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PLANNING

ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR) FOR THE PROPOSED COUNNAGAPPUL WIND FARM, CO. WATERFORD

VOLUME 2 - MAIN EIAR

CHAPTER 16: LANDSCAPE AND VISUAL IMPACT

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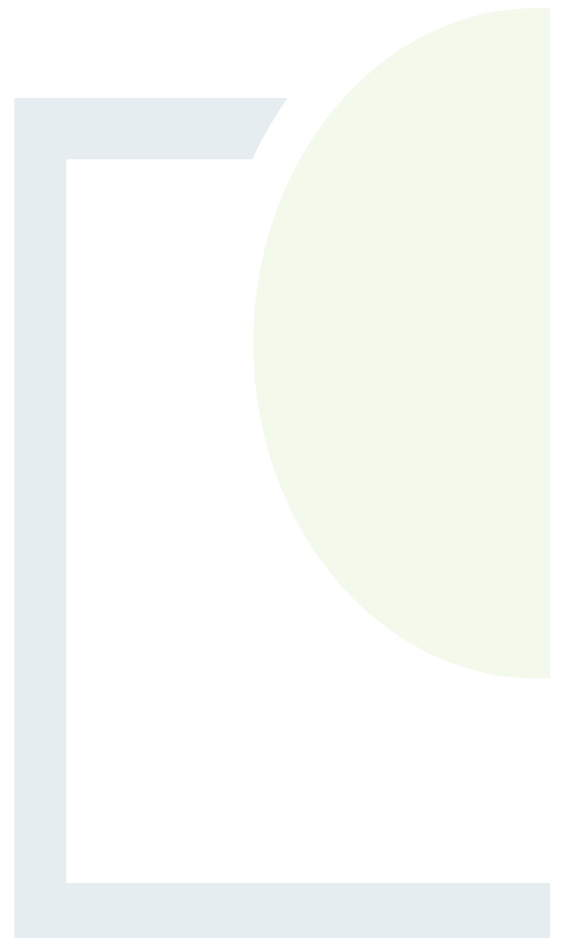


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16. LANDSCAPE AND VISUAL IMPACT ASSESSMENT

16.1 Introduction

This chapter describes the landscape context of the proposed Coumnaappul Wind Farm and assesses the likely landscape and visual impacts of the scheme on the receiving environment. Although closely linked, landscape and visual impacts are assessed separately.

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

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

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

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

- Environmental Protection Agency (EPA) publication 'Guidelines on the Information to be contained in Environmental Impact Statements (2022).
- Landscape Institute and the Institute of Environmental Management and Assessment publication entitled Guidelines for Landscape and Visual Impact Assessment – Third Addition (2013) and draft Notes and Clarifications on aspects of the 3rd Edition Guidelines on Landscape and Visual Impact Assessment (GLVIA3).
- Scottish Natural Heritage (SNH) Guidance Note: Cumulative Effect of Wind Farms (2012).
- Department of the Environment, Heritage and Local Government Wind Energy Development Guidelines (2006).
- Scottish Natural Heritage (SNH) Visual representation of wind farms: Best Practice Guidelines (version 2.2 - 2017).



16.1.1 Statement of Authority

This Landscape and Visual Assessment (LVIA) report was prepared by Richard Barker (MLA MILI) and Cian Doughan (BSLA MILI) of Macro Works Ltd. Macro Works Ltd, is a specialist LVIA company with over 20 years of experience in the appraisal of effects from a variety of energy, infrastructure and commercial developments. Relevant experience includes LVIA work on over 140 on-shore wind farm proposals throughout Ireland, including six Strategic Infrastructure Development (SID) wind farms. Macro Works and its senior staff members are affiliated with the Irish landscape Institute.

16.1.2 Description of the Proposed Development

A full description of the Project assessed in this EIAR is provided in Chapter 2 Development Description and comprises the following elements:

- The wind farm site (referred to in this EIAR as the 'Site');
- The grid connection (referred to in this EIAR as the 'GCR');
- The turbine delivery route (referred to in this EIAR as the 'TDR').

The general layouts of the proposed wind farm site (Site), grid connection (GCR) and turbine delivery route (TDR) are presented in Figures 2.2 to 3.4 in Volume IV.

The plans and particulars submitted with this application for consent are precise and provide specific dimensions for the turbine structures. This assessment considers wind turbine specifications with a hub height of 104 m and a rotor diameter of 162 m with a tip height of 185 m.

This Chapter is supported by Figures 16.1 to 16.4 provided in Volume IV, and should be read in conjunction with the following:

- Appendix 16.1 Volume III – Assessment of Viewshed Reference Points
- Appendix 16.2 Volume III – Photomontages
- Appendix 16.3 Volume III – Comparative Views
- Planning Drawings accompanying the planning application

16.1.3 Definition of the Study Area

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

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



In the case of this Project, the blade tips are 185m high and, thus, the minimum ZTV radius recommended is 20 km from the outermost turbines of the scheme. Notwithstanding the full 20km extent of the LVIA study area, there will be a particular focus on receptors and effects within the central study area where there is higher potential for significant impacts to occur. When referenced within this assessment, the 'central study area' is the landscape within 5km of the site. Notwithstanding the 20km extent of the study area for the proposed wind farm, the study area will be extended to include the TDR and GCR where they fall outside of the typical 20km study extents identified above.

16.2 Methodology

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

16.2.1 Desktop Survey

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

16.2.2 Fieldwork

- Fieldwork investigations and capturing of baseline photography took place over the Spring and Summer months during May 2020, April 2021 and August 2022
- Recording of a description of the landscape elements and characteristics within the Study Area.
- Selection of a refined set of VRP's for assessment. This includes the capture of reference images and grid reference coordinates for each VRP location for the visualisation specialist to prepare photomontages.

16.2.3 Appraisal

- Consideration of the receiving landscape with regard to overall landscape character as well as the salient features of the study area including landform, drainage, vegetation, land use and landscape designations.
- Consideration of the visual environment including receptor locations such as centres of population and houses; transport routes; public amenities, facilities and heritage features and; designated and recognised views of scenic value.
- Consideration of design guidance and planning policies.
- Consideration of potentially significant effects and the mitigation measures that could be employed to reduce such effects.



- Assessment of the significance of residual landscape impacts.
- Assessment of the significance of residual visual impacts aided by photomontages prepared at all of the selected VRP locations.
- Assessment of cumulative landscape and visual effects in combination with other surrounding developments that are either existing, permitted or proposed.

16.2.4 Assessment Criteria for Landscape Impacts

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

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

The sensitivity of the landscape to change is the degree to which a particular landscape receptor (Landscape Character Area (LCA) or feature) can accommodate changes or new features without unacceptable detrimental effects to its essential characteristics. Landscape Value and Sensitivity is classified using the following criteria outlined in Table 16.1 below;

Table 16-1: Landscape Value and Sensitivity

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



Sensitivity	Description
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 16.2 refers.

Table 16-2: Magnitude of Landscape Impacts

Magnitude of Impact	Description
Very High	Change that would be large in extent and scale with the loss of critically important landscape elements and features, that may also involve the introduction of new uncharacteristic elements or features that contribute to an overall change of the landscape in terms of character, value and quality.
High	Change that would be more limited in extent and scale with the loss of important landscape elements and features, that may also involve the introduction of new uncharacteristic elements or features that contribute to an overall change of the landscape in terms of character, value and quality.
Medium	Changes that are modest in extent and scale involving the loss of landscape characteristics or elements that may also involve the introduction of new uncharacteristic elements or features that would lead to changes in landscape character, and quality.
Low	Changes affecting small areas of landscape character and quality, together with the loss of some less characteristic landscape elements or the addition of new features or elements.
Negligible	Changes affecting small or very restricted areas of landscape character. This may include the limited loss of some elements or the addition of some new features or elements that are characteristic of the existing landscape or are hardly perceivable.

The significance of a landscape impact is based on a balance between the sensitivity of the landscape receptor and the magnitude of the impact. The significance of landscape impacts is arrived at using the following matrix set out in Table 16.3



Table 16-3: Landscape Impact Significance Matrix

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

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

16.2.5 Assessment Criteria for Visual Impacts

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

16.2.5.1 Visual Sensitivity

Unlike landscape sensitivity, visual sensitivity has an anthropocentric basis. Visual sensitivity is a two-sided analysis of receptor susceptibility (people or groups of people) versus the value of the view on offer at a particular location.

To assess the susceptibility of viewers and the amenity value of views, the assessors use a range of criteria and provide a four point weighting scale to indicate how strongly the viewer/view is associated with each of the criterion. Susceptibility criteria is extracted directly from the IEMA Guidelines for Landscape and Visual Assessment (2013), whilst the value criteria relate to various aspects of a view that might typically be related to high amenity including, but not limited to, scenic designations. These are set out below:

- **Susceptibility of receptor group to changes in view.** This is one of the most important criteria to consider in determining overall visual sensitivity because it is the single category dealing with viewer susceptibility. In accordance with the IEMA Guidelines for Landscape and Visual Assessment (3rd edition 2013) visual receptors most susceptible to changes in views and visual amenity are;
 - Residents at home;
 - People, whether residents or visitors, who are engaged in outdoor recreation, including use of public rights of way, whose attention or interest is likely to be focused on the landscape and on particular views;
 - Visitors to heritage assets, or to other attractions, where views of the surroundings are an important contributor to the experience;



- Communities where views contribute to the landscape setting enjoyed by residents in the area; and
- Travellers on road rail or other transport routes where such travel involves recognised scenic routes and awareness of views is likely to be heightened.

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

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



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

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

16.2.5.2 Visual Impact Magnitude

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

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

For wind energy developments, a strong visual presence is not necessarily synonymous with adverse impact. Instead, the 2012 Fáilte Ireland survey entitled 'Visitor Attitudes On The Environment – Wind Farms' found that *"Compared with other types of development in the Irish landscape, wind farms elicited a positive response when compared to telecommunication masts and steel electricity pylons"....* and that *"most (tourists) felt that their presence did not detract from the quality of their sightseeing, with the largest proportion (45%) saying that the presence of the wind farm had a positive impact on their enjoyment of sightseeing..."*. The purpose here is not to suggest that turbines are either inherently liked or disliked, but rather to highlight that the assessment of visual impact magnitude for wind turbines is more complex than just the degree to which turbines occupy a view. Furthermore, a clear and comprehensive view of a wind farm might be preferable in many instances to a partial, cluttered view of turbine components that are not so noticeable within a view. On the basis of these reasons, the visual amenity aspect of assessing impact magnitude is qualitative and considers such factors as the spatial arrangement of turbines both within the scheme and in relation to surrounding terrain and land cover. It also examines whether the project contributes positively to the existing qualities of the vista or results in distracting visual effects and disharmony.

