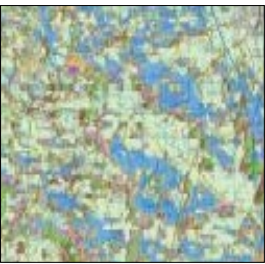
That is, they show from where in the landscape of the Study Area the proposed development will, or will not, be visible due to ‘bare-ground’ terrain screening only. Basic ZTV analysis does not account for the scale in relation to distance of turbines as it would, for example, indicate the same level of visibility at 1km as at 100km. Thus, ZTV maps are often misunderstood or assigned too much importance in the context of considering proposed developments. For this reason, a more advanced form of ZTV analysis has also been utilised for this baseline study and this has been coined Theoretical Visual Intensity (TVI) mapping. It uses the same basis as ZTV mapping, but also takes into account a number of other factors relating to the perceived visual presence of turbines (see Appendix 15.2 for a detailed TVI methodology).

The value of visual intensity mapping is that it highlights where in the Study Area the proposed turbines are likely to be a prominent visual feature and therefore have the potential to give rise to higher order visual impacts. It must be reiterated that theoretical visual intensity mapping is still a part of baseline analysis as it does not take account of the nature of change to views or the sensitivity of visual receptors, which remain the subject of professional judgment by the landscape assessor. As with standard ZTV analysis, theoretical visual intensity mapping also does not account for screening of views by the likes of vegetation and buildings. For this reason, yet another layer of analysis is provided and this is termed Route Screening Analysis (RSA).



Route Screening Analysis, as its name suggests, considers actual visibility of the proposed development from surrounding roads using Digital Surface Model (DSM) data, which takes account of vegetative screening. Route Screening Analysis bridges the gap for the assessor between the computer-generated, theoretical visibility modelling (expressed on the earlier ZTV and TVI maps) and the actual nature of visibility in the Central Study Area once vegetative screening is accounted for.

The relationship between the elements of the various visual exposure analysis tools is expressed in summary here as Table 15.8.

Table 15-8: Relationship between computer generated visual exposure analysis tools

Baseline Study Element	Value	Limitations
Zone of Theoretical Visibility (ZTV) Map 	Basic understanding of where the development could be seen from within the terrain of the Study Area Can differentiate numbers of turbines visible Can be generated from any point on the turbine (blade tip, hub etc.) Can be run in reverse as a design tool to avoid visibility at highly sensitive receptors	Does not differentiate beyond visible / not visible Theoretical as it does not account for terrestrial screening by vegetation and buildings, i.e. it presents a worst case. Visual exposure can be heavily overestimated in certain landscape types causing confusion.
Theoretical Visual Intensity (TVI) Map	Essentially a weighted ZTV map Takes account of several visibility factors in one map, such as scale in relation to distance and degree of terrain screening (full turbine blade tip only).	Theoretical as it does not account for terrestrial screening by vegetation and buildings, i.e. it presents a worst case.



Baseline Study Element	Value	Limitations
	<p>Aids selection of viewpoints for the Landscape and Visual Impact Assessment</p>	<p>Visual exposure can be heavily overestimated in certain landscape types causing confusion.</p>
<p>Route Screening Analysis (RSA)</p> 	<p>Provides an actual, rather than theoretical, estimate of visibility Can be compared with ZTV data to highlight if there is a strong discrepancy between actual and theoretical visibility Can provide local residents with an understanding of visibility from close to their property Collects a database of imagery and visibility that can be used by other disciplines Can highlight a distance threshold beyond which turbines become screened by prevailing vegetation</p>	<p>Relies on a degree of human judgement Will provide varying results across different seasons due to leaf cover Only undertaken for Central Study Area (<5km)</p>



15.4.1 Zone of Theoretical Visibility (ZTV)

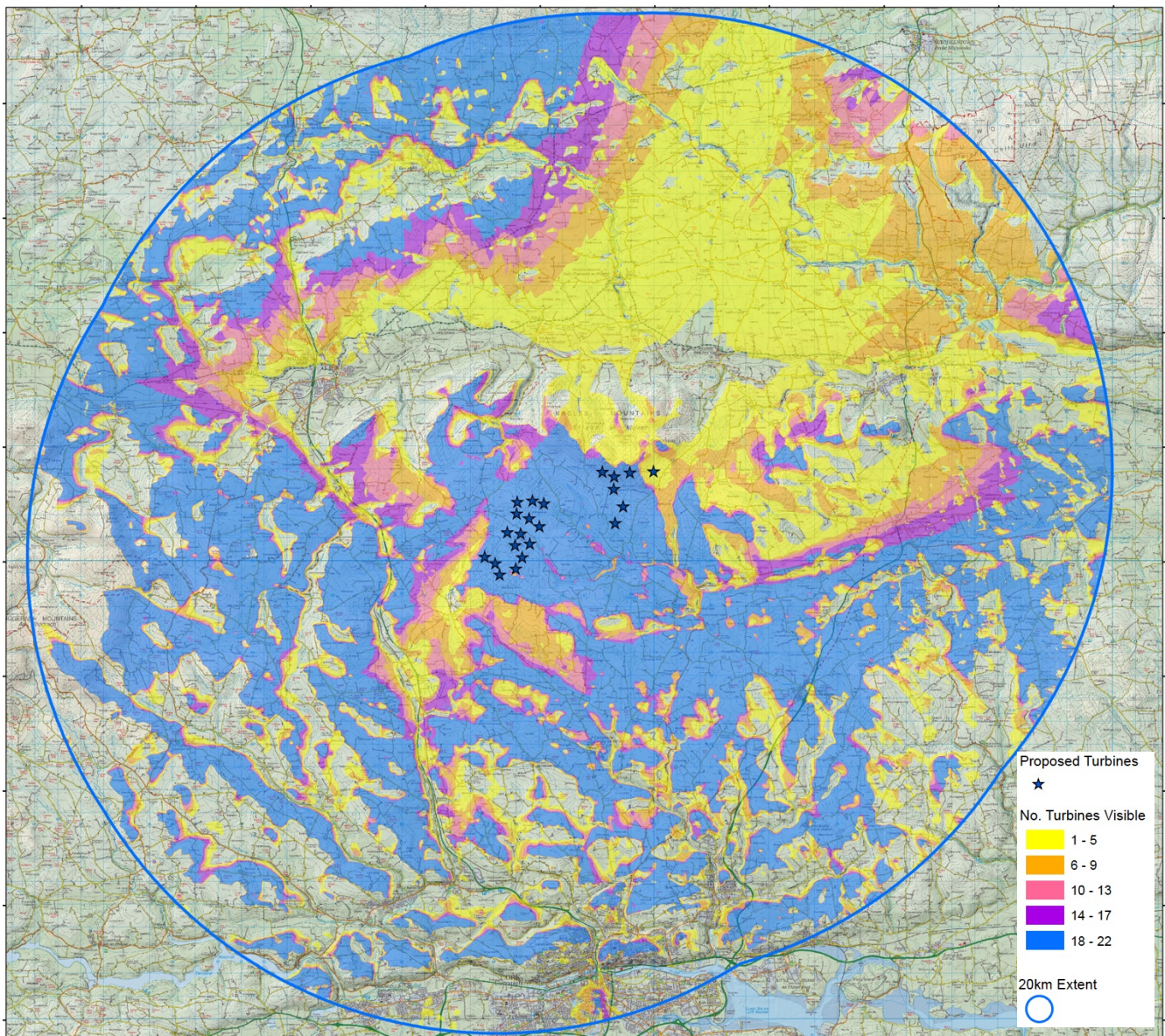


Figure 15.10: ZTV map (Tip Height) for Coom Green Energy Park (See Volume 3 for full scale annotated ZTV maps generated from hub height and blade tip)

The following key points should be noted from the ZTV maps (Volume 4):

- Much of the comprehensive visibility (majority of turbines – blue pattern) is confined to the southern half of the Study Area as the most elevated portions of the Nagle Mountains ridgeline is directly north of the proposed turbines and therefore, will reduce the theoretical degree of visual exposure in the northern half of the Study Area.
- Whilst comprehensive ZTV pattern occurs within the immediate surrounds of the site, this begins to dissipate as the terrain becomes more sporadic in nature. Theoretical visibility is entirely eliminated for some large sections of the Blackwater Valley north of the site, whilst some substantial areas in the northeast of the Study Area are afforded low (yellow/orange pattern) theoretical visibility associated with a few ridgetop turbines.



Much of the southern half of Mallow will be afforded no views of the proposed development whilst the northern and north-western outskirts of the settlement are situated within low ZTV pattern. Similarly, the settlement of Fermoy is also situated in low ZTV pattern due to its location within the valley of the River Blackwater.

- c) South of the proposed development there are a number of relatively large blocks of comprehensive visibility as a consequence of the sites' position on the southern foothills of the Nagle Mountains. A relatively consistent pattern of comprehensive visibility occurs throughout much of the southeast quadrant of the Study Area and encompasses considerable sections of the M8 motorway corridor. However, ZTV coverage becomes more sporadic beyond c.10km from the site in the southern and western half of the Study Area where the majority of the theoretical visibility relates to elevated hills and ridgelines. A number of small blocks of comprehensive visibility occur on the northern outskirts of Cork City and in the surrounds of Glanmire corresponding with elevated sections of terrain.
- d) In the outer northern half of the Study Area, visibility fluctuates between low-moderate (orange/pink/purple ZTV pattern) theoretical visibility with areas of no-visibility surrounding the River Awbeg valley, south of Doneraile. However, as the terrain begins to ascend towards the Ballyhoura Mountains in the northern periphery of the Study Area, the potential for comprehensive visibility of the proposed development also increases.

It is important to reiterate that the results of the ZTV analysis are based on bare-ground visibility only and do not account for any screening by vegetation.

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 360° viewshed that would be occupied by turbines within the context of the surrounding terrain. For ease of comprehension, this is calibrated so that a value of 100 is placed on the view of one full turbine at 1 km 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 (DTM) and does not account for screening by vegetation, which can be substantial.

(See Appendix 15.2 for a detailed methodology for TVI mapping).

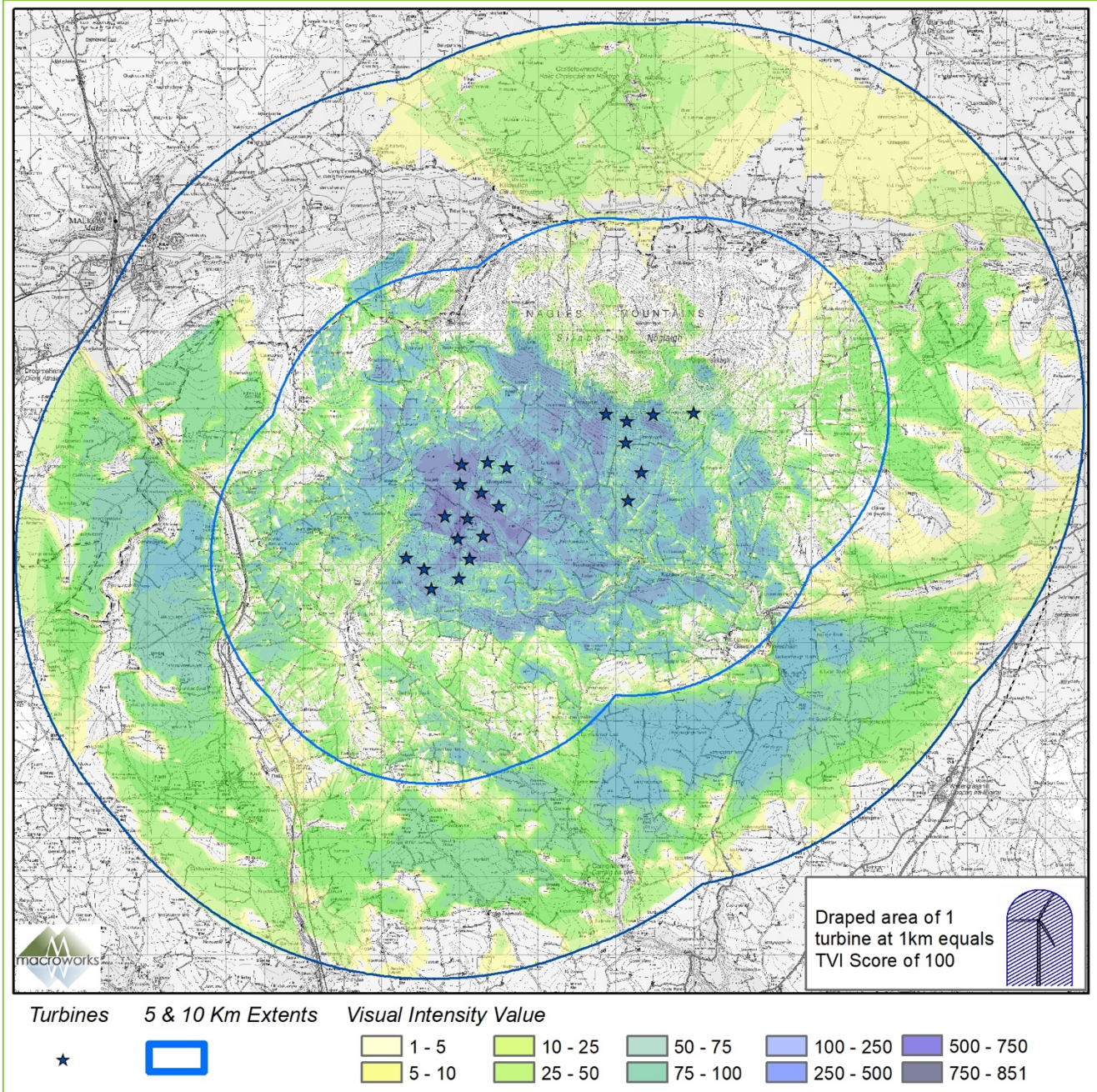


Figure 15.11: TVI Map for Coom Green Energy Park (See Volume 3 for large scale map)

The following key points are apparent from the TVI map:

- As would be expected, the highest levels of visual intensity, which usually equate to Dominant or Highly Dominant visual presence judgements (TVI scores 500+) are contained within the site itself and in the immediate vicinity 1-2km, especially in the area between the two clusters where both sets of turbines are potentially visible in relatively close proximity. The 1-2km zone is an area of low population density containing a considerable quantum of forestry which will considerably reduce the actual view of turbines from roads and residences in this zone.
- In the next lowest zone of TVI scores 250 – 500, terrain is almost as important as proximity in terms of potential visual intensity. That is, it corresponds with upper slopes and ridges within the near middle distance from turbines where there is little intervening terrain screening.



Again, upper slopes and ridges within this area tend to have a low population density with occasional farmsteads and a predominance of forestry.

- c) The zone of 100 – 250 TVI scores is relatively extensive and accounts for much of the remainder of the Central Study Area (<5km) and beyond to around 8km in respect of higher ground to the west and southeast. This corresponds to relatively elevated ground that is not otherwise screened by nearer topography such as the case to the north, east and southwest.
- d) TVI scores of between 10 – 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). Notably there is a single ‘wedge’ of green tone (10 – 50 TVI) penetrating northwards into the Blackwater Valley centred around the slightly elevated settlement of Castletownroche. This is a very minor degree of visual intensity / exposure equating to the partial view of several turbine blade sets and it avoids scenic designations within the Blackwater Valley, which otherwise has TVI scores of less than 5 or no visibility at all.

15.4.3 Route Screening Analysis (RSA)

In a landscape that benefits from a considerable degree of mature vegetation in the form of conifer forests and mature hedgerow vegetation, such as that of the Central Study Area, a standard ZTV map is of little value in understanding actual visibility. That is, it overestimates visibility compared to an open peatland or mountain moorland landscape for example. In order to get a clearer understanding of visibility within the Central Study Area, Route Screening Analysis (RSA) was undertaken for every road within a 5km radius of proposed turbines (See Appendix 15.3 for detailed RSA methodology). In this instance, the RSA has been broken-down by turbine cluster to illustrate whether visibility relates to one or both of the Bottlehill and Glannasack clusters. It is noteworthy that the conservative methodology employed for the RSA allows that ‘open visibility’ may relate to just the visibility of one full blade set out of the entire development and in the case of combined visibility only requires that one full blade set from each cluster may be visible.

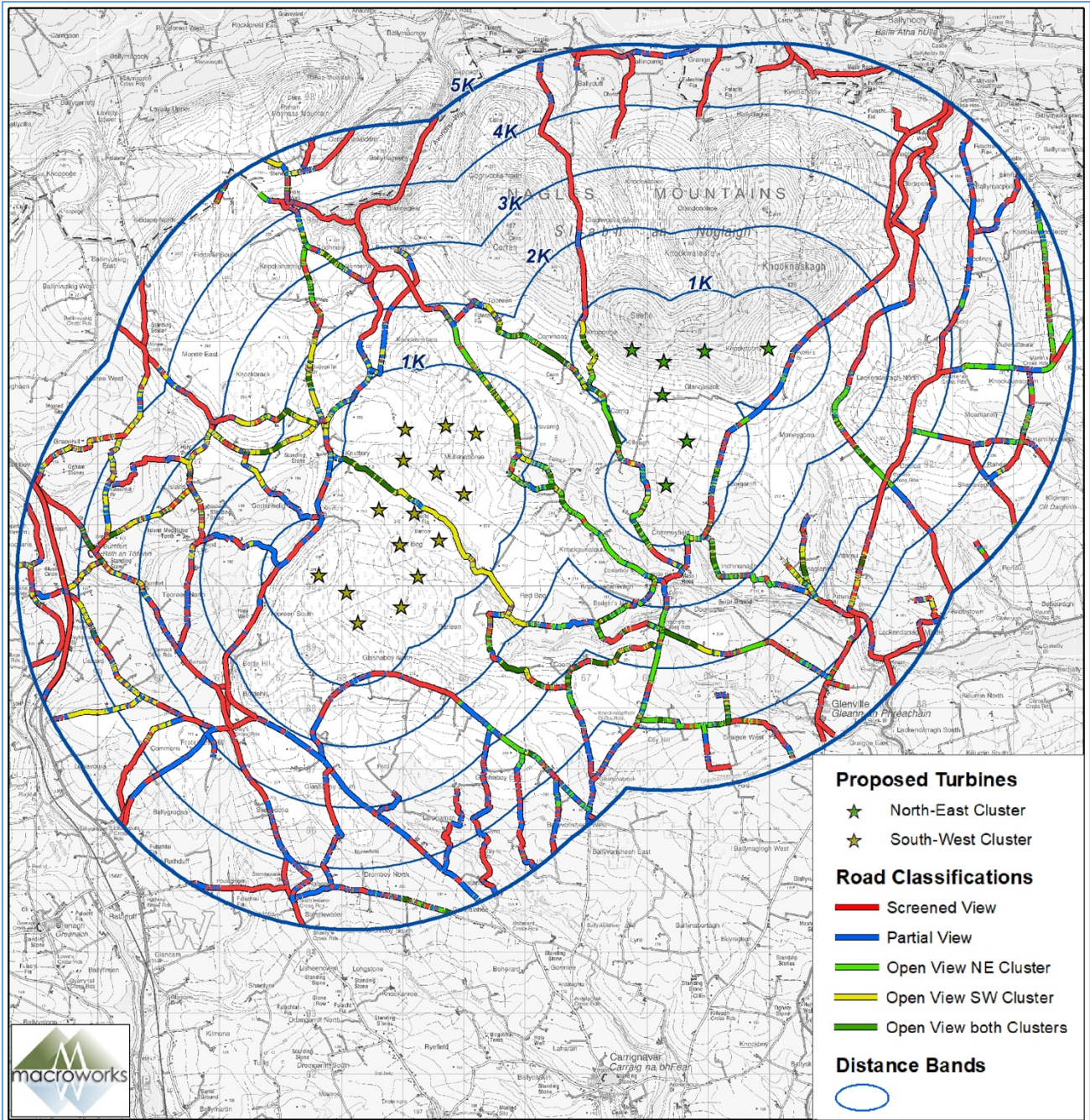


Figure 15.12: Map of Route Screening Analysis (See Volume 3 for larger scale map)

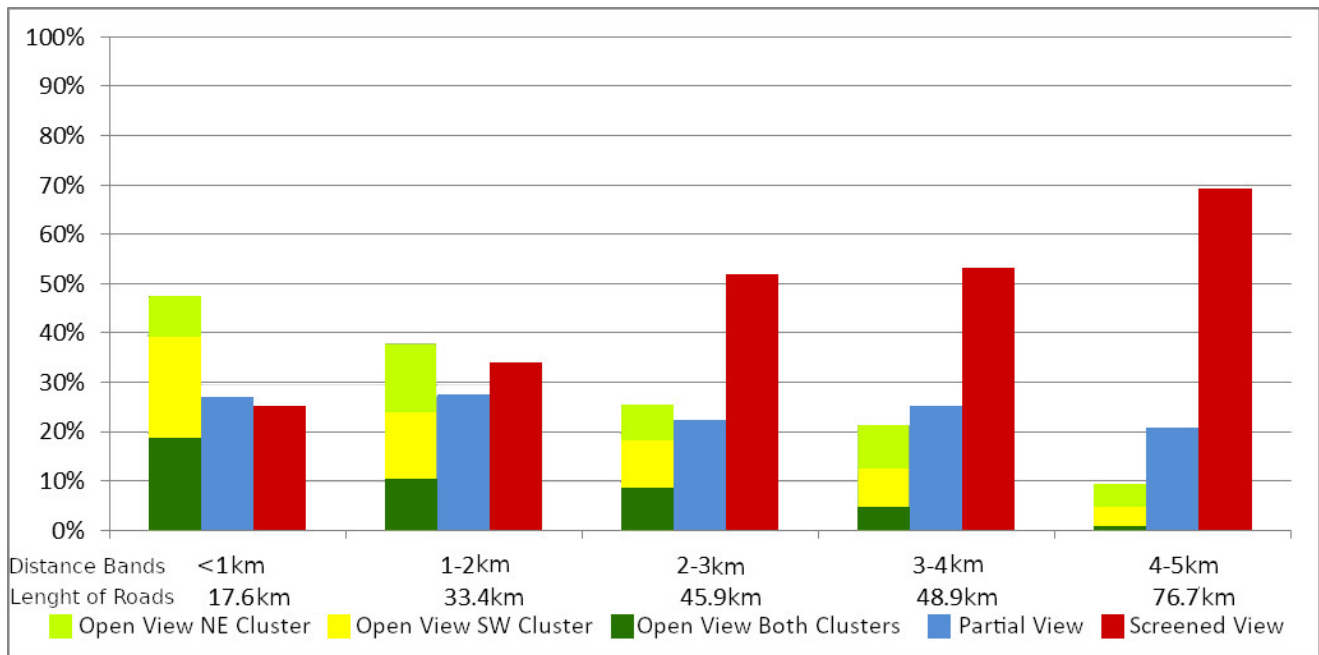


Figure 15.13: Graph illustrating results of Route Screening Analysis

15.4.3.1 Results of Route Screening Analysis

The RSA map (Figure 15.12) and associated graph (15.13) illustrates that within the nearest kilometre to turbines, it is most common for road sections to afford open views of at least some of the proposed turbines (48%). Such visibility is more likely to be of the Bottlehill cluster (20%) than of the Glannasack cluster (9%) although combined visibility accounts for around 19% of these road sections. ‘Partial visibility’ and ‘Screened views’ account for just over 25% each inside the nearest kilometre. Such instances are prevalent where mature forestry occurs, such as to the west of the Bottlehill cluster around Knuttery and to the east of the Glannasack cluster.

At distances between 1-2km of nearest turbines, the results have not altered dramatically from the nearest distance band except that Screened views have increased (34%) at the expense of Open views (39%), whilst the quantum of partial views has remained more or less the same. Most notable is that the Glannasack cluster now has equal visibility to the Bottlehill cluster (14% each) and the percentage of combined visibility has reduced to 10% of road sections. In terms of location, the vast majority of screened and partial views occur to the southwest of the Bottlehill cluster and northeast of the Glannasack cluster. Unsurprisingly, the majority of open view classes occur between the two clusters.

At distances between 2-3km, full screening of turbines takes over as the most common visibility class accounting for just over 50% of roads sections. Open visibility and Partial visibility account for the remaining road section at roughly even percentages around 25% and with an equally even distribution in terms of whether open visibility applies to the Bottlehill cluster, the Glannasack cluster, or both. In this distance band, most of the open visibility occurs to the west of the Bottlehill cluster and to the southeast of both clusters. Whereas, the majority of partial visibility and fully screened views occur southwest of the Bottlehill cluster, and north of the Glannasack cluster.

At distances between 3-4km, the proportion of screened views remains similar at just over 50% of road sections, whilst partial visibility becomes more common than open visibility – 26% and 21% respectively. Notably, the proportion of open visibility of both clusters continues to fall and now only accounts for around 4% of road sections.



In the 4-5km distance band, nearly 70% of road sections are fully screened from views of the proposed development with 20% allowing partial visibility. Open visibility accounts for the remaining 10%, but with only 1% of these sections being afforded views of turbines from both clusters.

Aside from sporadic instances of combined visibility, between gaps in intervening vegetation, the most notable sections of combined visibility occur on the sparsely populated local road that passes through the Bottlehill cluster, the two local roads at Lyravarrig and Commons that run between the clusters and a series of local roads between Doonpeter and Raheen between 2-3km southeast of the site, which are slightly elevated above the Coom River. It is important to reiterate that based on the analysis method employed, open visibility may only relate to the visibility of one full blade set out of the entire development and in the case of combined visibility only requires that one full blade set from each cluster may be visible.