It should be noted that as a result of this two-sided analysis, a high order visual presence can be moderated by a low level of effect on visual amenity and vice versa. Given that wind turbines do not represent significant bulk, visual impacts result almost entirely from visual 'intrusion' rather than visual 'obstruction' (the blocking of a view). The magnitude of visual impacts is classified in the following table:



Table 16-4: Magnitude of Visual Impact

Criteria	Description
Very High	The proposal intrudes into a large proportion or critical part of the available vista and is without question the most noticeable element. A high degree of visual clutter or disharmony is also generated, strongly reducing the visual amenity of the scene
High	The proposal intrudes into a significant proportion or important part of the available vista and is one of the most noticeable elements. A considerable degree of visual clutter or disharmony is also likely to be generated, appreciably reducing the visual amenity of the scene
Medium	The proposal represents a moderate intrusion into the available vista, is a readily noticeable element and/or it may generate a degree of visual clutter or disharmony, thereby reducing the visual amenity of the scene. Alternatively, it may represent a balance of higher and lower order estimates in relation to visual presence and visual amenity
Low	The proposal intrudes to a minor extent into the available vista and may not be noticed by a casual observer and/or the proposal would not have a marked effect on the visual amenity of the scene
Negligible	The proposal would be barely discernible within the available vista and/or it would not detract from, and may even enhance, the visual amenity of the scene

16.2.6 Visual Impact Significance

As stated above, the significance of visual impacts is a function of visual receptor sensitivity and visual impact magnitude. This relationship is expressed in the same significance matrix included for Landscape Impact Significance at Table 16.3 above.

16.2.7 Assessment Criteria for Cumulative Effects

The NatureScot 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 NatureSACOT 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 16.5 below provides the criteria used for assessing the magnitude of cumulative impacts, which are based on the NatureScot Guidelines (2012).

Table 16-5: Magnitude of Cumulative Impacts

Magnitude of Impact	Description
Very High	<ul style="list-style-type: none"> The proposed wind farm will strongly contribute to wind energy development being the defining element of the surrounding landscape. It will strongly contribute to a sense of wind farm proliferation and being surrounded by wind energy development. Strongly adverse visual effects will be generated by the proposed turbines in relation to other turbines.
High	<ul style="list-style-type: none"> The proposed wind farm will contribute significantly to wind energy development being a defining element of the surrounding landscape. It will significantly contribute to a sense of wind farm proliferation and being surrounded by wind energy development. Significant adverse visual effects will be generated by the proposed turbines in relation to other turbines.
Medium	<ul style="list-style-type: none"> The proposed wind farm will contribute to wind energy development being a characteristic element of the surrounding landscape. It will contribute to a sense of wind farm accumulation and dissemination within the surrounding landscape. Adverse visual effects might be generated by the proposed turbines in relation to other turbines.



Magnitude of Impact	Description
Low	<ul style="list-style-type: none"> • The proposed wind farm will be one of only a few wind farms in the surrounding area and will be viewed in isolation from most receptors. • It might contribute to wind farm development becoming a familiar feature within the surrounding landscape. • The design characteristics of the proposed wind farm accord with other schemes within the surrounding landscape and adverse visual effects are not likely to occur in relation to these.
Negligible	<ul style="list-style-type: none"> • The proposed wind farm will most often be viewed in isolation or occasionally in conjunction with other distant wind energy developments. • Wind energy development will remain an uncommon landscape feature in the surrounding landscape. • No adverse visual effects will be generated by the proposed turbines in relation to other turbines.

16.3 Existing Environment

16.3.1 Landscape Baseline

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

A description of the landscape context of the Site and wider study area is provided below under the headings of landform and drainage and vegetation and land use. Centres of population, transport routes and tourism, recreation and heritage features form part of the visual baseline and are dealt with in Section 16.4 below.



The Site and Central Study Area (< 5km from the site)

The Site itself is located along the transitional western foothills of the Comeragh Mountains and is contained within a horseshoe ridge that opens to the south. The Site's elevation ranges between c. 220-420m AOD, with the most elevated locations along the eastern extents of the Site where the terrain transitions towards a more typical upland setting. Milk Hill (451m AOD) and Bleantassour Mountain (402m AOD) contain the Site to the north and west, respectively, whilst an assemblage of rolling hilltop summits and elevated ridges, including Seefin (726m AOD), Coumfea (741m AOD) and Fouscoum/Kilclooney Mountain (792m AOD) contain the Site to the east. The internal site infrastructure intersects three watercourses which include Skeheens Stream, Knockavanniamountain Stream and the Colligan River. The Coumavane Stream is also located just over 400m to the south of the site. The Coumavane Stream merges with the Colligan River slightly further to the south of the Site and flows throughout the study area in a general southerly direction towards the settlement of Dungarvan. The Glenastuckaun Stream flows east of the site and is located just under c.1km from the nearest turbine. The Glenastuckaun Stream flows north-westerly and merges with the River Nire, one of the most notable watercourses in the central study area. The River Nire is situated some 4km north of the Site at its nearest point and flows throughout the northern half of the central study area in a general westerly direction. The landscape to the north of the site in the surrounds of the Nire river valley has a strong sense of enclosure as it is contained to the north, east and south by upland hills and ridges within the Comeragh Mountains. To the west of the Site, beyond Bleantassour Mountain, the terrain transitions to a more typical low-rolling landscape context punctuated by small river valleys and streams.

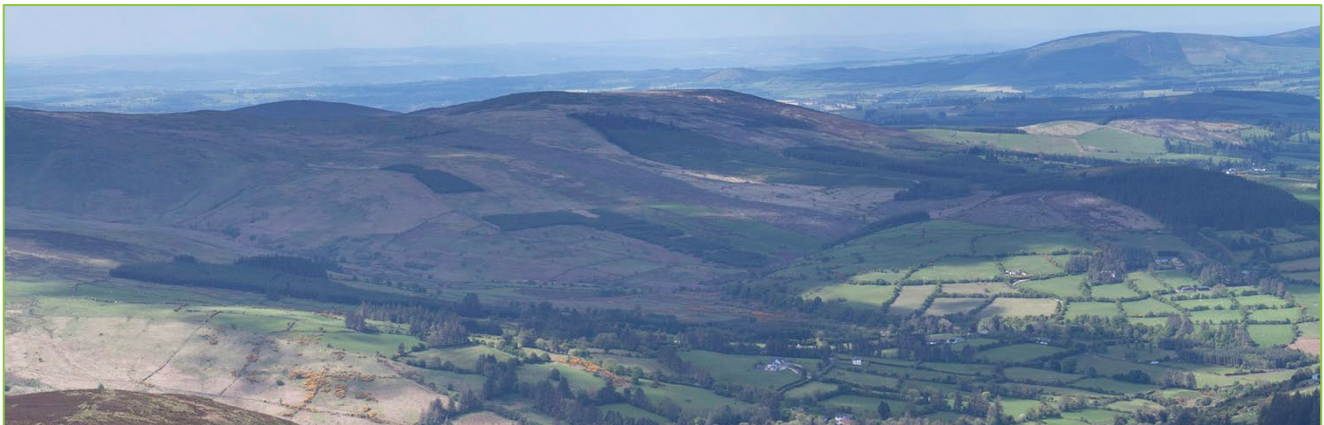


Image 16-2: Transitional nature of the landscape within the central study area comprising a mix of pastoral farmland, conifer forest plantations and elevated areas cloaked in extensive areas of moorland and heath.

The Wider Study Area (5-20km from the site)

The wider study area is as complex and varied as the central study area and contains the broader extents of the Comeragh and Monavullagh Mountains, whilst the Knockmealedown Mountains are located throughout the western half of the study area. In addition, Slievenamon punctuates the northern periphery of the study area, whilst the complex and rugged coastline of County Waterford is located throughout the wider southeast quadrant of the study area.

Other notable watercourses within the wider study area include the River Suir, which traverses the wider northern half of the study area and flows in a general easterly direction to the north of the Comeragh Mountains. The River Blackwater is also a prominent watercourse within the study area and is located in the wider southwest quadrant of the study area, where it flows past the settlement of Cappoquin south of the Knockmealedown foothills.



16.3.1.2 Vegetation and Land Use

The Site and Central Study Area (< 5km from the site)

The Site is contained in a mix of moorland and heath, whilst some areas of commercial conifer forestry and agricultural farmland are located in the westernmost section of the site on the western flank of the horseshoe ridge and within the valley contained within the central areas of the horseshoe ridge. The most notable areas of moorland and heath are contained throughout the most elevated locations within the Site. The landscape to the north, west and south of the site within the central study area are heavily influenced by more typical transitional rural land uses such as pastoral farmland and extensive areas of commercial conifer forestry. To the east of the site, the central study area influenced by upland land uses such as extensive areas of moorland and heath and rocky outcrops along the most elevated mountaintop summits. Several upland lakes surrounded by steep escarpments are also located throughout the upland portion of the central study area to the east of the site.

Wider Study Area (5-20km from the site)

The wider study area comprises a much broader mix of land uses, albeit many of the land uses throughout the site and central study area also occur within the wider study area. The predominant land use is pastoral farmland, whilst blocks of commercial conifer forestry occurs throughout the transitional foothill landscape within the wider study area. The wider study area also encompass broad areas of the Comeragh and Monavullagh Mountains that encompass some distinctive landscape features including Coumshingaun Lough, which is situated on the eastern extents of the Comeragh Mountains, some c.7.3km from the Site. Linear swathes of riparian woodland often cloak the corridors of the many small streams and rivers that flow throughout the wider study area. Sections of the coastline also occur within the wider southeast quadrant of the study area and comprise rugged coastal cliffs, enclosed bays and broad river estuaries.

The wider study area also encompasses a notable number of small to medium-sized settlements. The largest area of urban land cover is that of Clonmel, situated to the north of the Comeragh Mountains in the northern half of the wider study area. In addition, the linear transport routes of the N24, N25, N72 and N76 are also notable utilitarian land uses within the wider study area.