The trends illustrated in Figure 15.13 are clear and consistent showing an expected drop off in open visibility at the expense of screened views over distance. An important threshold would appear to be around the 2km mark where open visibility becomes less likely than full screening. From experience of completing RSA in flat midlands sites, this threshold is generally reached between 2-3km when localised screening from the likes of hedgerows is sufficient to screen the diminishing scale (in relation to distance) of the turbines beyond. In this case, the threshold would appear to be reached slightly closer due to the added screening afforded by rolling and folding terrain in combination with hedgerow and tall forestry screening. Interestingly, partial visibility remains relatively consistent throughout the distance bands

15.4.3.2 Refined Analysis of 'Open View' Category

Because of the broad extent of this proposed development across two distinct clusters and based on the results of the RSA that indicate a rapid drop-off in turbine visibility beyond a threshold of approximately 2km, it is considered pertinent to examine the number of proposed turbines that will be openly visible (full blade sets) when open visibility is indicated. This is also important because the term 'open visibility' tends to imply full visibility of the entire development.

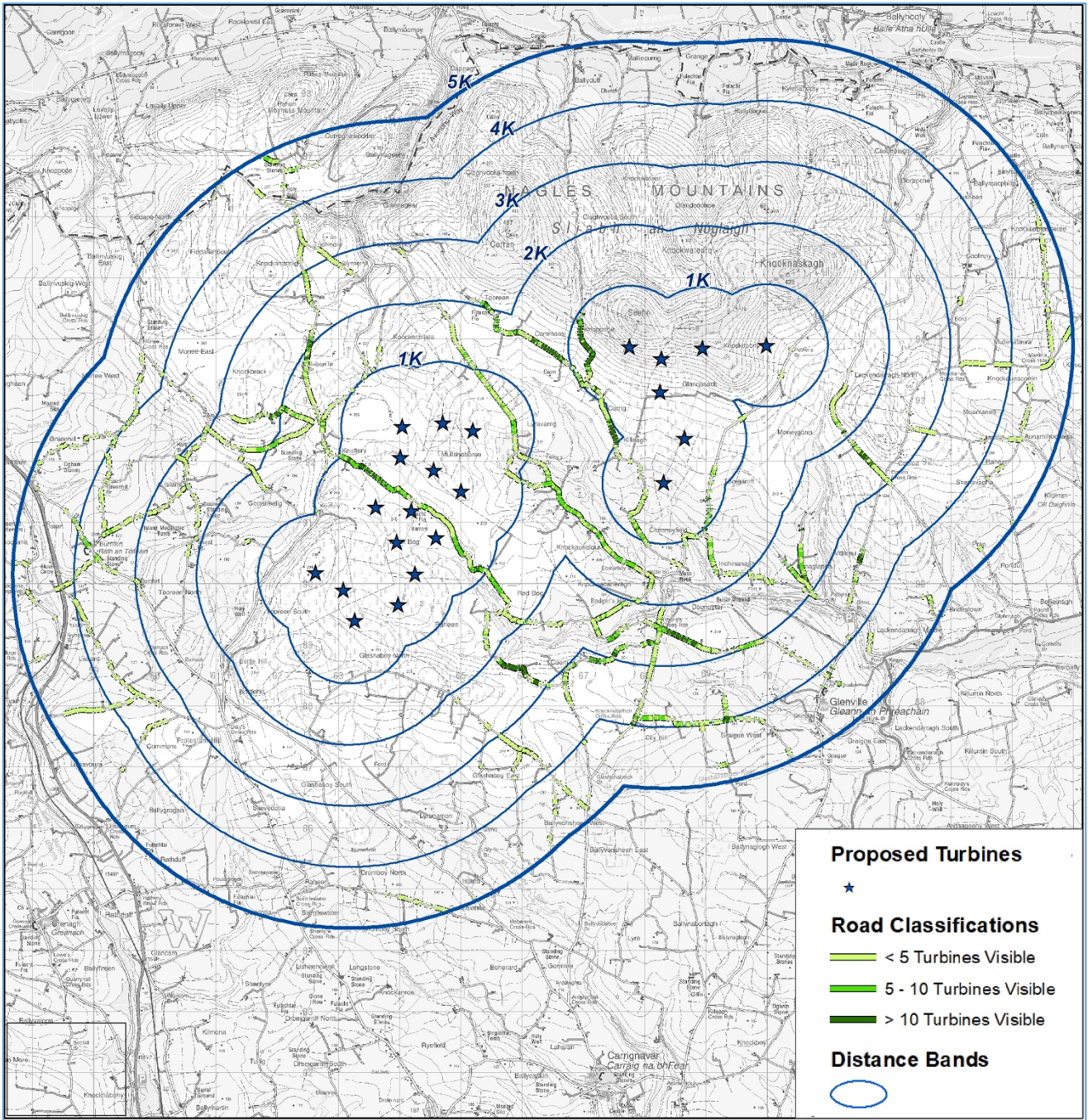


Figure 15.14: Map of RSA 'Open Visibility' Category indicating number of turbine blade sets visible (See Volume 3 for larger scale map)

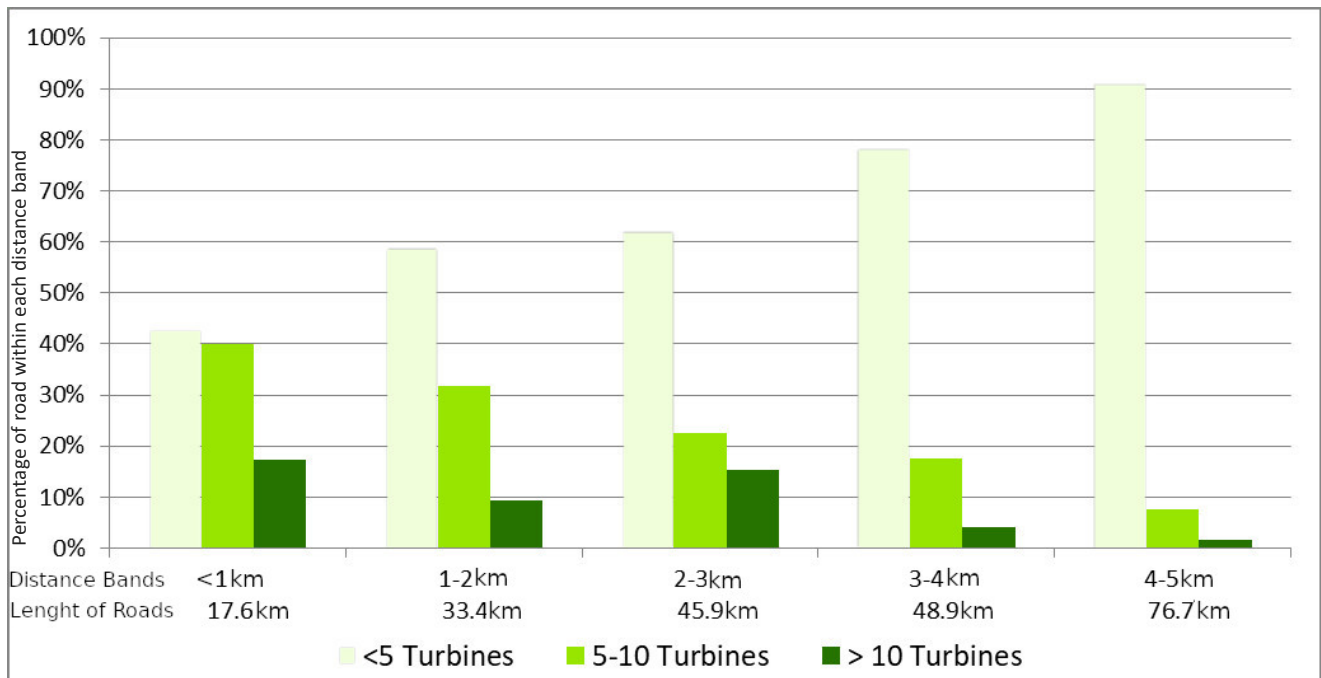


Figure 15.15: Graph of RSA ‘Open Visibility’ Category indicating number of turbine blade sets visible across distance thresholds

As can be seen from the map at Figure 15.14 and the associated graph at Figure 15.15, it is most common for the road sections with open visibility of turbines to be afforded a view of less than 5 full blade sets irrespective of whether this is from one or both clusters. Albeit, in the nearest distance band of less than 1km from turbines, there is almost equal chance of viewing between 5-10 turbines (42% and 40% respectively). Across the distance bands, the potential to see less than 5 turbines increases consistently to more than 90% of road sections between 4-5km, whilst the potential to see between 5-10 reduces equally consistently down to 7% between 4-5km.

The potential to view more than 10 turbines generally reduces across the distance bands, but in a less consistent fashion. However, such visibility never exceeds approximately 17% of road sections and is only about 1% in the 4-5km distance band. The general lack of consistency in the >10 turbine category is also likely to occur, because such visibility tends to occur from elevated and open sections of road and is less dependent on the relationship between the diminishing scale of turbines over distance versus intervening screening than the other categories.

15.4.4 Visual Receptors

15.4.4.1 *Centres of Population and Houses*

Although it is not the nearest, the most notable major settlement in relation to the proposed development is that of Cork City and its environs, and is situated along the banks of the River Lee 15km south of the southernmost turbine at its nearest point. Mallow and Fermoy are both situated along the corridor of the River Blackwater and are the nearest two major settlements in relation to the proposed development. Fermoy is situated just over 10km northeast of the nearest turbine whilst Mallow is situated just over 9km northwest of the nearest turbine. Blarney and Glanmire are two modest sized settlements both situated just north of Cork City and its environs. Blarney is situated approximately 12.5km southwest of the proposed development whilst Glanmire is situated approximately 15km southeast of the proposal site.



A number of small rural villages are also situated within the Central Study Area. Bottlehill is located just over 2km southwest of the proposed development at its nearest point. Burnfoot is 3km west of the westernmost turbine. Glenville is situated just over 4km southeast of the nearest proposed turbine. The riverside settlements of Killavullen and Ballyhooly are located along the River Blackwater corridor and are situated 6km northwest and 5km northeast of their nearest turbines respectively.

The settlements of Grenagh and Mournabbey are both situated to the west of the N20 approximately 7km southwest and 6km west of the nearest turbines respectively. Both settlements of Whitechurch and Carrignavar are located approximately 8km south of the southernmost turbine.

Other notable towns villages and cross road settlements within the Wider Study Area include Buttevant, Doneraile, Castletownroche, Glanworth, Rathcormac, Watergrasshill, Bweeng and Dromahane.

15.4.4.2 Transport Routes

The most notable transport route within the Study Area is that of the M8 motorway which traverses the entire eastern half of the Study Area passing through or near the settlements of (in order of north to south) Fermoy, Rathcormac, Watergrasshill and Glanmire, before culminating just east of Cork City at its intersection with the N8 national primary route. The M8 motorway corridor passes just under 10km east of the easternmost turbine at its nearest point. The N20 national primary route enters the Study Area north of Buttevant and travels through the settlements of Buttevant, Mallow and Blarney before culminating on the northern outskirts of Cork City. The N20 is situated just under 4km to the west of the westernmost turbine at its nearest point. North of the proposal site, the N72 national secondary route connects the settlements of Fermoy and Mallow and is oriented in a general east-west direction, situated just under 5km from the nearest turbine. The N73 national secondary route diverges from the N72 northeast of Mallow and is situated just under 10km from the proposed wind energy development.

A modest network of regional roads also traverse the Wider Study Area. The R614 regional road is the nearest of these and extends from the settlement of Rathcormac in a westerly direction passing just over 4.5km southeast of the nearest turbine as it approaches the small village of Glenville from the north. The R616 and R639 regional roads similarly occur within the eastern half of the Study Area, the nearest of these is the R639 which occurs just over 10km east of the site at its nearest point. The R512 and R666 regional roads both extend from the northern portions of Fermoy, the nearest of which is the R512 regional road running just under 10km northeast of the nearest proposed turbine.

The R619, R620, R638 and R639 regional roads are also situated southwest of the settlement of Mallow in the northwest quadrant of the Study Area. The nearest of these to the proposal site is the R638, which intersects with the N20 national primary route and is situated just under 10km from the nearest turbine. The R581 and R522 regional roads intersect just north of the settlement of Doneraile in the northwest quadrant of the Study Area. The R581 regional road extends out from Doneraile in a south-westerly direction intersecting the N20 north of Mallow and is located just over 15km northwest of the site at its nearest point. The R522 regional road is oriented in a general east-west direction and is situated just under 15km north of the site at its nearest point.

A dense network of national primary and secondary routes and regional roads pass through Cork City on the southernmost periphery of the Study Area. The most notable of these include the N8, N22, N27, N71 and N40.

A section of national railway line also passes through the western and southern parts of the Study Area and follows much of the N20 corridor passing just over 4km to the west of the site at its nearest point. The Dublin – Cork line enters the Study Area north of Mallow and meanders through the western extents of the Study Area passing northeast of Blarney and then through the central portions of Cork City.