Image 16-3: Upland areas within the Comeragh Mountains comprising extensive areas of moorland and heath in addition to small upland lakes enclose by steep cliffs and rugged escarpments.



Image 16-4: Typical rolling pastoral lands located throughout the wider study area backdropped by elevated uplands

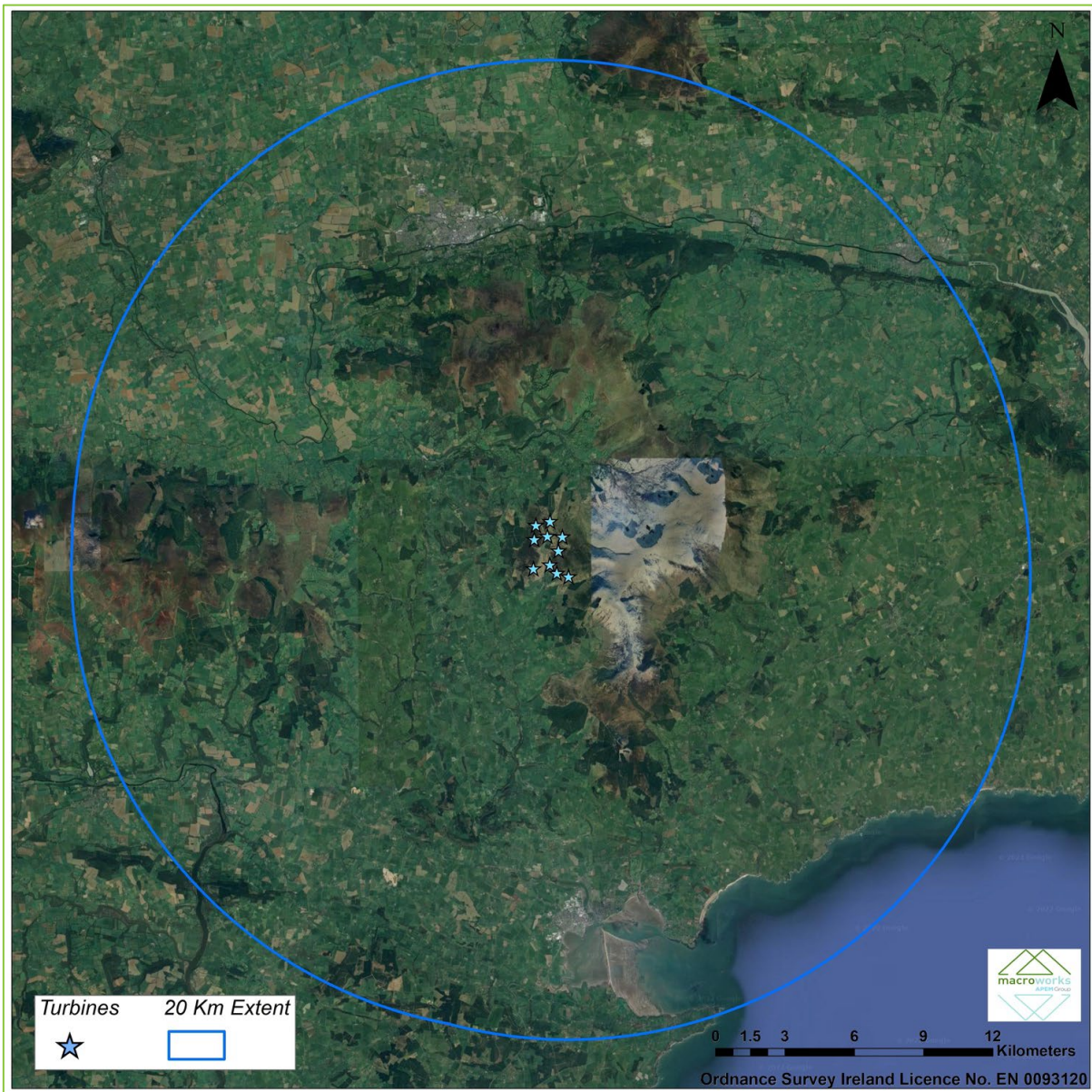


Image 16-5: Aerial photograph showing the landscape context of the wider Study Area which includes a broad array of land uses.



16.3.2 Landscape Policy Context and Designations

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

The 2006 Wind Energy Development Guidelines provide guidance on wind farm siting and design criteria for a number of different landscapes types (this section remains unchanged in the draft 2019 guidelines). The main wind farm site and central study area is considered to be located within a landscape that is consistent with both the 'Transitional Marginal Landscapes' and the 'Mountain Moorland' landscape type. However, there are also some aspects of 'Hilly and Flat Farmland' (on lower ground to the west). In such instances the Guidelines recommend consideration of the advice for each landscape type. Siting and design recommendations for these landscape types include the following:

Transitional Marginal Landscapes:

- Location** *"As wind energy developments, for reasons of commercial viability, will typically be located on ridges and peaks, a clear visual separation will be achieved from the complexity of lower ground."*
- "wind energy developments might also be located at lower levels in extensive areas of this landscape type, where they will be perceived against a relatively complex backdrop. In these situations it is important to minimise visual confusion such as the crossing by blade sets of skylines, buildings, utility lines and varied landcover."*
- Spatial extent** *"Wind energy developments in these landscapes should be relatively small in terms of spatial extent. It is important that they do not dominate but achieve a balance with their surrounds, especially considering that small fields and houses are prevalent."*
- "4(a) Wind energy development with regular spacing and linear layout – may not be appropriate due to the undulation of the land from as well as limited field pattern."*
- "4(b) Wind energy development with irregular spacing and random layout -is more appropriate given the relative undulation of the setting."*
- "4(c) Large wind energy development straddling two landscape character types within the same visual unit can create visual ambivalence and, thus, negative tension between the two character types involved."*
- Spacing** *"All options are possible, depending on the actual landscape characteristics. However, irregular spacing is likely to be most appropriate."*
- Layout** *"The likely location of wind energy developments on ridges suggests a linear or staggered linear layout whereas on broader hilltops they could be linear or clustered."*
- Height** *"where the upper ground is relatively open and visually extensive, taller turbines may be more appropriate."*
- "...the profile can be even or uneven, depending on the profile and visual complexity of the terrain involved. The more rugged and undulating, the greater the acceptability of an uneven profile provided it does not result in significant visual confusion and conflict."*



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

Mountain Moorland:

Location *“It may be acceptable to locate wind energy developments on ridges and peaks. They may also be appropriate, in certain instances, in a saddle between two peaks where they will be partially contained or “framed”. A third acceptable location is lower down on sweeping mountainsides.”*

Spatial extent *“Given the typical extensive areas of continuous unenclosed ground, larger wind energy developments can generally be accommodated because they correspond in terms of scale. However the spatial extent of a wind energy development would need to be reduced where a suggestion of smaller scale is provided by nearby landscape features.”*

“1(a) Large wind energy development with random layout, irregular spacing and high turbines - this siting and design option is appropriate given the scale of this landscape.”

“1(b) Wind energy development with many turbines of medium height – this can be inappropriate. The spatial extent of a wind energy development can be reduced by using taller turbines. This may be a preferable solution in some situations.”

“1(c) Wind energy development with relatively few and tall turbines.”

Spacing *“All spacing options are usually acceptable. Where a wind energy development is clearly visible on a crest or ridge there is considerable scope to vary the rhythm, though on simple ridges, regular spacing may be more appropriate. On sweeping and continuously even areas of mountain moorland or upland plateaux regular spacing may be most desirable.”*

Layout *“All layout options are usually acceptable. However, the best solutions would either be a random layout, and clustered where located on hills and ridges (fig 1(a)), or a grid layout on sweeping and continuously even areas of moorland or plateaux (fig 1(b)). Where a wind energy development is close to a linear element, such as a river, road or long escarpment, a corresponding linear layout or staggered line might be most desirable.”*

“1(d) A wind energy development with a grid layout with tall turbines – the rhythmic grid layout is appropriate to the open expanse of moorland, especially when it relates to the geometric blocks of conifers”

Height *“There would generally be no height restrictions on mountain moorlands as the scale of landscape is so great. However, shorter turbines may be more appropriate where they are located on small peaks and outcrops in order to maintain an appropriate scale. Profile, whether even or uneven, is dependent on topography: the more rugged and undulating (e.g., knolls and crags) the more uneven it will be. The profile of the wind energy development should not necessarily run in parallel to that of the topography.”*

“1(e) Cumulative effect involving two wind energy developments – this situation would possibly be acceptable due to the similar siting and design approach adopted for each wind energy development.”



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

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

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

In combination with the recommendations for ‘Transitional Marginal Landscapes’ and ‘Mountain Moorland’, the siting and design recommendations for ‘Hilly and Flat Farmland’ landscape types have also been considered when designing the turbine layout for the proposed Coumna Gappul Wind Farm as a result of the varied nature of the landscape within the central and wider study area. In general, the proposed development is relatively consistent with the guidance notes for all three landscape types but it is especially consistent with the guidance for the landscape type ‘Transitional Marginal Landscapes’ and ‘Mountain Moorland’ in which the proposed project is situated. A key consideration in this instance was the locational guidance for the ‘Transitional Marginal’ landscape type which states *“wind energy developments may be located at lower levels in extensive areas of this landscape type, where they will be perceived against a relatively complex backdrop”*. Furthermore a key design consideration relating to the ‘Mountain Moorland’ landscape type was *“1(a) Large wind energy development with random layout, irregular spacing and high turbines - this siting and design option is appropriate given the scale of this landscape”*.

Siting in Relation to Individual Properties (‘Setback’)

Section 6.18 of the Draft Revised Wind Energy Development Guidelines (December 2019) refers to appropriate setback distances for visual amenity purposes. The guidelines outline a mandatory minimum setback distance of *“500 meters”* or the distance of *“4 times the tip height”* of the proposed turbines *“between the nearest point of the curtilage of any residential property”*. This is set out in the 2019 Draft Revised Wind Energy Development Guidelines in SPPR2 (subsection 6.18.1) which is included below:

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



The nearest residential dwelling to any of the proposed turbines is 820m which exceeds and fully complies with the setback distance outlined in the Draft Revised Guidelines (2019). It is important to note that the current Wind Energy Development Guidelines 2006 do not provide for a mandatory minimum setback distance between wind turbines and residential dwellings in terms of visual amenity. The minimum setback of 500m required in the current Wind Energy Development Guidelines relates to noise.

16.3.2.2 Waterford City and County Development Plan 2022-2028

16.3.2.2.1 Waterford Landscape and Seascape Assessment 2020

A Landscape and Seascape Character Assessment was prepared for County Waterford in 2020 and forms part of the current Waterford City and County Development Plan. The Landscape and Seascape Character Assessment subdivides the county's landscape in to 7 landscape types and a subsequent 28 landscape character units. The Site is contained within the western extents of the 'Upland' landscape type and is bordered to the north, south and west by the 'Foothills' landscape type. In terms of landscape character units – the Site is located in the unit '6A – Comeragh Uplands' and is situated to the east of '5B – Ballymacarberry / Nire Valley' and '5C – Tooaneena Foothills (Image 16-6 below). The Landscape and Seascape Assessment also sets out the 'degrees of sensitivity' of Waterford's landscape and describes the landscape of Waterford as comprising "a series of compartments each of which has a distinctive character." Table A8.2 of the Landscape and Seascape Assessment assigns the Waterford's landscape four layers of sensitivity, each of which "indicates the extent to which the landscape will be vulnerable to change in its character". Guidelines in relation to each of these sensitivity classifications are outlined below;

- **Most Sensitive** – *Landscape Character Areas and features designated as Most Sensitive represent the principal features which create and sustain the character and distinctiveness of the surrounding landscape. To be considered for permission, development in or in the environs of these areas must be shown not to impinge in any significant way upon its character, integrity or uniformity when viewed from the surroundings. Particular attention should be given to the preservation of the character and distinctiveness of these areas as viewed from scenic routes and the environs of archaeological and historic sites.*
- **High Sensitivity** – *These areas have distinctive, homogenous character, dominated by natural processes. Development in these areas has the potential to create impacts on the appearance and character of an extensive part of the landscape. Applications for development in these areas must demonstrate an awareness of these inherent limitations by having a very high standard of site selection, site layout, selection of materials and finishes.*
- **Low Sensitivity** – *A large area of County Waterford is designated as a landscape of low sensitivity. These areas have potential to absorb a wide range of new developments subject to normal planning and development control procedures. In these areas the Planning Authority will have regard to general restrictions to development such as scenic routes, siting, road set backs, road widening plans, parking numbers, road and sewage disposal criteria.*
- **Least Sensitive** – *A small area of Waterford City and County is designated least sensitive to landscape change. These are areas of concentrated existing development and infrastructure. Appropriate new development in these areas can reinforce the existing desirable land use patterns. Regard shall be had to site development standards namely density, building lines, height of structures and design standards. The overall aim is to ensure that the inherent character of city/town environs and town and village centres is maintained.*



As per **Image 16-8** below, the Site is located within the ‘Most Sensitive’ designation which carpets the entirety of the Comeragh and Monavullagh Mountains. To the west as the terrain transitions towards to rolling lowlands between the Comeragh Mountains and Knockmealdown Mountains, the sensitive classifications also transitions to the ‘Low Sensitivity’ classifications, with isolated areas of ‘High Sensitivity’ also located through the rolling lowlands.

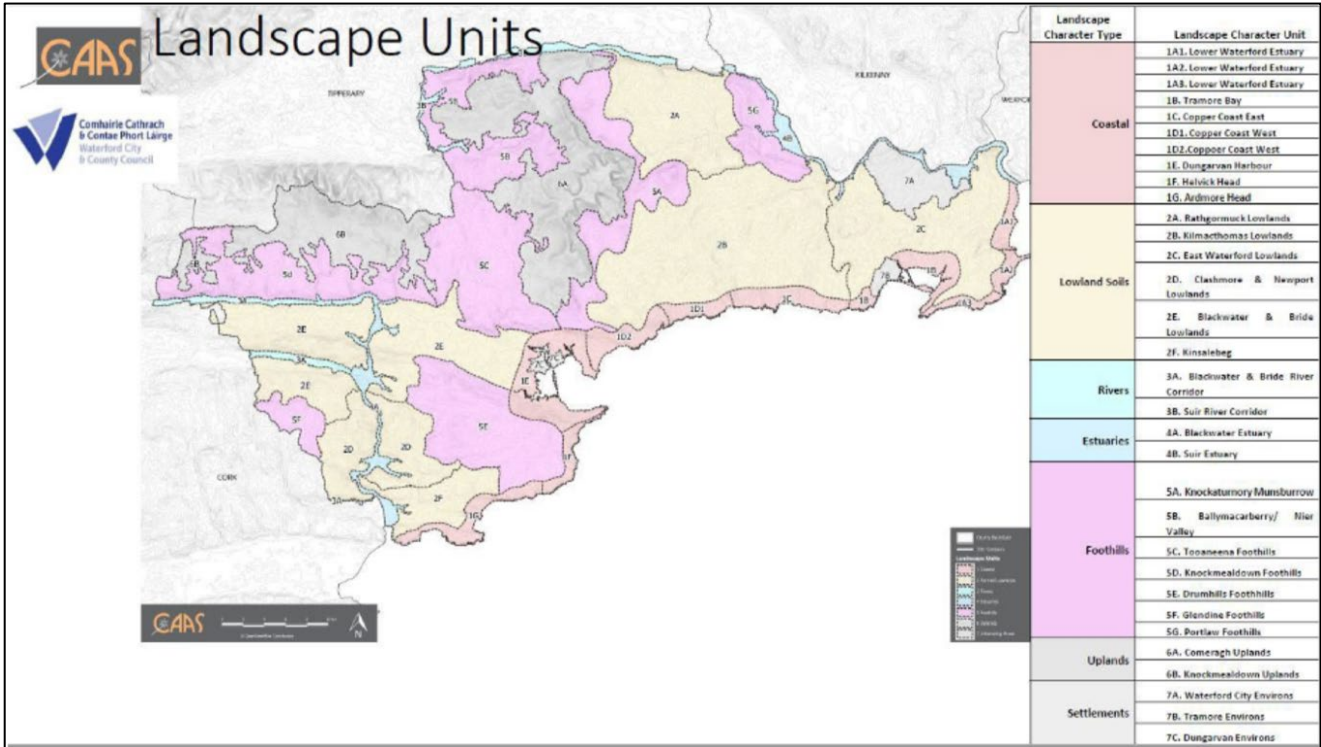


Image 16-6: Excerpt from the Current Waterford City and County Development Plan 2022-2028 showing landscape character types and landscape character units in relation to the proposed development.

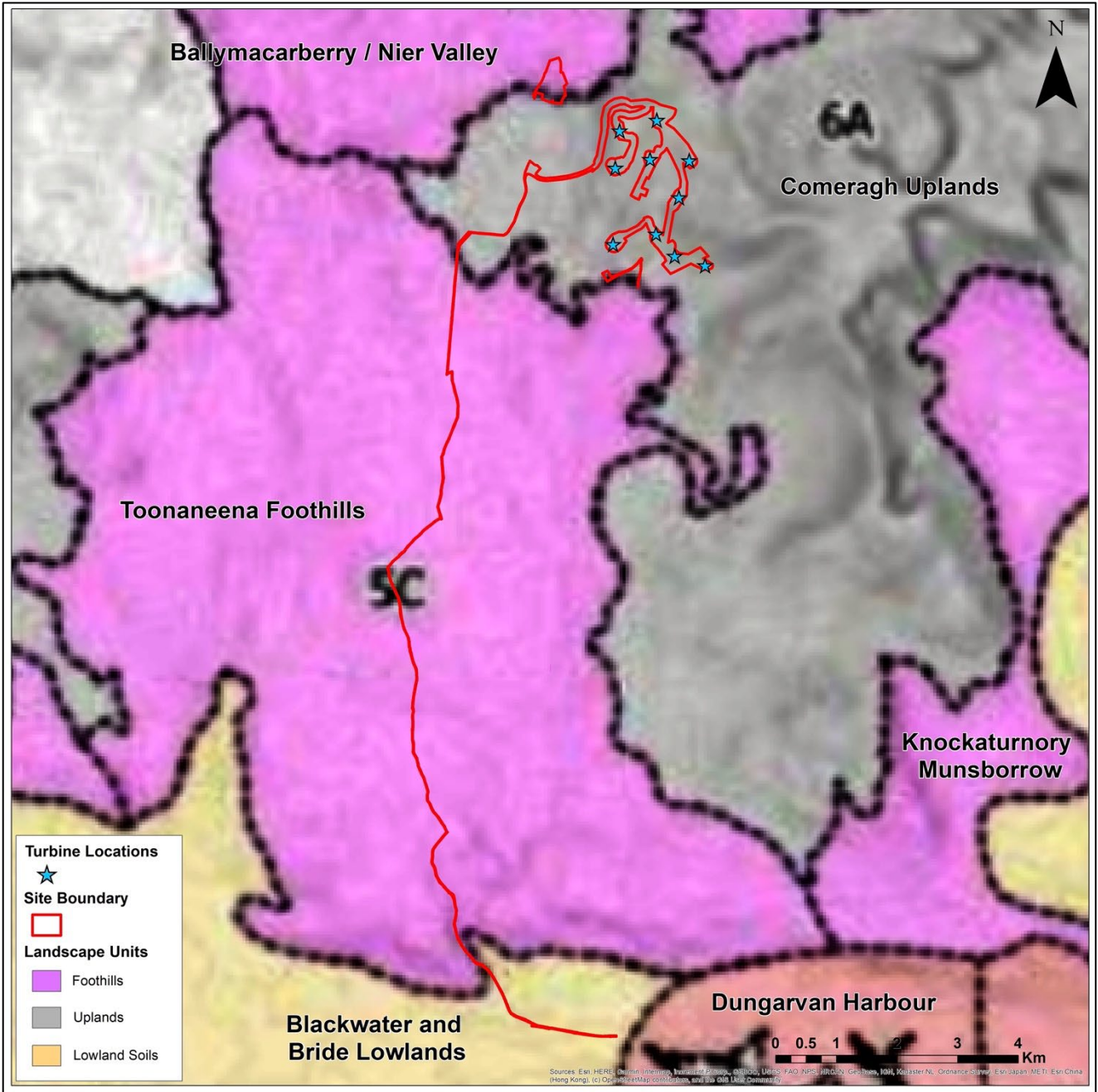


Image 16-7: Excerpt from the Current Waterford City and County Development Plan 2022-2028 showing landscape character types and landscape character units in relation to the proposed turbines and red line boundary