15.4.4.3 Amenity and Heritage Locations

The Blackwater Way (Avondhu) national waymarked trail is a 94km walking trail that follows the course of the River Blackwater and is situated just under 4km north of the proposed turbines at its nearest point. The trail enters the Study Area north of Fermoy and follows the southern banks of the River Blackwater before veering in a south-westerly direction past the settlement of Mallow and exiting the Study Area at its westernmost periphery. The Killavullen looped walk intersects the Blackwater Way south of Killavullen and passes just over 1.5km northwest of the nearest turbine at its nearest point. Other local walking trails within the Study Area include the Glenville Holy Well loop walk situated under 2km south of the nearest turbine at its nearest point, Ardarou Wood walk located on the outskirts of Glenville 3.5km southeast of the nearest turbine, Corrin Wood looped walk situated south of Fermoy just over 10km to the east of the nearest turbine and Moanbaun Wood looped walk situated over 13km southeast of the nearest turbine. A number of looped walks, mountain bike trails and on road cycling trails also occur within the northern periphery of the Study Area in the surrounds of the Ballyhoura Mountains.

Doneraile Wildlife Park is a 166 hectare landscape park dating back to the 18th Century and is situated in the settlement of Doneraile just under 15km north of the proposed development. The park comprises a number of walking trails, picnic areas and tea rooms.

Originally dating from before 1200, Blarney Castle and gardens is a popular international tourist attraction in the picturesque settlement of Blarney northwest of Cork City. The castle is open to the public and is situated 14km southwest of the nearest proposed turbine. Visitors make their way to the ramparts of the castle where they can take in views of the surrounding landscape and Blarney Village before kissing the famed ‘Blarney Stone’.

With regard to other heritage features within the Study Area, Island Wedge Tomb is situated in the townland of Island 2.5km west of the nearest turbine. It should be noted that this wedge tomb is contained in private property and is not frequented by the public (visual receptors). Labbacallee Wedge Tomb is situated just over 11km northeast of the proposed development and is Ireland largest standing wedge tomb. A number of heritage features including Ballyhooly Castle, the remains of Bridgetown Abbey and a number of privately owned historic demesne landscapes all occur along the corridor of the River Blackwater north of the proposed development.

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. In this instance there are not considered to be any iconic views that are not otherwise included as designated scenic views in the relevant county development plans.

15.4.5.1 Cork County Development Plan 2014

Designated Scenic Routes are indicated in the Cork County Development Plan 2014 online map browser (**Figure 14.15** refers). A number of designated Scenic Routes occur within the Study Area and are as follows:

- **S2:** Local Roads adjoining Kilworth Mountains Views of the Araglin River Valley, distant views of the Galtee, Kilworth, Knockmealdown Mountain Ranges & Cairn Hill.
- **S3:** N8 National Primary Route between Moorepark and Mitchelstown. Views of the Galtee, Nagle, Kilworth & Knockmealdown Mountain Ranges.



- **S4:** R667 Regional Road, section of local road & R666 Regional Road between Kilworth & Fermoy. Views of the Blackwater, Funchion & Argalin River Valleys
- **S5:** R666, Regional Road from Coolalisheen Bridge to Ballyalacken. Views of the Blackwater River Valley.
- **S6:** Local Road to Coolbaun. Views of pastoral landscape & the Bride River Valley.
- **S7:** N72 National Secondary Route between Bellvue Cross and Kilbarry overlooking Blackwater valley. Views of the Blackwater River Valley & distant Mountain Views
- **S8:** Local Road between Glenabo Bridge & Ballynahina. Distant views of the Blackwater and Bride River Valleys & local views of wooded valley.
- **S9:** N72 National Secondary Route between Cregg Castle, Castlehyde & Fermoy. Views of the settlement of Fermoy, the Blackwater Valley, the eastern slopes of the Nagle Mountains & demesne walls, characteristic of the area.
- **S10:** N72, National Secondary Route from Renny Lower through village of Ballyhooly. Views of the Blackwater Valley & the northern slopes of the Nagle Mountains.
- **S11:** Local Road at Carrigacunna through Nagle Mountains to Ross River Valley to Fiddane Bridge. Views of the Nagle Mountains.
- **S12:** Local Road between Knuttery and Bottlehill. Views of rolling landscape.
- **S13:** Local Road from Craig Cross Roads to County Boundary. Views of the Ballyhoura Mountains & the Awbeg Valley.
- **S14:** N72 National Secondary Route between Mallow and Roskeen Bridge. Views of the Blackwater valley.
- **S19:** R579 Regional Road from Glenaknockane towards Donoughmore. Views of Boggeragh Mountains & rural uplands.
- **S37:** Local Road & R618 Regional Road between Leemount and Macroom via Coachford. Views of the Lee Valley & reservoir, rural landscape & the Sullane River.
- **S39:** Local Road & R617 Regional Road between Clogheen, Tower and Blarney and the road to Blarney Lake. Views of the settlements of Ballincollig, Tower & Blarney, Blarney Castle & the Lee Valley.
- **S40:** Section of Local Road between Blarney and Grenagh. Views of wooded banks of the River Martin & Putland Bridge.
- **S41:** R639 Regional Road & Local Road from Dunkettle to Glanmire and eastwards to Caherlag and Glounthane. Views of the Estuary & Harbour, wooded landscape, open countryside & hillsides.
- **S42:** Local Road at Forest-town, N.W. Carrigtwohill and Westwards to Caherlag. Views of the Harbour, open countryside & tree lined hillsides.
- **S43:** R626 Regional Road between Lisgould and Carrigogna. Views of wooded landscape & intermittent views of open countryside.
- **S44:** Local Road between Monaleen Bridge, Ardlass & Gurteen Cross Roads. Views of hills & rural landscape.



Figure 15.16: Extract from Cork County Development Plan 2014 Volume 4 - Map Browser showing relevant designated scenic routes and the location of the proposed Wind Turbines.

Due to proximity and potential visual exposure of the proposed development, the most relevant scenic routes listed above are 'S11' and 'S12'. 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. The scenic routes identified in this plan are shown on the scenic amenity maps in the CDP Map Browser and are listed in Volume 2 Chapter 5 Scenic Routes of this 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*

It is also important to note that section 13.7.2 of the Cork County Development Plan (2014) 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' where views of the proposed development might be afforded.

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 development 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 development from different distances, different angles and different contexts.

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

- a) Key views (from features of national or international importance);
- b) Designated Scenic Routes and Designated Views;
- c) Local community views;
- d) Centres of population;
- e) Major routes; and
- f) Amenity and heritage features;

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

Key Views

These VRP's are at features or locations that are significant at the national or even international level, typically in terms of heritage, recreation or tourism.



They are locations that attract a significant number of viewers who are likely to be in a reflective or recreational frame of mind possibly increasing their appreciation of the landscape around them. The location of this receptor type is usually quite specific.

Designated Scenic Routes and Views

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

Local Community Views

This type of VRP represents those people that live and/or work in the locality of the wind farm, generally within a 5km radius of the site. Although the VRP's 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 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 VRP's is necessary in order to sample the spectrum of views that would be available from within the local landscape. In this instance feedback from local residents informed the selection of a number of the selected VRP's at public consultation events and via feedback from the Community Liaison Officer. It should be reiterated that in this instance, the open views represented in the local community category are not necessarily typical views from the Central Study Area and have been selected as worst-case-scenario views in terms of visual exposure. Whilst this is appropriate for the visual assessment, cognizance should also be taken of the Route Screening Analysis in terms of understanding the typical visual scenario in the Central Study Area.

Centres of Population

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

Major Routes

These include motorways, national and regional level roads as well as rail lines and even ferry routes. They 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

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 might be occasional archaeologists visiting a subterranean feature in a farmer’s field or large numbers of tourists visiting the likes of Blarney Castle. 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. In this instance discussions with the Project Heritage Consultant informed the selection of several of the VRP’s for this category.

Table 15-8: Selected Viewshed Reference Points (VRP’s)

VRP No.	Location	Direction of View
VRP1	Local road adjacent to Labbacallee Wedge Tomb southeast of Glanworth	SW
VRP2	N72 west of Ballyhooly	SW
VRP3	Caislean An Easaig residential estate southwest of Castletownroche	S
VRP4	N72 southwest of Castletownroche	S
VRP5	Chapel Street, Killavullen	SSE
VRP6	Local road at Commons	N/S/E/W
VRP7	Local road at Knoppage	E/W
VRP8	Local road at Carrig	N/S/E/W
VRP9	Local road at Carrig (2)	N/S/E/W
VRP10	Local road at Moneygorm	W
VRP11	Local road north of Powers Bridge	W
VRP12	Local road at Toorgarrife	N/S/E/W
VRP13	Glenville GAA Club	NW
VRP14	Doonpeter Holy Well	NW
VRP15	Local road at Doonpeter	N/W
VRP16	Local road at Glashaboy East	N
VRP17	L6956 southeast of Bottlehill	N
VRP18	Local road at Gortaneelig	N/S/E/W



VRP No.	Location	Direction of View
VRP19	Local road at Knuttery	N/S/E/W
VRP20	N72 at Inchinpallas	SW
VRP21	M8 overbridge of River Blackwater	SW
VRP22	N72 west of Mallow	SE
VRP23	Blarney Castle	NE
VRP24	R639 north of Fermoy	SW
VRP25	L1239 at Ballintlea South	S
VRP26	R522 west of Clogher Cross	S
VRP27	Doneraile Wildlife Park	SE
VRP28	Corrin Wood – Coillte Recreational Trail	W
VRP29	R614 overbridge of M8 southwest of Rathcormac	W
VRP30	Glen Corrin residential estate north of Watergrasshill	NW
VRP31	Local road overbridge of M8 northeast of Cork City	NW
VRP32	R616 north of White’s Cross	N
VRP33	Local road west of Mackey’s Cross	N
VRP34	Local road northeast of Whitechurch	N
VRP35	L2950 southwest of Bottlehill	NE
VRP36	Gleann Aras View residential estate, Grenagh	NE
VRP37	N20 at Lissard	NE
VRP38	Burnfort Cemetery	E
VRP39	Local road at Ballyfillibeen	E
VRP40	Local road northwest of Bweeng	E
VRP41	Mourneabbey GAA Club	E
VRP42	Megalithic Tomb at Island	E

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 in Tables 15.1, 15.2 and 15.4). From 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 2-3km of the proposed development (the first 3 zones shown on the TVI map – see Section 15.4.2.
- 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 development, the most highly sensitive physical landscape receptor is considered to be the Blackwater Valley and particularly heritage features and demesne landscapes contained within it that contribute to its tranquil heritage landscape character.

The most sensitive visual receptors are considered to be the designated scenic routes and views identified in the Cork County Development Plan, which are sensitive receptor locations on the basis that they represent a consensus on scenic amenity. The top of Blarney Castle is also considered to be a highly sensitive visual receptor location due to the number of domestic and international visitors it attracts and the visual amenity afforded from its high ramparts.

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 are:

- Mitigation by avoidance and design - using Reverse ZTV technology
- Buffering of Residential Receptors

15.6.1 Mitigation by Avoidance and Design

During the early design stages of the proposed Coom Green Energy Park, key landscape and visual constraints were identified. In terms of macro level design consideration, the most sensitive of these were deemed to be the Black Water Valley, for reasons of both landscape character and scenic designations as well as Blarney Castle and associated demesne because of its tourism, heritage and amenity value.



Reverse ZTV maps were prepared from several scenic designations within the Blackwater Valley and the top of Blarney Castle. 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). From an early iteration of the wind farm design, Reverse ZTV from key Blackwater Valley viewpoints showed visibility of nine turbines, being those closest to the Nagles ridgeline - as illustrated in Figure 14.16.

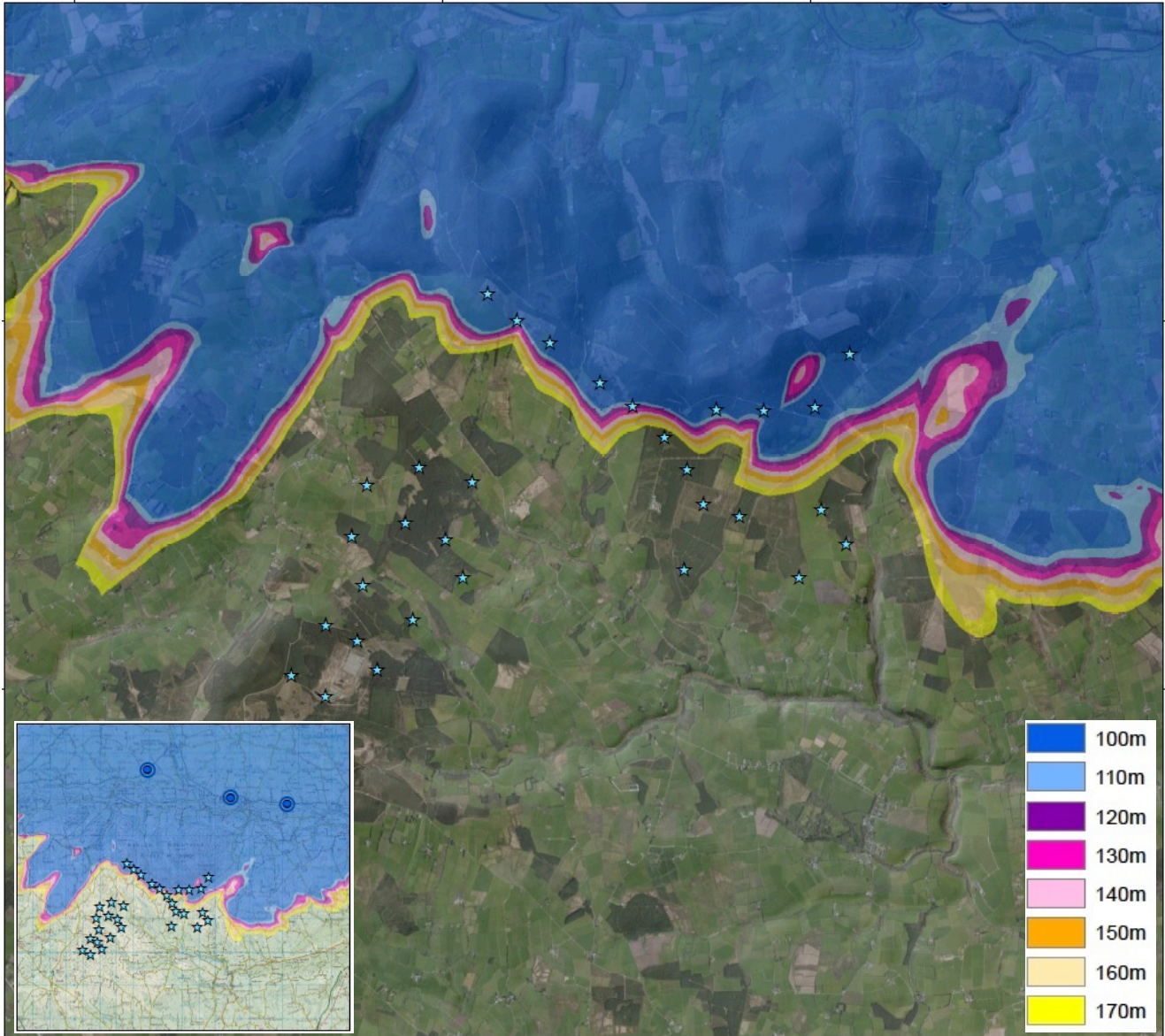


Figure 15.17: Reverse ZTV from Blackwater Valley viewpoints for early stage design. Note turbines outside of ZTV pattern not visible from selected VRPs

Whilst it was not considered feasible or necessary to remove turbines from all sections of the site with potential visibility from the Blackwater Valley, the design was substantially altered to remove many of the relevant turbines from view and limit the visual exposure of those remaining turbines so as to minimise landscape and visual impacts on the Blackwater Valley.



The result is a much reduced lateral extent of development along the Nagles ridgeline and the view of only partial blades sets of up to 3-4 turbines above the forested ridge, but not including from sections of designated scenic route within the valley where either no turbine visibility remains (see VRP2) or the partial view of one turbine at nearly 8 km (VRP20).

The reverse ZTV map prepared in respect of Blarney Castle indicated that several of the Bottle Hill turbines would be potentially visible from this receptor.

However, the context of the visibility was barely noticeable blade tips amongst trees and buildings that line an intervening ridge above Blarney Village at viewing distances in excess of 18km. Thus it was not considered necessary to alter the design of the wind farm to avoid what is a very minor impact from this receptor (See VRP23).

15.6.2 Buffering of Residential Receptors

For the proposed Coom Green Energy Park, the minimum distance of any turbine from the nearest residential receptor is 750m, which is in excess of the current Wind Energy Development Guidelines (2006) recommended distance of 500m. It is also in excess of the recently published Draft Revised Wind Energy Guidelines (2019), which indicates a 4 X tip height buffer distance; up to 676m distance from residential receptors in this instance. As no neighbouring dwellings fall within 750m of nearest turbines for the proposed development the setback is 50% greater than the requirement for the current Guidelines. Furthermore, the residential amenity setback for the Draft Revised Guidelines is also complied with (minimum setback 676m from 169m tip height turbines), which also gives a considerable buffer to account for ‘curtilage’ of dwellings, as specified by the Draft Revised Guidelines.

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 14.17.

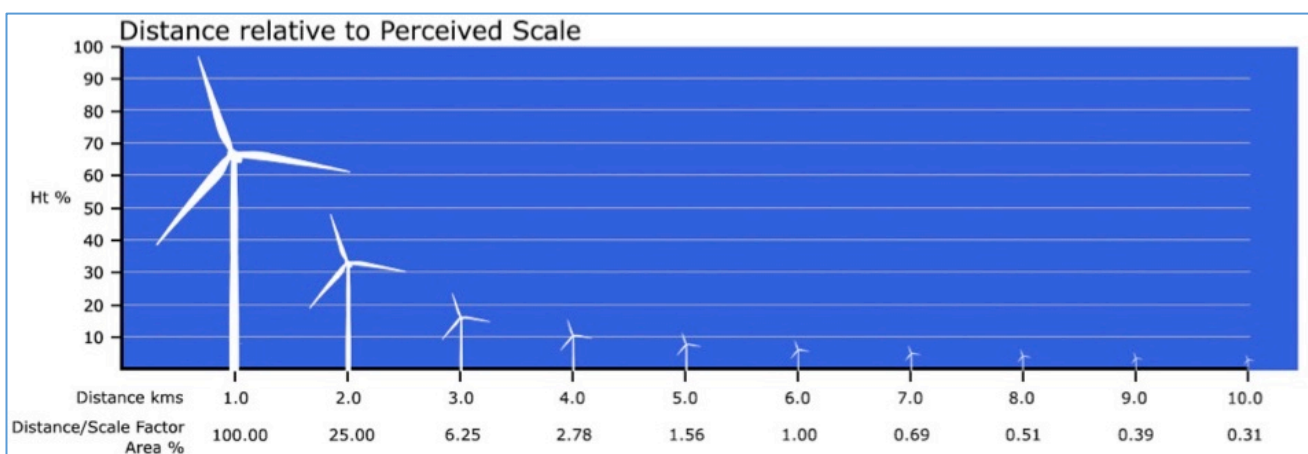


Figure 15.18: Turbine ‘scale in relation to distance’ relationship



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 development is spread over two turbine clusters that are not extensive in their own right, but collectively cover a considerable area of transitional forested landscape divided by an upland farmed valley. The northernmost turbine cluster is situated on the upper southern slopes of Knocknaskagh Mountain in the eastern extents of the Nagle range, which is a distinctive upland ridgeline in the local context, but not in a regional or national context. The other cluster is located south of the Nagle range on the subtle plateau hilltop of Bottlehill. This turbine cluster abuts the vacant Bottlehill landfill facility, which presents as initial infrastructures, such as access roads, but is unused to date. The N20 national route skirts the western side of the Central Study Area, but the only notable settlement within 5km of the site is Glenville. Otherwise, there is a reasonable, but widely dispersed rural population lining the loose network of local roads that criss-cross the Central Study Area. The scale and intensity of built development within the immediate environs of the site is relatively modest at present and there is some degree of remote rural tranquillity to be found despite the proximity to Cork City.

In general, the terrain of the site and Central Study Area drains gently south-eastwards towards the River Bride and it is this rolling and folding landscape that can be described as a productive and settled one, where landscape value relates as much to the sustenance of the local rural economy as it does to scenic value and there is little in the way of overt naturalistic or heritage value within the Central Study Area. Scenic value is most evident on elevated ground where broad vistas to the south and west are often afforded and this is reflected in the scenic route designations attributed to several of the upland roads. As with the general landscape values of this area, the scenic value of these designated views mainly relates to their extent rather than the presence of dramatic or naturalistic landscape features.

In some contrast to the landscape described above that falls away to the south of the Nagles Mountain Range, is the Blackwater Valley that falls away to the north. The Blackwater Valley has relatively steep flowing forest covered slopes on the southern (Nagles Mountain Range) side and more gradual rolling farmed slopes on its northern side. It is the lower portion of the valley adjacent to the River Blackwater itself that is synonymous with tranquil heritage value influenced by riparian woodlands and demesne parkland landscapes. Thus there is a strong degree of naturalistic, scenic and heritage value associated with the Blackwater Valley. The sense of enclosure provided by the forested slopes of the Nagles above is an important aspect of the overall setting and it is this aspect that is contained within the Central Study Area for the proposed development. Nonetheless, the Blackwater Valley is also discrete from the proposed development and its general environs because it is contained within a separate physical and visual catchment and the ridgetop divide between landscape character units, being the Nagles ridgeline, is a distinct one.

With regard to landscape designations, the Cork County Development Plan identifies that the proposed development is wholly contained within landscape type 'LCT 13b – Valleyed Marginal Middleground', albeit situated along its north-western border with 'LCT 10b – Fissured Fertile Middleground' and 'LCT 5 – Fertile Plain with Moorland Ridge'. LCT 13b and LCT10b are the two landscape character units contained to the south and west of the Nagles ridgeline, within the same visual catchment as the site and with characteristics that correspond directly to those of the site. They are both attributed 'Medium' landscape sensitivity and 'Medium' and 'Low' Landscape Value respectively. Contrastingly, the Blackwater Valley on the opposite (northern) side of the Nagles ridgeline to the proposed development is contained in LCT 5 and is assigned 'Very High Landscape Sensitivity' and 'Very High Landscape Value'.



These respective landscape sensitivity / value classes also inform the wind energy zoning in the CDP. That is, LCT 13b and LCT 10b are contained in an area that is 'Open to Consideration, whereas LCT 5 is an area where wind energy development is 'Normally Discouraged'. It should be noted that five of the proposed turbines from the southern cluster are, somewhat anomalously, contained within an area described as 'Urban Area' in the Cork Wind Energy Strategy. This zoning corresponds with the Bottlehill landfill site and it is considered that the 'Urban' Zoning can be disregarded in the context of this assessment.

Overall, it is considered that the Central Study Area is a robust and productive rural area without a high degree of distinction or uniqueness except on the far side of the Nagles Mountains ridgeline where the Blackwater Valley occurs in a somewhat discrete landscape setting to the proposed site. There is some evidence of scenic value in the Central Study Area, but this is not related to naturalistic or dramatic landscape features. Instead it relates to broad elevated views across the farmed and forested countryside. Consequently, the proposed development site and its immediate environs is deemed to be of a **Medium-low** landscape sensitivity, albeit with those northern slopes of the Nagle range (southern side of the Blackwater Valley), that are contained within the Central Study Area, increasing to **High-medium**.

Wider Study Area (c. 5-30km)

The Wider Study Area can be perceptually divided into northern and southern halves. Whilst the Central Study Area is strongly transitional in character, the northern extent of the Wider Study Area, north of the Blackwater River, constitutes gently rolling terrain that generally inclines in a northerly direction towards the Ballyhoura Mountains on the northern periphery of the 20km Study Area.

The southern half of the Study Area generally comprises of low rolling terrain interspersed with distinctive low ridges and incised river valleys. This is a productive and settled rural hinterland landscape that eventually gives way to the urban context of Cork City, Ballincollig and Blarney in the outer extents of the Study Area. The corridors of both the M8 motorway and the N20 to the east and west of the proposed development respectively, are also notable urban land uses within the wider southern portions of the Study Area. The only notable area of 'High Value Landscape' in the southern half of the Study Area occurs on the northern periphery of Cork City and its environs and relates to landscape character area 'LCT 1 – City Harbour and Estuary', which is located in the outer southern extents of the Study Area. In terms of notable landscape features, Blarney Castle and Gardens are situated in the picturesque settlement of Blarney northwest of Cork City on the northern bank of the River Blarney. This is a popular tourist attraction for international visitors with important scenic and heritage landscape values.

A large proportion of the northern half of the Study Area has been designated as high value landscape which relates to the landscape character area 'LCT 5 – Fertile Plain with Moorland Ridge' within the wider Blackwater Valley. The most notable and sensitive landscape features within this area include the River Blackwater and the numerous demesnes and stately houses that flank it and contribute to its tranquil heritage qualities. Further north are forest cloaked southern foothills of the Ballyhoura Mountains. Whilst it is not a designated landscape feature, Doneraile Wildlife Park and Demesne is situated within the northern extents of the Study Area and is popular amenity and heritage feature. Another notable heritage feature to the north of the site is that of the Labbacallee Wedge Tomb. This in combination with the considerable number of heritage features situated along the Blackwater Valley represent overt heritage landscape value within the northern portions of the Study Area.

In summary, there is something of a contrast in terms of sensitivity within the Study Area as much of the northern half of the Study Area is designated as a 'high value landscape' with 'very high sensitivity' (LCT 5). Contrastingly, the southern and central sections of the Study Area have designations ranging between 'low' and 'medium' sensitivity. It is considered that as a whole, the Wider Study Area has a similar, albeit extended scenario to that of the Central Study Area.