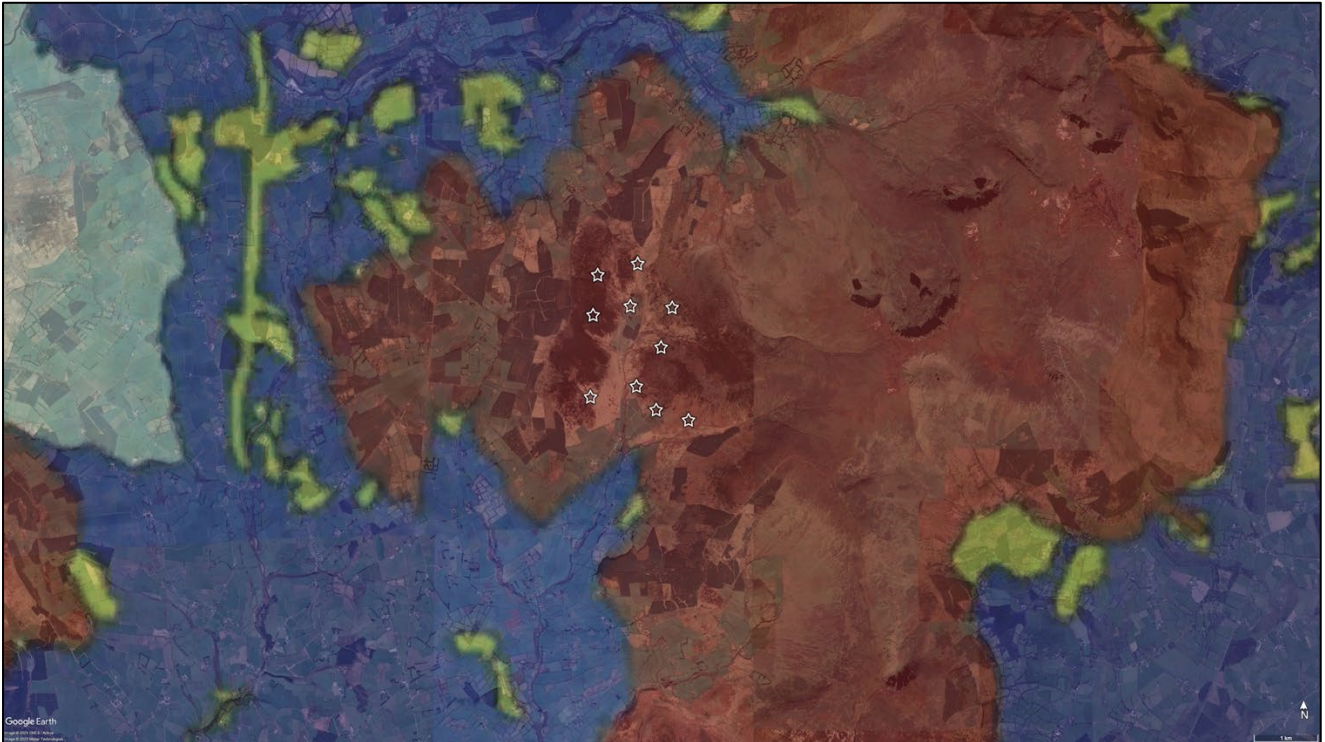


Image 16-8: Excerpt from the Current Waterford City and County Development Plan 2022-2028 map viewer showing landscape sensitivity classifications in relation to the proposed turbines (Red – Most Sensitive, Yellow – High Sensitivity, Blue – Low Sensitivity)

16.3.2.2.2 Waterford Renewable Energy Strategy 2016-2030 (Appendix 7)

A renewable energy strategy for Waterford is included in Appendix 7 of the current County Development Plan. Appendix 2 of the renewable energy strategy relates to wind energy development and outlines the amended wind energy zonings into three classifications as follows and is identified on the revised wind energy designations map. These include; 'Preferred Areas', 'Areas Open to Consideration', and 'No-Go Areas' (shown as Exclusion Areas on renewable energy strategy mapping) (see **Image 16-9** below). The current renewable energy strategy states that wind energy classification areas have been "identified by way of overlaying the following series of maps and data:

- *The Landscape and Seascape Character Assessment (Appendix 8 of the Development Plan);*
- *Natura 2000 network;*
- *Urbanised areas;*
- *Waterford Regional Airport Masterplan (Appendix 12 of the Development Plan);*
- *Wind energy mapping of adjacent local authorities;*
- *Major road infrastructure; and,*
- *Transmission grid."*



As per Image 16-9 below, the Site is located in a broad 'Exclusion Area' which carpets a large portion of the Comeragh, Monavullagh and Knockmealedown Mountains, in addition to the farmed working landscape that occurs between these mountains and to the west of the Proposed Development. The nearest 'Preferred' area occurs in the southern half of the study area some c. 880m from the nearest turbine (T12), in the landscape in the wider surrounds of the Comeragh and Monavullagh Mountains. It is important to note that the full extent of the 'Exclusion Area' does not directly correspond with the 'Most Sensitive' landscape sensitivity classification identified in the current Waterford CDP. Indeed, an area designated as 'Preferred' in the eastern extents of the Comeragh Mountains is located within the aforementioned 'Most Sensitive' landscape classification. Policy in relation to renewable energy is included in chapter 6 of the current Waterford City and County Development Plan. Policy ULT13 relates to Renewable energy. The most relevant part of this policy in relation to the proposed development is included in the points below;

- *"The Wind Energy Designation Map and the Landscape and Seascape Character Assessment Map identify different landscape character areas and associated landscape sensitivities. These designations encompass the concept of buffers between areas of sensitivity which vary across the different landscape character types and their different locations. These buffers allow for gradual change between contrasting landscape sensitivities and associated wind energy designations to be considered, as necessary, when determining any development proposal."*

Note: Whilst the current renewable energy strategy for County Waterford identifies the Proposed Development within an 'exclusion area', this is in stark contrast with the previous version of the Waterford Renewable Energy Strategy (formed part of the previous Waterford County Development Plan 2011-2017 (as extended), which designated the site and surrounding landscape as an area 'Preferred' in relation to wind energy development. Within these areas *"proposals for wind farms will be assessed on their merits with responsibility on the developer to demonstrate suitability of the site"*. Whilst the current Renewable Energy Strategy identifies some rationale for the updated wind energy classifications throughout the county, it is still relatively ambiguous as to how areas once classified as 'Open to Consideration' and 'Preferred' for wind energy development can now be classified as 'exclusion areas' when they have not been subject to any notable physical change or change in environmental designation under national or European legislation

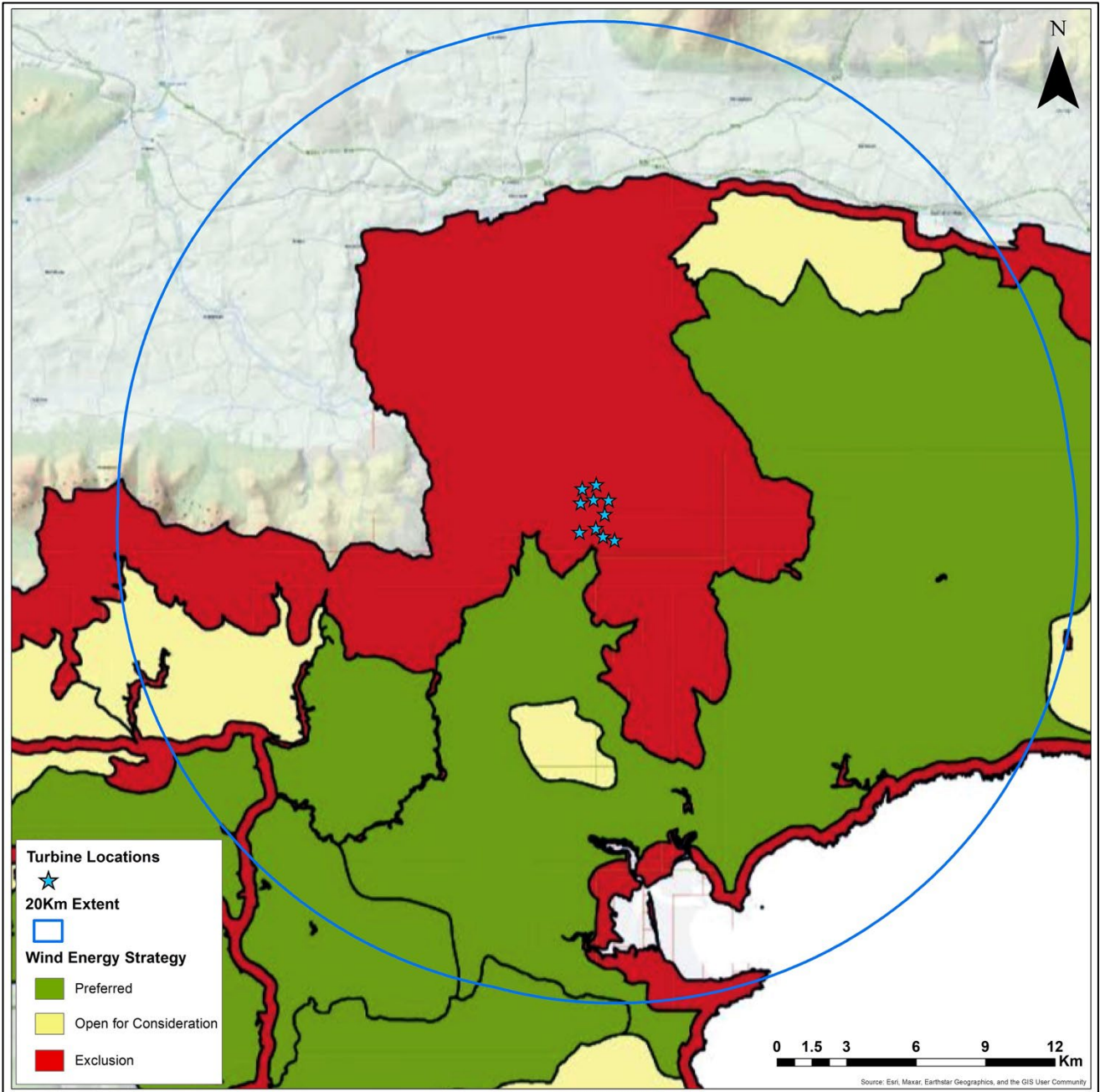


Image 16-9: Excerpt from Appendix 2 of the current Renewable Energy Strategy showing updated wind energy classification areas in relation to the Proposed Development.