That is, the landscape character of the southern extents are most influenced by productive and utilitarian land uses associated with the rural hinterland of Cork City, whilst the northern extents have a more classical pastoral character influenced by heritage features and the wooded slopes of the Blackwater Valley and Ballyhoura foothills. Thus, the landscape sensitivity of the southern Study Area is deemed to be **Medium-low** and the northern Study Area is deemed to be generally **Medium** with the lower and more enclosed reaches of the Blackwater Valley increasing to **High-medium**.

15.7.2 Magnitude of Landscape Impacts

The physical landscape as well as the character of the proposed development and its immediate surrounds is affected by the proposed 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. By contrast, for the wider landscape of the Study Area, landscape impacts relate to the influence of the proposed turbines on landscape character. The aspects of the proposed project that are likely to have an impact on the physical landscape and landscape character are identified 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 development will have a modest physical impact on the already modified landscape within this broad development site as none of the proposed development features have a large or concentrated ‘footprint’ and land/vegetation disturbance will be dispersed across the site. The topography and land cover of the site will remain largely unaltered with construction being limited to tracks, areas of hard standing for the turbines, the 110 kV substation compounds, grid connection cable trenching and temporary site construction compounds 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 minimise the length of necessary roadway. There will be approximately 15km of new tracks constructed to facilitate the proposed development along with the upgrading of a further 10km of existing (agricultural / forestry) tracks to achieve a general width of 4.5-5m. The access roads will be constructed using aggregate material from three on-site borrow pits and once the construction stage is completed the access roads to these pits will be reinstated. 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 operational stage effects on landscape character from these familiar and dispersed surface features will be minor.

There will be two 110kV on-site substations constructed to collect the generated power from the proposed development before distributing it to the existing Barrymore substation. One of the on-site substations will be located within an area surrounded by forest at Knockacullata within the Bottle Hill part of the site. The other substation is also located substantially within a forested area at Lackendarragh North. The proposed 110 kV substations will require some excavation to form a flat compound area of **approximately 180m X 120m** as well as a dedicated access tracks. There will be some lighting provided within the substation compounds, but this is likely to be well contained, in terms of light spill, by surrounding forestry and will be minimal outside of normal working hours.



All internal site cabling will be underground and will follow site access tracks without the need to trench through open ground. Indeed, the land cover of the site will only be interrupted as necessary to build the structures of the proposed development and to provide access. Impacts from land disturbance and vegetation loss at the site are considered to be relatively modest in the context of this landscape setting of already modified farmland and forestry. However, there will be some forest felling required in the immediate vicinity of turbine bases (c. 90m radius) as well as clearance for hardstands and additional tracks. All forestry that is removed (62.8ha) will be subject to forest replanting provisions, which subject to licence will be provided on sites at Moneygorm in County Cork and Ballard in County Wicklow. An assessment of the landscape and visual effects in relation to replant lands is provided within the report entitled Environmental Assessment of Replant Lands at Moneygorm and Ballard (Appendix 3.3). This assessment concludes that the effects will be Negligible.

The grid connection cabling will run from the onsite substations across a combination of private land and public roads generating land disturbance and associated movement of machinery and stockpiling of materials. There will also be a series of cable route watercourse and road crossings using directional drilling techniques. All effects associated with the proposed cable routes will be temporary and transient.

There will be 9no. watercourse crossings within the site to facilitate additional access tracks and the turbine delivery route is likely to require some minor clearance of vegetation at tight road bends, especially along the local road network in close proximity to the site.

There will be some long term / permanent operational stage effects on the physical landscape in the form of turbine foundations and hardstands, access tracks and substations, but only the latter is 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 development site and it will be substantially reinstated to agricultural or forestry use upon decommissioning. Thus, the landscape effects of the proposed development are largely reversible.

15.1.1.1 *Operational Stage Effects on Landscape Character*

As mentioned above, there will be some construction stage effects on landscape character generated by the intensity of construction activities (workers and heavy machinery) as well as areas of bare-ground and stockpiling of materials as identified in the Construction and Environmental Management Plan (CEMP). Such effects will be temporary / short term in duration and, therefore, not considered to be significant. Instead, 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 relatively new feature within the immediate context of the site, albeit, other wind farms are visible from within parts of the Study Area in the far distance to the north (Ballyhoura) east (Knockmealdown) and west (Boggeragh). Thus, the proposed wind energy development represents the introduction of a familiar form of development, but within an area where it is not already a strongly characteristic feature of the rural upland landscape.

In terms of scale and function, the proposed development is well assimilated within the context of the Central Study Area. This is due to the very broad scale of the landform, landscape elements and land use patterns. These attributes prevent the height and extent of the proposed development causing the type of scale conflict that can occur in more intricate landscapes. The proposed development site and its immediate landscape context has a utilitarian character due to the presence of large commercial conifer plantations and low intensity agricultural grazing on higher ground with more intensive agriculture, settlements and major transport routes also contained within the lower ground of the Central Study Area.



Although the proposed development represents a stronger human presence and level of built development than currently exists on the proposed development the site, it will not detract significantly from its working rural character. Instead, it adds a further layer of productivity that will not materially alter or limit the existing ground-based land uses. Furthermore, whilst the turbines are large scale moving structures, they are more simple and elegant in design than most utilitarian structures found in rural landscapes, such as electrical transmission pylons and telecommunications masts. They are also structures that are more synonymous with rural upland areas and peatlands in an Irish context and, as such, they will not impart a sense of urbanisation or industrialisation to this rural hinterland landscape.

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, but it is a 'short-term' impact that will cease as soon as the proposed development is constructed and becomes operational (up to 24 months from the commencement of construction).

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, with the exception of the substations, is 30 years, after which time it is likely to be dismantled and the landscape reinstated to prevailing conditions. Within 2-3 years of decommissioning there would be little evidence that a wind farm ever existed on the site, albeit the proposed substations will remain in perpetuity as part of the national grid infrastructure.

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 development, but this can be reinstated upon completion of decommissioning. Areas of hard standing and access tracks that are of no further use will be reinstated and reseeded to blend with the prevailing land cover of the time.

In summary, there will be physical impacts on the land cover of the site as a result of the proposed development, but these will be relatively minor in the context of this productive rural landscape that comprises of sizable commercial forestry activities. This scale of development can be comfortably assimilated into this rolling 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** within the Central Study Area to the south of the Nagles ridgeline where the turbines are a more prominent and extensive feature within the same physical and visual catchment. Within the Central Study Area to the north of the Nagles ridgeline the magnitude of impact is considered to reduce to **Medium-low** as there are no physical landscape effects and the impact on landscape character is limited by the partial visual exposure of around three turbines from the adjacent landscape unit. Within the Wider Study Area, beyond 5km of 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 14.3) used in combination with professional judgement. Based on the assessment described in Sections 15.7.1 and 15.7.2 the significance of landscape impact is considered to be **Moderate-slight** throughout the Central Study Area, albeit based on a different balance of judgements for the landscape units to the north and south of the Nagle Mountains ridgeline. That is, a balance of High-medium sensitivity / Medium-low magnitude for the northern (Blackwater valley) side and Medium-low sensitivity / Medium magnitude on the southern side.



For the Wider Study Area (beyond 5km of the site), landscape impact significance is not considered to exceed **Slight** as the highest order combination of sensitivity and magnitude is High-medium / Low and this relates to the Blackwater River Valley where there is very limited intervisibility indicated by the ZTV map (Figure 14.10).

For the vast majority of the Wider Study Area, outside of the immediate confines of Blackwater River valley, the significance of residual landscape impact will be Slight-imperceptible or Imperceptible, particularly at greater separation distances.

15.8 Residual Visual Effects

Table 15.10 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 15-9: Summary of Residual Visual Effects at Viewshed Reference Points (VRP’s)

VRP No.	Distance to nearest Visible turbine (km)	No. of turbine nacelles visible	Visual intensity category (TVI)	Visual receptor Sensitivity (from table 15-8)	Visual Impact Magnitude	Significance of Visual effect
VRP1	11.2	0	<5	High medium	Negligible	Imperceptible
VRP2	-	0	<5	High	Negligible	Imperceptible
VRP3	8.0	3	13.2	Medium low	Low	Slight-imperceptible
VRP4	7.2	3	12.0	Medium	Low	Slight
VRP5	-	0	<5	Medium low	Negligible	Imperceptible
VRP6	1.4	21	490.5	High medium	Medium	Substantial moderate
VRP7	0.7	16	371.9	High medium	Medium	Substantial moderate
VRP8	1.0	6	206.4	Medium low	Medium	Moderate slight
VRP9	1.1	21	505.7	Medium	Medium	Moderate
VRP10	0.6	1	64.9	Medium	Low	Slight
VRP11	0.7	1	39.4	Medium low	Low	Slight-imperceptible
VRP12	1.0	6	217.7	Medium low	High medium	Moderate
VRP13	4.2	7	54.1	Medium low	Low negligible	Slight imperceptible
VRP14	2.4	16	208.3	High-medium	Medium low	Moderate



VRP No.	Distance to nearest Visible turbine (km)	No. of turbine nacelles visible	Visual intensity category (TVI)	Visual receptor Sensitivity (from table 15-8)	Visual Impact Magnitude	Significance of Visual effect
VRP15	2.4	22	324.4	Medium low	High medium	Moderate
VRP16	3.3	16	169.8	Medium low	Medium	Moderate slight
VRP17	2.3	6	81.3	Medium low	Medium	Moderate
VRP18	0.8	3	74.7	Medium	Medium low	Moderate slight
VRP19	0.8	21	477.0	Medium low	Medium	Moderate
VRP20	7.7	1	5.9	Medium	Low negligible	Slight imperceptible
VRP21	14.0	0	<5	Medium	Negligible	Imperceptible
VRP22	12.7	0	<5	High medium	Negligible	Imperceptible
VRP23	14.1	1	<5	Very High	Negligible	Imperceptible
VRP24	13.3	3	<5	Medium	Low-negligible	Slight-imperceptible
VRP25	19.7	3	<5	High medium	Low negligible	Slight imperceptible
VRP26	15.0	8	<5	Medium	Low	Slight
VRP27	15.6	5	<5	High medium	Low negligible	Slight-imperceptible
VRP28	10.9	14	<5	High	Low	Moderate slight
VRP29	9.8	2	3.0	Low	Negligible	Imperceptible
VRP30	10.8	22	<5	Medium	Low	Slight
VRP31	19.3	2	<5	Low	Negligible	Imperceptible
VRP32	14.1	18	<5	Medium low	Low negligible	Slight imperceptible
VRP33	16.4	17	<5	High medium	Low	Slight
VRP34	8.0	19	49.9	Medium	Medium low	Moderate slight
VRP35	3.0	1	9.7	Medium low	Low	Slight
VRP36	6.9	5	31.8	Medium low	Low	Slight
VRP37	4.9	1	4.3	Low	Negligible	Imperceptible
VRP38	3.5	18	125.3	Medium low	Medium	Moderate slight
VRP39	7.9	20	78.4	Medium	Low	Slight
VRP40	13	21	<5	Medium	Low	Slight
VRP41	6.3	6	30.6	Medium low	Low	Slight imperceptible
VRP42	2.5	2	23.5	High medium	Low	Slight



15.8.1 Impacts on Designated Views

In relation to the proposed Coom Green Energy Park Study Area, designated scenic routes tend to fall into three main categories; medium to long distance views from the Blackwater Valley to the north of the site; short to medium distance views from within the Central Study Area; and, medium to long distance views from ridges to the south of the site.

Relevant designated scenic routes in the northern Study Area within the highly sensitive Blackwater Valley and Ballyhoura landscape areas include CDP reference S3 and S4 (represented herein by VRP24), S9 (represented by VRP20), S10 (represented by VRP2), S13 (represented by VRP25), S14 (represented by VRP22). The significance of residual visual impact for these views, which takes account of their higher order sensitivity, ranges between ‘Slight-imperceptible’ at VRP20 and VRP24 and ‘Imperceptible’ at VRP2 and VRP22. This low-order level of impact relates to the fact that only glimpses of a small number of blade sets above the Nagles ridge is afforded in even the worst-case-scenario views from this viewpoint set and there is no visibility at all from VRP2, which is the closest of these scenic designations just to the west of Ballyhooly. This is a result of focused mitigation effort to try and eliminate / minimise visual exposure to the sensitive Blackwater Valley receptors. The effect is that even where there is a partial and distant view of several blade sets or blades above the forested skyline of the Nagles, there is a strong sense that the wind farm is contained within a separate and discrete landscape unit with little impact on the landscape of the Blackwater Valley and visual amenity of viewers – particularly those on designated scenic routes.

Relevant designated scenic routes in the southern Study Area include Cork County Development Plan reference S39 and S41, represented herein by VRP33, and VRP31 respectively. Both scenic routes are beyond 15km from the site and VRP31 is an illustrative view – illustrating the absence of scheme visibility from the scenic route. VRP33 is typical of several other non-designated views (see VRP32 and VRP34) from a series of low farmed ridges running across the southern extents of the Study Area. The significance of visual impact from VRP33 is deemed to be ‘Slight’ on balance of the fact that most of the proposed turbines will be visible in clear viewing conditions and there are some minor aesthetic issues such as instances of turbines overlapping and blades sets rotating against the skyline. However, such effects are strongly diluted by the viewing distance and limited visual presence of the proposed development within the broad vista afforded from here.

Of most relevance to this proposed development are the two designated scenic routes contained within the Central Study Area. These include Cork County Development Plan reference S11 (represented herein by VRP6 and VRP7) and S12 (represented by VRP18). The similarity between S11 and S12 is that they both afford elevated, vast west and southwest vistas across a similar landscape context of rolling farmland and forestry. Indeed, it is considered that their main visual amenity value relates to the extent of views rather than any sense of the naturalistic or the presence of distinctive / unique landscape features. In terms of visual impact from the proposed development, there is also some similarity between these views in that the nearest turbine cluster in each instance is in the opposite direction to the main panorama subject of each designation. In respect of scenic route S12, only a small number of turbine blades from the Bottlehill cluster will be visible above the forested skyline immediately uphill to the east. Although these will have a modest impact (Moderate-slight) in respect of a small number of local receptors, they have almost no impact on the scenic amenity from the scenic route designation, which relates to vast downhill views to the west. It is also important to reiterate that the relevant sections of scenic routes S11 and S12 do not pass through a ‘High Value Landscape’ and according to section 13.7.2 of the Cork County Development Plan they are afforded a lesser degree of protection than those scenic routes that do.

In respect of scenic route S11, the nearest Glannasack cluster of turbines are fully screened by terrain and forestry from VRP7 and from VRP6 the same partially revealed cluster is at most peripheral within the principle vista to the southeast. Notwithstanding the limited visual effects of the Glannasack cluster from VRP6 and VRP7, the Bottlehill cluster will be fully revealed within the lower middle ground context of cross-valley views.



Whilst these turbines are not spatially overbearing, being downhill at distances of over 3km, they will be a distinctive and prominent built development in an upland rural area currently characterised by low levels of such development. However, although they intrude on the view they do not represent an obstruction (blocking) of the view and are peripheral to the main long distance aspect down-valley to the southeast. Nor do the turbines appear incongruous in this productive upland / rural landscape, typical of many other wind farm development sites throughout the country. In this context, (particularly from VRP6), the Glannasack cluster and the Bottlehill cluster also serve to frame the principle viewing direction and complement the sense of space and distance, which are central to the scenic value of the S11 designated scenic view, rather than foreshortening or enclosing it. In weighing the visual sensitivity, and the nature and scale of effects against the ameliorating factors associated with views from this scenic designation, it is concluded that the significance of impact is ‘Substantial-moderate’.

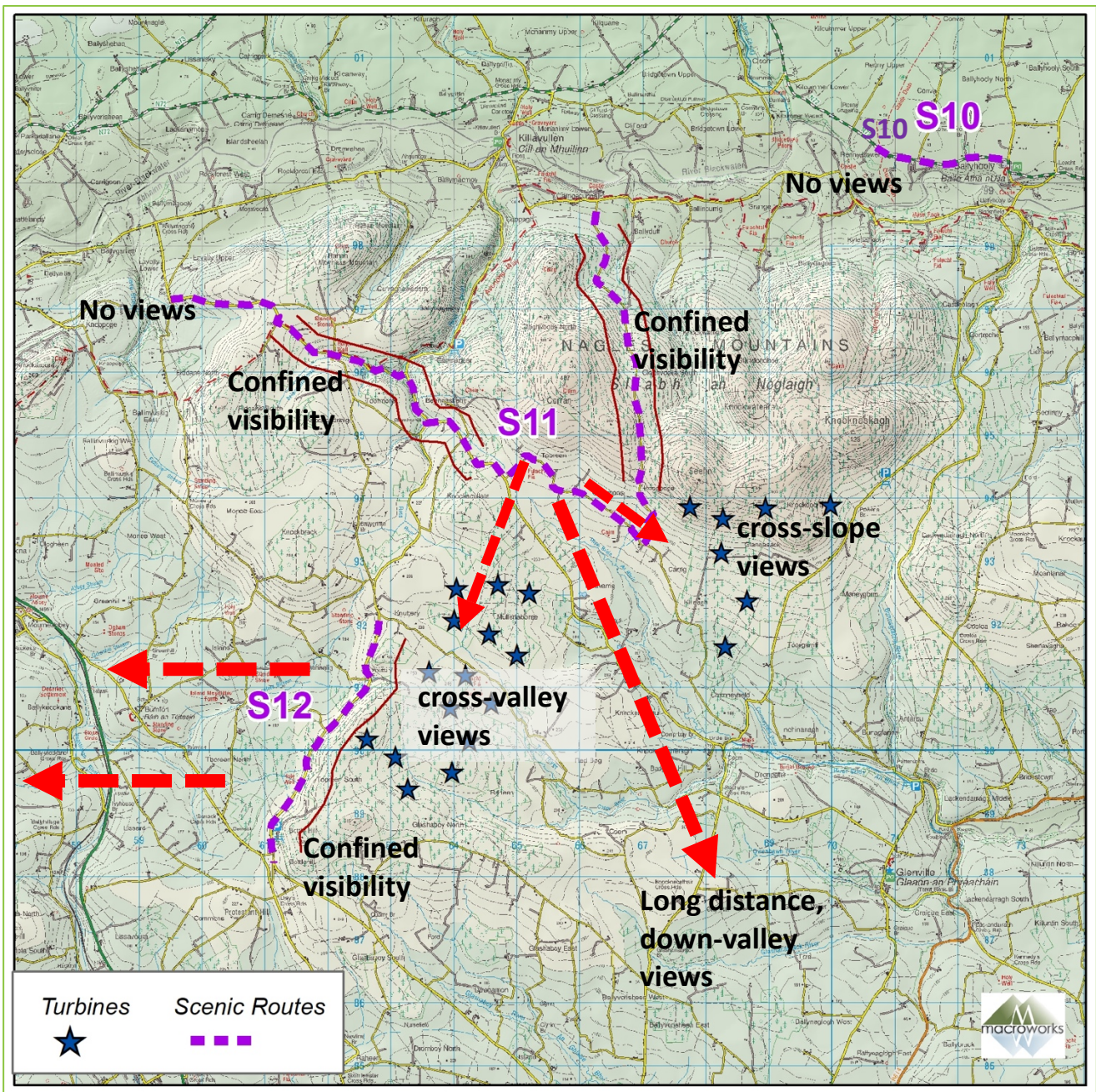


Figure 15.19: Graphic illustration the nature and context of visibility for designated scenic views within the Central Study Area



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.

Ten viewpoints were selected principally to represent views from within the local community (<5km from the site) and these include VRPs; 8, 9, 10, 11, 12, 15, 16, 17, 19 and 35. It should be noted that a further seven viewpoints selected to represent other receptor types (i.e. heritage features, designated views) are also contained within 5km and relevant to the local receptor set, but will be summarised under separate headings.

The sensitivity of local community views tends not to be a strongly differentiating factor in this instance as they are all considered to be in the range of 'Medium' to 'Medium-low'. This is on the basis that the VRP's are contained within a productive rural landscape and most views, with the exception of the designated scenic routes, tend not to be vast or particularly unique. The main aspect of local community receptor sensitivity is that of the susceptibility of local residents to changes in the day-to-day views, particularly from dwellings. This is accounted for in the overall assessment of sensitivity at these receptors.

Of the ten specific local community views the highest significance of impact is deemed to be 'Moderate' at four locations (VRP9, VRP12, VRP15 and VRP17) whilst the remainder range between 'Moderate-slight' and 'Slight Imperceptible' significance.

Of the Moderate significance judgements, the effects at VRP9 and VRP12 relate to relatively close, cross-slope views of the Glannasack turbines rising above the forested slopes of the Nagles. There is no view of the Bottlehill turbines from VRP12, however, in the case of VRP9 there is a clear, albeit reasonably distant view of the Bottlehill turbines cluster downhill in the opposite direction. VRP15 is from a locally elevated section of road to the southeast of the site and is one of the only viewpoints to be afforded relatively clear views of the turbines from both the Bottlehill and Glannasack clusters across a relatively broad viewing arc throughout the north-western quarter. VRP17 is further south of the site and is afforded views of most of the Bottlehill turbines rising above the forested hilltop in a tight cluster as well as a couple of the further distant Glannasack turbines. In all cases the significance of visual impact relates to the conspicuous introduction of tall structures with moving components (the turbines) into a visual setting that is currently characterised by more typical and lower intensity rural land uses. Nonetheless, there are no instances where the proposed turbines appear spatially overbearing, due partly to the minimum setback distances of more than 750m and there are very few locations with clear visibility of the majority of turbines. The more typical scenario is a view of less than ten turbines from one or the other cluster (as indicated in the route screening analysis). Furthermore, the proposed turbines do not appear incongruous in this productive rural / upland landscape setting, which is typical of many existing wind farm sites throughout the country and more specifically County Cork.

For the reasons outlined above and based on the individual assessments undertaken across a robust set of Local Community representative viewpoints (see appendix 15.1), it is not considered that significant visual impacts will occur in respect of Local Community views.

15.8.3 Impacts on Centres of Population

Nine viewpoints were selected specifically to represent views from centres of population throughout the Study Area (VRPs 3, 5, 21, 13, 30, 34, 36, 38 and 41), whereas VRP22 from a scenic route adjacent to Mallow Race Course, is also representative of worst-case views from the settlement of Mallow.



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. The main aspect of visual sensitivity often relates to a distinctive backdrop to the settlement in the form of hills or mountains, which is the case for several of the settlements, particularly relating to views across the Blackwater Valley towards the Nagles range (VRP3, VRP5, VRP21).

The significance of visual impacts at centres of population ranges between Moderate-slight and Imperceptible. The two viewpoints where a Moderate-slight impact is deemed to occur include VRP34 at Whitechurch and VRP38 at Burnfort. VRP34 is a broad elevated vista from the edge of the settlement of Whitechurch that is afforded to only a fraction of the residents, many of whom enjoy equally broad views in the opposite direction (south). Nonetheless, all of the proposed turbines are visible from VRP34, albeit at a distance of nearly 10km where the wind farm will be a noticeable background feature, but not one that unduly impacts on the visual amenity of residents.

VRP38 is from the cemetery at Burnfort, which affords relatively open views towards Bottlehill and consequently, the full and partial blade sets of the proposed turbines from the Bottlehill cluster at a distance of around 4km. Although the turbines will be a new and distinctive element of the eastern skyline backdrop of the settlement, it is not considered that they are incompatible with the surrounding land use matrix or will unduly impact on the rural visual amenity enjoyed by residents.

For the reasons outlined above and based on the individual assessments undertaken across the Centre of Population receptor set, it is not considered that significant visual impacts will occur in respect of the settlements contained within the Study Area.

15.8.4 Impacts on major routes

Four viewpoints were selected specifically on the basis of being major route receptors (VRP4, 26, 29, and 37), however, VRP 21 represents views from the M8 as well as the settlement of Fermoy and VRP22 and VRP31, which are on major routes were principally selected for their designated scenic route status. The small proportional representation of major routes in this study reflects the fact that mainly local roads occur within the Central Study Area and the nearest major route, the N20, has almost no potential visibility of the proposed development. There is also very limited visibility from the M8 motorway and the N72 along the Blackwater Valley and the most relevant sections of the latter are those designated as scenic routes (addressed at section 14.8.1).

The significance of impact at major route receptors only ranges between ‘Slight’ (VRP4 and VRP26) and Imperceptible (VRP29 and VRP37). Both VRP4 and VRP26 are contained within the Blackwater Valley where distant and partially screened views of only a small number of turbines will rise above the Nagles ridgeline to the south. Consequently, 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

Eight viewpoints were selected to represent Heritage and Amenity Features throughout the Study Area and these receptors are varied in nature. The first and last viewpoints, VRP1 and VRP42 both represent megalithic wedge tombs. VRP1 is from Labbacallee Wedge Tomb just off a local road north of Fermoy and appears to have some limited visitation, whilst VRP42 from the Megalithic tomb at Island, which is much nearer the site, but is located within a farmers field and does not appear to be regularly frequented by the public. The significance of visual impacts at these locations are considered to be ‘Imperceptible’ and ‘Slight’ respectively.



Another ancient site is the 3000 year old ‘Carn Thiernagh’, which is contained within Coillte’s Corrin Wood recreation area on a hilltop to the south of Fermoy, which is represented by VRP28. This location, which straddles the uplands on the southern side of the Blackwater Valley, affords middle distance views of most of the proposed turbines in a relatively tight grouping along the southern slopes of the Nagles. The significance of visual impact is deemed to be ‘Moderate-slight’ from this location even taking account of the High sensitivity judgement.