16.3.2.3 Tipperary County Development Plan (TCDP) 2022-2028

16.3.2.3.1 TCDP – Volume 3: Tipperary Landscape Character Assessment

Although the Proposed Development is wholly contained within county Waterford, it sits approximately 6.5km to the Tipperary border and as a result it is important to include any neighbouring landscape designations within County Tipperary. Section 11.7 of the current TCDP relates to landscape and ‘Primary and Secondary Amenity Areas’ which are “particularly notable by virtue of their scenic and visual quality and offer significant opportunities for tourism development and rural recreational activities.” A ‘Primary Amenity Area’ and a ‘Secondary Amenity Area’ designation occurs along the Waterford – Tipperary boundary within the Study Area, as highlighted on **Image 16-10** below.

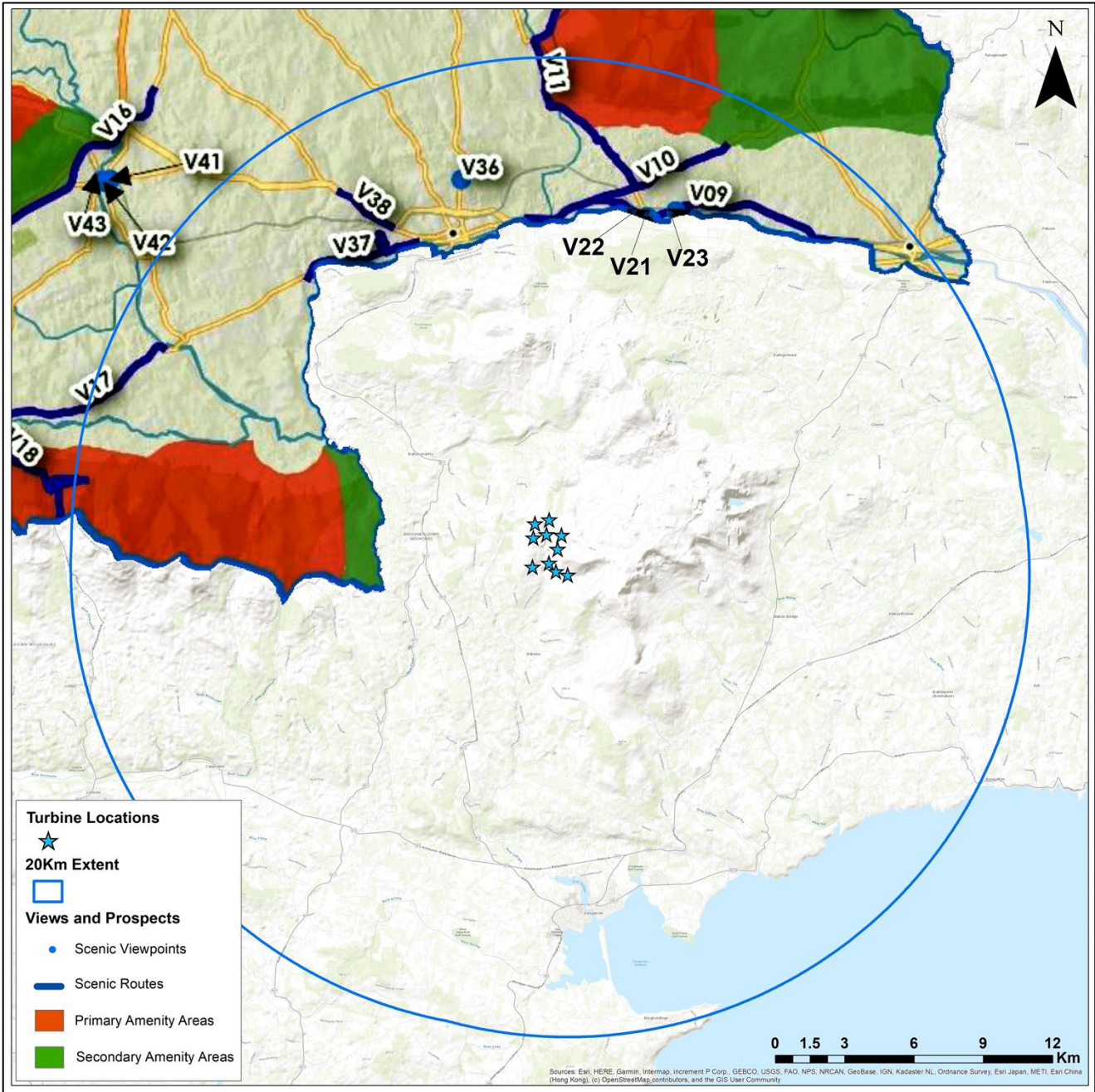


Image 16-10: Excerpt from the current Tipperary County Development Plan 2022-2028 showing ‘primary amenity areas’ and ‘secondary amenity areas’ in relation to the Proposed Development.

A Landscape Character Assessment for County Tipperary was produced in 2016 and is incorporated in to the current County Development Plan. This provides a hierarchy of landscape units beginning with high level ‘Landscape Architypes’ then ‘Landscape Character Types’ and finally 23 geographically distinct ‘Landscape Character Areas’. The nearest and most relevant landscape archetype and landscape character type to the proposed development is that of ‘D – The Uplands’ and ‘D1 – Mountain & Upland’. The most relevant landscape character area is that of LCA 23 – Knockmealdown Mountain Mosaic which has been designated with a ‘Class 5 – Vulnerable’ sensitivity designation. Relevant planning policy with regard to the environment and natural assets is outlined in subsection 11.9 of the current CDP. Policy that is deemed relevant to the proposed development is included below;



“11-6: Facilitate new development which integrates and respects the character, sensitivity and value of the landscape in accordance with the designations of the Landscape Character Assessment, and the schedule of Views and Scenic Routes (or any review thereof). Developments which would have a significant adverse material impact on visual amenities will not be supported.

11-17: Ensure the protection of the visual amenity, landscape quality and character of designated ‘Primary’ and ‘Secondary’ amenity areas. Developments which would have a significant adverse material impact on the visual amenities of the area will not be supported. New development shall have regard to the following;

- a) Developments should avoid visually prominent location and be designed to use existing topography to minimise adverse visual impact on the character of primary and secondary amenity areas.*
- b) Buildings and structures shall integrate with the landscape through careful use of scale, form and finishes.*
- c) Existing landscape features, including trees, hedgerows and distinctive boundary treatment shall be protected and integrated into the design proposal.”*

16.3.2.4 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 a number of ecological designations throughout the study area. Those within 10km of the site are included below as designations beyond this distance will have little potential to be notably impacted by the proposed development due to their distance from the site.

- Comeragh Mountains SAC – c. 1km east of the Site
- Nire Valley Woodlands SAC – c 2.5km north of the Site
- Lower River Suir SAC – c. 4.8km northwest of the Site
- Blackwater River (Cork/Waterford) SAC – c. 5km southwest of the Site

16.4 Visual Baseline

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



16.4.1 Zone of Theoretical Visibility (ZTV)

A computer generated Zone of Theoretical Visibility (ZTV) map has been prepared to illustrate where the proposed turbines are potentially visible from. The ZTV map is based solely on terrain data (bare ground visibility), and ignores features such as trees, hedges or buildings, which may screen views. Given the complex vegetation patterns within this landscape, the main value of this form of ZTV mapping is to determine those parts of the landscape from which the Proposed Development will definitely not be visible, due to terrain screening within the 20km study area. The ZTV below is based on the 185m tip height of the proposed turbines.

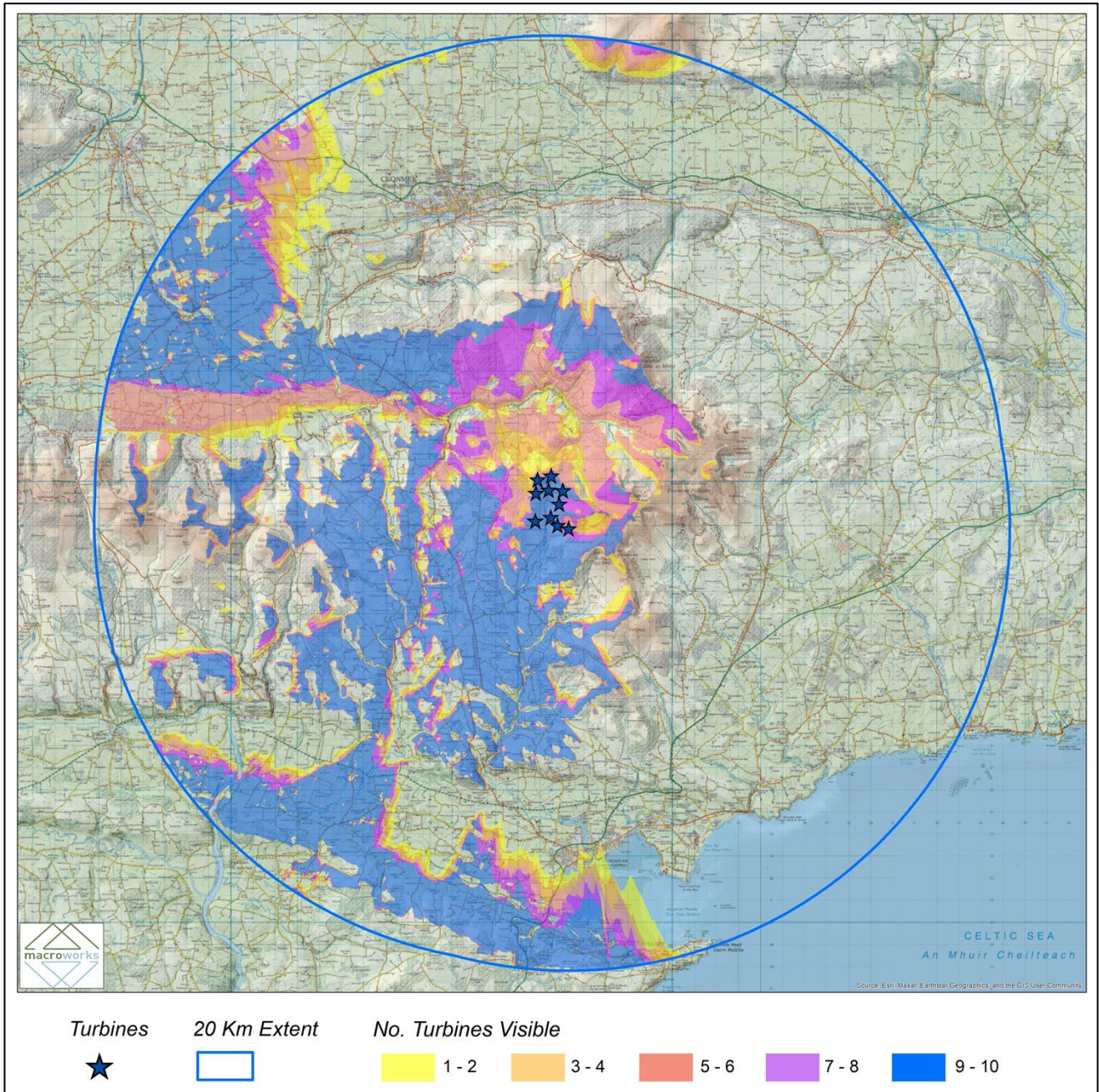


Image 16-11: ZTV Map (185m Tip Height) for Coumna gappul Wind Farm (See Figure 16.3, Volume IV for full scale annotated ZTV maps.