VRP14 is from a graveyard and Holywell at Doonpeter in relatively close proximity to the southeast of the site where visitors will have a potential view of both clusters of turbines, albeit with the Glannasack cluster more prominent on the opposing slopes of the Nagles to the north. This location is contained within a privately owned farm, but public access is facilitated between fields. The significance of visual impact at this location is deemed to be ‘Moderate’ on balance of the fact that the turbines will be an overt addition to the northerly rural vista, but they are seen in a clear and unambiguous manner in a visual setting with which they are a compatible land use.

VRP23 is from the elevated ramparts of Blarney Castle in the outer southern extents of the 20km radius Study Area. This is an important heritage and tourism feature that attracts a large number of domestic and international visitors every year and a key aspect of the visitor experience is ‘kissing the Blarney Stone’ on the ramparts of the castle and taking in the surrounding views of Blarney estate and village and the Martin River Valley. Although this receptor is deemed to be of Very High sensitivity, the significance of visual impact is considered to be ‘Imperceptible’ on the basis that the distant view of two or three turbine blades amongst visually complex intervening ridgetop vegetation and buildings that occur around 13km closer than the turbines. Thus, the turbines are not likely to be discernible and will not materially impact on the visual amenity of Blarney Castle visitors.

VRP27 is from Doneraile Wildlife park in the outer north-western extents of the Study Area, where even the most elevated and open view towards the distant Nagles range reveals only the partial blade sets of a couple of turbines. It is not considered to have more than a ‘Slight-imperceptible’ significance of visual impact for park users, if they notice the turbines in the distant background at all.

VRP39 and VRP40 both represent views from road sections of the Avondhu Way walking trail to the west of the site and the nature of the views is also very similar. Although the majority of turbines will be visible above the eastern skyline in mid to long range views, the broad scenes consist of a productive upland / rural landscape in which they are not an incongruous or dominating feature and the significance of impact is deemed to be ‘Slight’ in both instances.

15.8.6 Impacts from Ancillary Structures

For the purposes of the visual impact assessment ancillary structures, including the two permanent met masts and two 110kV substations / battery storage units, are included within the wireframe images and where potentially visible, within photomontages. The presence of these structures within particular views is noted throughout the visual impacts assessment. However, by comparison and in the immediate visual context of the proposed turbines they tend to visually recede and do not materially contribute to the overall visual impact. In the case of the substations / battery storage structures, the majority of bulky development is contained within 3-5m of the ground and is usually substantially screened by intervening landform and vegetation revealing only the narrow lighting masts amongst intervening tree tops. The met masts are tall narrow structures of fine lattice steel construction with very little bulk and therefore visual presence. Indeed, beyond approximately 3km they can become difficult to identify. Furthermore, all of these structures are readily perceived as ancillary aspects of the wind farm development fitting into the overall context of the development rather than being perceived as discrete and unrelated forms of development.



15.8.7 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 sets are generally in the mid to low range. Only in respect of ‘Designated Scenic Routes’ and the ‘Local Community’ receptor set are impacts considered to be slightly higher, but not significant.

The most pertinent scenic route designations in this instance are those identified as S11 and S12 in the Cork County Development Plan because they occur in close proximity to the proposed development. The S12 scenic route is not considered to be significantly impacted by the proposed development as the main aspect of visual amenity, being elevated long distance views over rolling countryside, occurs in the opposite direction (west) to the proposed development, which lies immediately uphill to the east where it is substantially screened by forestry. Similarly, the Glannasack turbine cluster is uphill and peripheral to the main viewing direction from scenic route S11, which is down-valley to the southeast. Whilst the Bottlehill cluster of turbines is a prominent feature of the near-middle distance cross-valley views from this scenic route, rather than foreshortening or enclosing the view, they serve to frame the main aspect and complement the sense of space and distance of the overall vista - a vista that is considered to be valued more for its vastness rather than any sense of the naturalistic or the presence of striking or noteworthy landscape features.

It should also be noted that, due to design mitigation measures to reduce the visual exposure of the development to the sensitive Blackwater Valley to the north of the site, visual impacts in respect of scenic designations within the Blackwater valley are deemed to be very minor or non-existent.

15.9 Do Nothing Scenario

In a Do-Nothing scenario the land within these predominantly forested sites is likely to continue to be managed through rotations of commercial conifer planting and harvesting. The adjacent Bottle Hill Landfill site is likely to begin operations and will be subject of an increased level of day-to-day activity. There will be no landscape and visual effects arising from wind energy development.

15.10 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 15.11 below provides Macro Works' criteria for assessing the magnitude of cumulative impacts, which are based on the SNH Guidelines (2012).

Table 15-10: Magnitude of Cumulative Impacts

Magnitude of Impact	Description
Very High	<ul style="list-style-type: none"> The proposed development 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 or sizeable developments.
High	<ul style="list-style-type: none"> The proposed development 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 or sizeable developments.
Medium	<ul style="list-style-type: none"> The proposed development 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 or sizeable developments.



Magnitude of Impact	Description
<p>Low</p>	<ul style="list-style-type: none"> • The proposed development 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 development accord with other schemes within the surrounding landscape and adverse visual effects are not likely to occur in relation to these.
<p>Negligible</p>	<ul style="list-style-type: none"> • The proposed development 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 or sizeable developments.

15.10.1 Cumulative Impact Assessment

There is one other existing wind farm within the 20km radius Study Area and this is approximately 15km to the west (Esk Wind farm – 12 turbines). There are also some substantial scale existing wind farms outside of the Study Area to the west within the Boggeragh range (Boggeragh Wind Farm c. 23km west), to the north within the Ballyhoura range (Castlepook Wind farm 22km north) and the east in the Knockmealdown range (Barranafaddock Wind farm 23km east).

As can be seen in Figure 15.20, there is some potential for the proposed turbines to be seen in ‘succession’ (same location but within different viewing arcs) with the Esk turbines from some elevated and open receptors within the western, northern and southern extents of the Study Area. However, in such instances, one or both developments will be distant background features contained in opposite viewing directions. From those north-eastern and south-western portions of the study area indicating slightly more aligned intervisibility, it is important to note that the Esk turbines will be well over 20km away. There will be some very limited opportunity to view the proposed turbines on the same alignment as the Esk Wind farm from the likes of the elevated VP6 and VP7 in the Central Study Area looking westwards. However, in such instances, the Esk turbines will be distant background features over 15km away. Likewise, there may be opportunities to view the permitted Esk turbines on the same alignment as the proposed turbines from elevated vantage points within the Boggeragh range, albeit with the reverse scenario of the Coom turbines being visible 15km or more beyond. In neither instance is it considered that an aligned view will lead to any sense of visual clutter or ambiguity due to the separation distances involved.

There is one permitted wind turbine located at Moneygorm, approximately 1.2km south east of T23. This turbine was permitted in 2013 (CCC ref. 116168, ABP ref. PL 04.241037) but remains unconstructed and that is very likely to remain the case for various commercial reasons. The turbine consent allows for a hub height max 76m, rotor diameter 56m and blade tip height max 100m. Despite its relatively close physical proximity to the proposed Glannasack cluster of turbines, it is somewhat discrete from the proposed development on lower ground and around the south-eastern side of a spur ridge that acts as a visual divide. In the context of the proposed development this modest scale single turbine will not generate significant cumulative impacts if it is, against all likelihood, constructed.

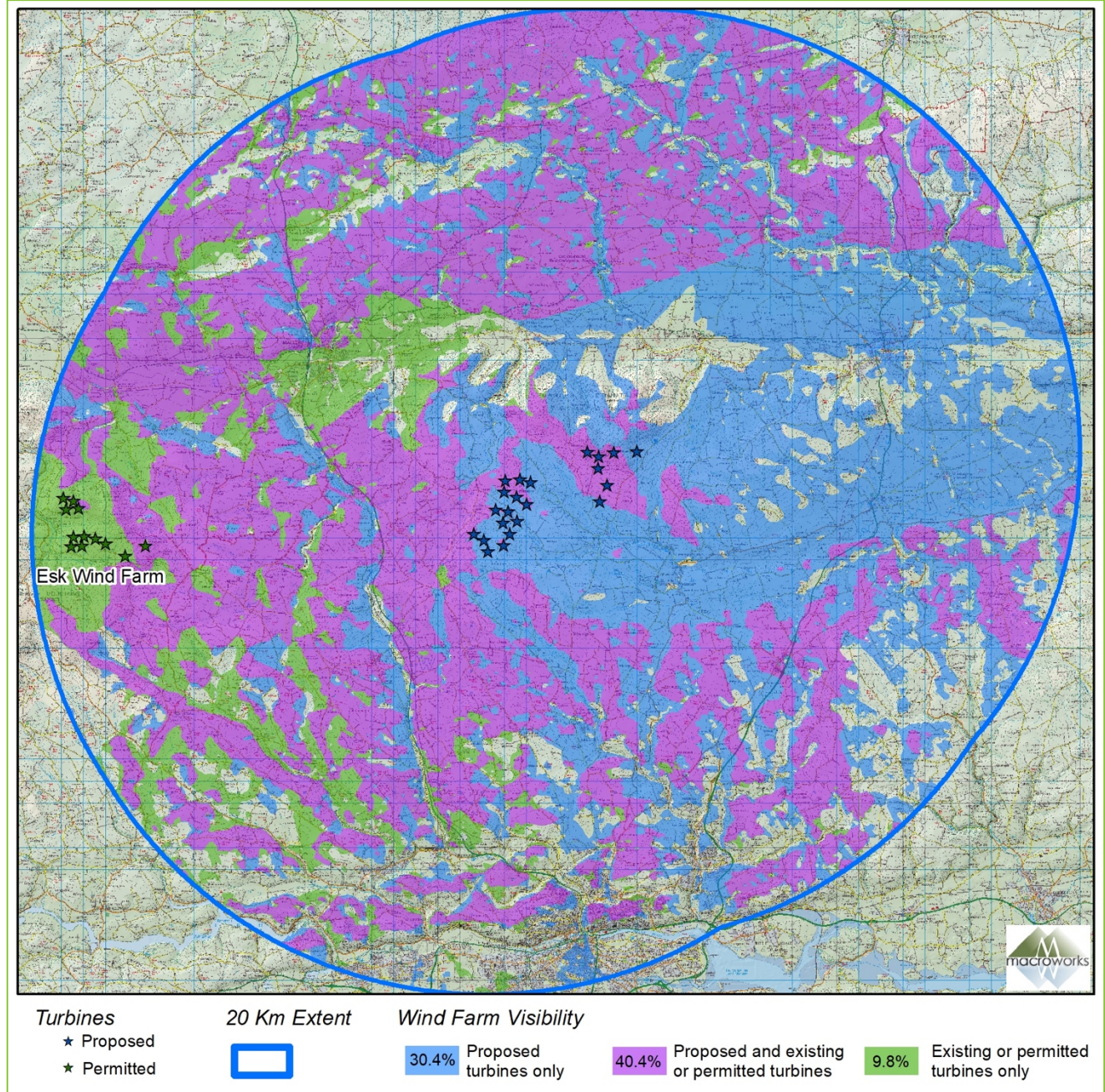


Figure 15.20: Cumulative ZTV map illustrating theoretical intervisibility between the proposed turbines and the permitted Esk Wind Farm in a bare-ground scenario (see Appendix 15.1 for larger scale map)

In a similar, but even broader context, there may also be some limited potential to view the proposed development in conjunction with the highlighted wind farms that occur beyond the study area to the north, east and west. Again, the most likely intervisibility scenario would occur from elevated ground between the proposed and cumulative developments where they lie in opposite viewing directions (succession views) or where one of the developments will be a very distant background feature of the other within a ‘combined view’.

In terms of ‘sequential’ cumulative views of the proposed development and other wind farms along different sections of the same route in a journey scenario, only N72 national secondary route along the Blackwater Valley offers any tangible opportunity.



This is on the basis that there is some, albeit very limited, potential to see distant turbines from the likes of Barranafaddock wind farm in the Knockmealdown range and the Castlepook Wind Farm in the Ballyhoura range to the north of the Blackwater Valley. When coupled with the very restricted potential to see the proposed Coom wind turbines to the south of the valley from the same road, any sequential cumulative effects are likely to be infrequent and restricted to brief glimpses.

In respect of cumulative impacts with other forms of development, the only other land use that has potential for in-combination effects is the future operation of the currently unutilised Bottlehill landfill, which will be surrounded by the proposed turbines from the Bottlehill cluster. There is very little potential for cumulative visual effects to occur, because the landfill is a discrete ground based land use that is fully enclosed by conifer plantation. However, in the context of physical landscape impacts and impacts on the landscape fabric of the Central Study Area, the proposed development in conjunction with the landfill is likely to contribute to a noticeable diversification and intensification of land use within an area characterised by more traditional forms of rural land use and little built development. Due to the physical and visual containment of the Bottlehill landfill site, such cumulative effects are not likely to be overt in terms of the perceived landscape character and are therefore not considered to be significant.

Overall, it is considered that the proposed Coom Energy Park will have very limited landscape and visual cumulative impacts in conjunction with other wind energy developments and major infrastructure developments. In accordance with the criteria provided in Table 15.11, cumulative impact is considered to be in the order of **Low-negligible**.



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