The following key points are illustrated by the 'bare-ground' ZTV map (Image 16-11 refers);

- Due to the location of the Site within a horseshoe ridge along the western foothills of the Comeragh Mountains, many of the notable areas of comprehensive visibility within the near surrounds of the Site occur immediately south and west of the proposed turbines. The largest area of comprehensive visibility is situated throughout the western and southern extents of the study area in a foothill/low-rolling landscape context located to the west of the Comeragh Mountains and the east of the Knockmealedown Mountains.
- North of the Site (south of the Nire River), the potential for visibility of all of the turbines is limited. The ZTV identifies the potential for views of between 1-6 of the turbines, many of which will be heavily screened by the horseshoe ridge that contains the site. Further to the north, on the northern side of the Nire river valley, the potential for turbine visibility increases as the terrain rises towards elevated hills and ridges in the northern extents of the Comeragh Mountains. Comprehensive ZTV pattern (blue colour) reemerges along the most elevated ridges in this part of the Comeragh Mountains, however, further north of this visibility of the proposed turbines is eliminated. Visibility re-emerges at the northern periphery of the study area along the south-facing slopes of Slievenamon.
- In the western half of the study area, a broad block of comprehensive visibility (blue colour) contains the low rolling landscape between the Comeragh Mountains and the Knockmealedown Mountains. Extensive areas of blue ZTV pattern also occur along the east-facing hills and ridges at the eastern extents of the Knockmealedown Mountains within the wider eastern half of the study area. Nonetheless, the rolling foothills and elevated hilltop summits within the eastern extents of the Knockmealedown Mountains will heavily screen the turbines from the wider eastern half of the study area, where there are large areas of no ZTV pattern. A broad area of comprehensive ZTV pattern also occurs in the northwest quadrant of the study area. This part of the study area is a low-rolling landscape located north of the Knockmealedown Mountains and includes the settlements of Ardfinnian and Newcastle. While comprehensive ZTV occurs throughout the settlement of Ardfinnian, there is limited potential for turbine visibility at the small settlement of Newcastle.
- Comprehensive visibility of all of the turbines occurs throughout the southern half of the study area, but is principally contained to the west of the main ridgeline within the Comeragh Mountains. The potential for visibility is eliminated briefly in the wider southern half of the study area, where the terrain swiftly descends from a steep terrace towards a broad valley containing the N72 national secondary route. The potential for visibility re-emerges on the northern side of this broad valley, where the terrain rises towards a broad plateau of rolling hills and ridges oriented in a northwest-by-southeast orientation. Comprehensive ZTV pattern occurs along the most elevated sections of this ridgetop plateau throughout the study area and extends east along Ring peninsula.
- The eastern half of the site has a limited potential for turbine visibility. The only areas of theoretical turbine visibility occur immediately east of the site within the upland areas of the Comeragh Mountains. Whilst theoretical turbine visibility will occur along the west-facing hills and ridges within the Comeragh Mountains, the eastern half of the Comeragh Mountains will be entirely screened from the proposed turbines. A brief area of theoretic visibility occurs at the western face of Fouscoum (Kilclooney Mountain), the highest summit in the Comeragh Mountains. Visibility of up to 6 turbines has the potential to be afforded from here. East of Fouscoum, the potential for turbine visibility within the eastern portions of the study area, is entirely eliminated.



- One of the most notable points to make about the ZTV is that nearly three-quarters of the study area will afford no visibility of the proposed turbines. There will be no turbine visibility at the settlements of Clonmel, Kilsheelan, Carrick on Suir, Kilmacthomas, Lemybrien and Cappoquin. Large areas of Dungarvan will also be entirely screened from the proposed turbines. However, there is some limited potential for theoretical visibility of the proposed turbines in the central areas of the town.

16.4.2 Visual Receptors

16.4.2.1 *Centres of Population and Houses*

This is not a heavily populated study area and there are few settlements within close proximity to the Site.

The largest and most notable centre of population in relation to the proposed development is that of Clonmel, which is situated to the north of the Comeragh Mountains along the banks of the River Suir, some c.12km from the Site at its nearest point. As per the ZTV above, there will be no visibility of the turbines from Clonmel. Dungarvan, a slightly smaller-sized settlement is located in the southern half of the study area along the coastline. Dungarvan is situated some 14km south of the site at its nearest point and has limited potential to afford any notable degree of turbine visibility.

The nearest population centre to the proposed development is the small village of Kilbrien Lower, located just under 4km south of the Site. The small town of Tooraneena is located c.5km southwest of the Site, whilst the settlement of Ballymacarbry is located along the southern banks of the River Nire c. 5km northwest of the site.

The small settlements of Newcastle and Ardfinnian are located in the northwest quadrant of the study area and are located 10km and 16km from the Site, respectively. The settlement of Cappoquin is located along the River Blackwater corridor south of the Knockmealedown Mountain foothills and is situated 16km southwest of the Site at its nearest point. Other settlements within the wider study area include Lemybrien (9.5km southeast), Kilsheelan (13km north), Kilmacthomas (14km east) and Carrick-On-Suir (19km northeast).

16.4.2.2 *Transport Routes*

The N24 and N25 are the most notable transport routes within the study area. The N25 traverses the eastern and southern extent of the study area and is located less than 10km southeast of the Site at its nearest point. The N24 is located along the northern extents of the River Suir and connects the settlements of Carrick-on-Suir and Clonmel within the northern half of the study area. The N24 is located some 12km north of the site at its nearest point. Other notable routes include the N72 national secondary route, located some 12km south of the site, whilst the N76 national secondary route is located some 13km north of the Site. It is worth noting that as per the ZTV above, considerable sections of all three of these routes will have no potential for visibility of the proposed turbines

The nearest major route to the Site is the R672 regional road, which is oriented in a north-south direction and is located some c.4km west of the Site at its nearest point. The R671 regional road is similarly located some c.4km west of the Site and is similarly oriented in a general north-south direction. Both of these regional roads have the potential to afford comprehensive views of the proposed turbines. The R676 regional road is situated on the eastern side of the Comeragh Mountains and is located some c.9km east of the Site at its nearest point and will be entirely screened from the proposed development. A network of interconnecting regional roads also traverses the wider study area, many of which converge at the principal settlements of Clonmel and Dungarvan. A dense web of local roads also cloaks the study area, the nearest of which are located a short distance to the west and south of the Site.



16.4.2.3 *Tourism, Recreational and Heritage Features*

The Comeragh Mountains are one of the most notable areas for outdoor recreation within County Waterford and comprise numerous cycling, walking and hiking trails. As stated in the current Waterford County Development Plan, some of the top visitor attractions within the County include 'Mahon Falls' and the 'Nire Valley', both of which are situated in the surrounds of the Comeragh Mountains. Notable amenity and recreation features within and in the near surrounds of the Comeragh Mountains include; the Nire Valley National Looped walking trails, the Sean Kelly Cycling Loop trails, the Lough Mohra Loop, the East Munster Way and the Comeragh Mountains scenic drive. The Coumshingaun Lough looped hiking trail is also a popular and highly scenic trail amongst outdoor recreationalists, whilst areas surrounding the Nire Valley encompass several camping areas and holiday parks. It is important to note that large sections of the Comeragh Mountains will be entirely screened from the proposed turbines, especially the eastern extent of the Comeragh, which comprise several highly susceptible landscape areas and features such as Coumshingaun Loch and Mahon Falls.

The wider study area also encompasses numerous recreational and amenity features, the most notable of which is the Waterford Greenway located throughout the south-eastern quadrant of the study area. The Waterford Greenway is a multi-use 46km long trail that affords broad views across the coastline and toward the Comeragh Mountains and their surrounding landscape. The Tipperary Heritage Way is a 56km linear walking route located in the northwest quadrant of the study area and follows the River Suir northwards from the Knockmealedown Mountains towards the historic town of Cashel. Several looped walking trails are also located throughout the Knockmealedown Mountains, which are also popular amongst outdoor recreationalists. As a result of their elevated nature many of these hiking trails and walking routes will have some potential for visibility of the proposed turbines.

The study area also encompasses numerous local walking trails, some of which include; the Glenpatrick Bridge Loop, Marlfield Woods trails west of Clonmel, the Colligan Woods trails and the Glenshelane trails northeast of Cappoquin.

The study area is also punctuated by numerous heritage features, many of which are located within the wider extents of the study area. Careys Castle and St. Patricks Well are located in the wider northwest quadrant of the study area, whilst the Trappist monastery, Mount Melleray Abbey, is located along the foothills of the Knockmealedown Mountains in the western half of the study area. Several notable heritage features are also located along the corridor of the Blackwater River in the western half of the study area and include; Lismore Castle, Tourin House and Dromana House. Dungarvan Castle dates back to the early 13th Century and is a prominent and popular heritage feature within the settlement Dungarvan in the southern half of the study area.

The Copper Coast Geopark is located throughout the southeast quadrant of the study area and comprises 25km of rugged coastline and is a popular tourist attraction within County Waterford. The geopark consists of coastal inlets, coves, areas of geological interest, and several heritage features.

16.4.3 Views of recognised scenic value

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

All of the scenic routes and views in both Waterford and Tipperary that fall inside the ZTV pattern (see Image 16-12) were investigated during fieldwork to determine whether actual views of the proposed wind farm might be afforded. Where visibility may occur, a viewpoint has been selected for use in the visual impact appraisal later in this chapter. In some instances, a single viewpoint is selected to represent a stretch of designated scenic route or a cluster of designated scenic views, particularly distant ones.

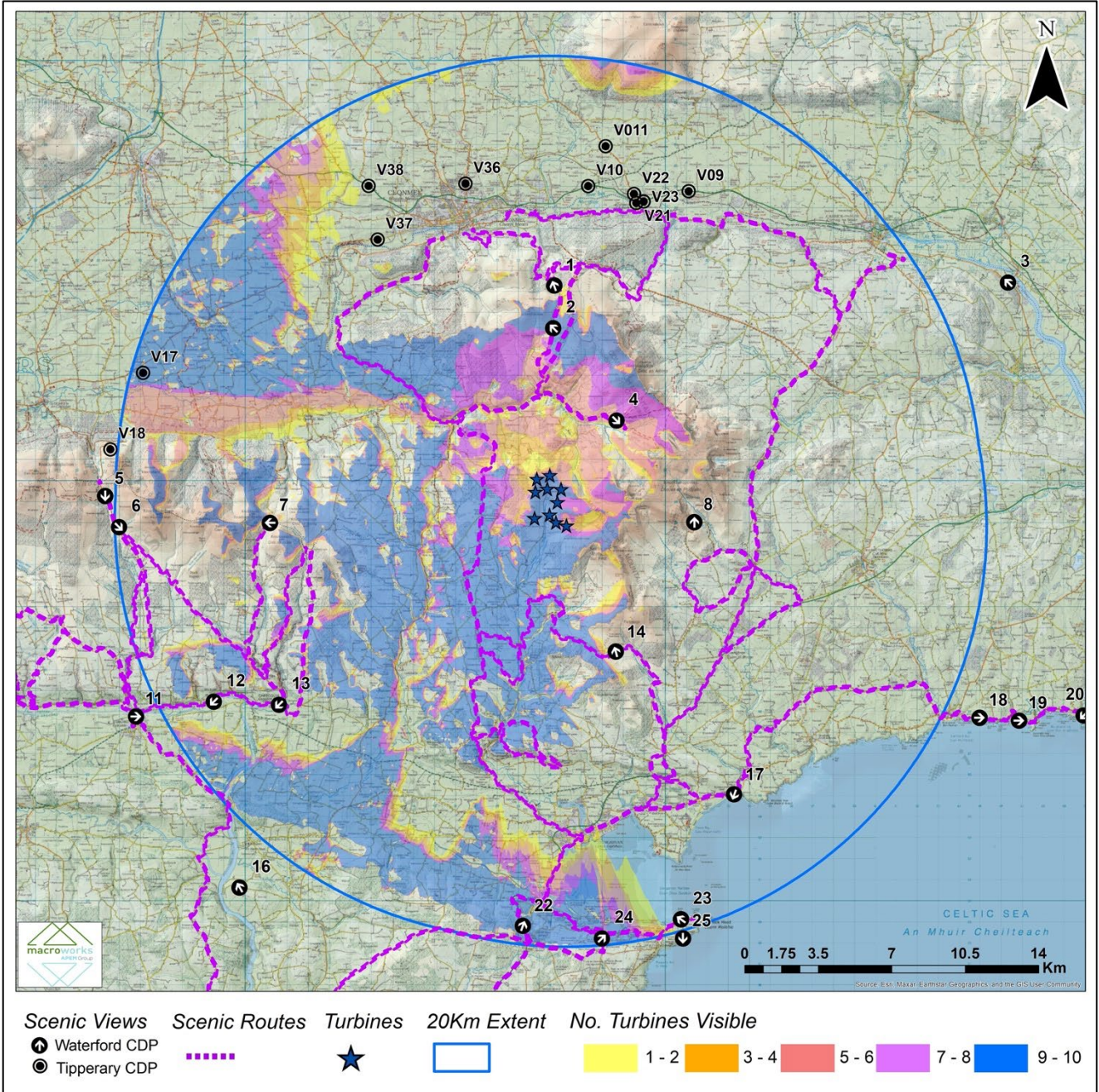


Image 16-12: Map showing scenic designations within the study area in the Waterford and Tipperary CDP overlaid on the ZTV map.



Table 16.6: Rationale for selection of scenic designations within the current Waterford County Development Plan 2022-2028

Waterford CDP ref:	Relevance to visual impact appraisal?	VP ref no. herein
S1	Not Relevant – Scenic route located outside of ZTV	-
S2	Yes Relevant – Potential for distance intermittent views of the proposed turbines	VP25
S5	Yes Relevant – Potential for distance views of the proposed turbines	VP30
S6	Yes Relevant – Potential for brief intermitted distant views in the direction of the site	VP30
S7	Yes Relevant – Potential for distant views in the direction of the site	VP30
S8	Yes Relevant – Views afforded in the direction of the site	VP03, VP09, VP16, VP22 & VP26
S9	Yes Relevant – Views oriented in the direction of the site (ZTV identifies low theoretic visibility of the proposed turbines)	VP08, VP10 & VP11
S10	Yes Relevant – Views oriented in the direction of the site	VP23 & VP24
S11	Yes Relevant – Views oriented in the direction of the site	VP27
S12	Not Relevant – Scenic route located outside of ZTV	-
S13	Not Relevant – Scenic route located outside of ZTV	-
S14	Not Relevant – Scenic route located outside of ZTV	-
Waterford CDP – Protected Views		
3	Yes Relevant – Views oriented in the direction of the site	VP30
4	Not Relevant – View located outside of ZTV	-
5	Yes Relevant – Views oriented in the direction of the site	VP30
8	Yes Relevant – Views oriented in the direction of the site	VP11
9	Not Relevant – View oriented in the opposite direction to the site	-
13	Not Relevant – View located outside of ZTV	-
14	Not Relevant – View located outside of ZTV	-
16		
17	Yes Relevant – View is located within ZTV, however, the direction of the view is oriented in the opposite direction to the site	VP3
20	Not Relevant – View located outside of ZTV	-
21	Not Relevant – Protected view located outside of ZTV	-



Table 16.7: Rationale for selection of scenic designations within the South Tipperary County Development Plan

Tipperary CDP ref:	Relevance to visual impact appraisal?	VP ref no. herein
Tipperary County Development Plan 2022-2028		
V08	Not Relevant – View located outside of ZTV	-
V10	Not Relevant – View located outside of ZTV	-
V11	Not Relevant – View located outside of ZTV	-
V17	Yes Relevant – Views afforded in the direction of the site	VP2
V21	Not Relevant – View located outside of ZTV	-
V36	Not Relevant – View located outside of ZTV	-
V38	Not Relevant – View located outside of ZTV	-

Policy relating to scenic designations in both the Waterford and Tipperary County Development Plan is included below;

Waterford CDP

Policy Objective L04: “We will protect the scenic routes and specified protected views identified in our Landscape Character Assessment (Appendix 8), including views to and from the sea, rivers, landscape features, mountains, landmark structures and urban settlements from inappropriate development that by virtue of design, scale, character or cumulative impact would block or detract from such views.”

Tipperary CDP

Planning Policy 11-17: “Ensure the protection of the visual amenity, landscape quality and character of designated ‘Primary’ and ‘Secondary’ amenity areas. Developments which would have a significant adverse material impact on the visual amenities of the area will not be supported. New development shall have regard to the following:

- a) Developments should avoid visually prominent locations and be designed to use existing topography to minimise adverse visual impact on the character of primary and secondary amenity areas.
- b) Buildings and structures shall integrate with the landscape through careful use of scale, form and finishes.
- c) Existing landscape features, including trees, hedgerows and distinctive boundary treatment shall be protected and integrated into the design proposal.”



16.4.4 Identification of Viewshed Reference Points as a basis for Assessment

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

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

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

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

Key Views (KV)

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

Designated Scenic Routes and Designated Scenic Views (SR/SV)

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

Local Community Views (LCV)

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



Centres of Population (CP)

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

Major Routes (MR)

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

Amenity and Heritage Features (AH)

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

The Viewshed Reference Points selected in this instance are set out in Table 16.8 and Image 16-13 below.

Table 16.8: Selected Viewshed Reference Points (VRP's)

VRP No.	Location	Representative of:	Distance to nearest turbine	Direction of view
VP1	N24 at Kilmolash Lower	SR, MR	17.8km (T1)	SE
VP2	Local road at Gortnalower, south of Ardfinnian	CP, AH	17.2km (T1)	SE
VP3	Local road layby at Glendalough	SR, AH	7.0km (T2)	S
VP4	Local road at Sillaheens	AH	9.0km (T1)	SE
VP5	Newcastles Birdge at Moloughnewtown, north of River Suir	CP, AH	11.4km (T1)	SE
VP6	Local road at Ballymacarbry	LCV	4.9km (T1)	SE
VP7	Nire Valley Trails – Coumduala Loop at Knockanaffrin South	AH	6.1km (T2)	SW
VP8	Local road at Shanballyanne south of Nire River	SR, LCV, AH	3.7km (T1)	S



VRP No.	Location	Representative of:	Distance to nearest turbine	Direction of view
VP9	R671 Ballymacarbry Main Street	CP, MR, AH, LCV	5.7km (T1)	SE
VP10	Local road at Knockanaffrin	SR, AH, LCV	3.1km (T2)	SW
VP11	Nire Valley Trails Car Park	SR, AH, LCV	4.1km (T2)	SW
VP12	Local road ay Knockaunbrandaun	LCV	2.4km (T1)	S
VP13	Local road at Lyre West east of Glenastuckaun Stream	LCV	2.5km (T2)	SW
VP14	Local road at Knockavannia	LCV	1.5km (T1)	S
VP15	Kilclooney Mountain Summit (Fauscoum)	AH	6.7km (T6)	W
VP16	Local road at Tooraneena north of Bryan's Cross Roads	SR, LCV, MR	2.4km (T4)	E
VP17	Knockmealedown Summit	AH	17.9km (T12)	E
VP18	Local road west of Sweep Cross Roads	LCV	1.8km (T12)	E
VP19	Local road at Glennaneane	LCV	967m (T12)	N
VP20	Local road at Tooraneena	CP	4.9km (T12)	NE
VP21	Local road at Bleantasour	LCV	2.2km (T12)	N
VP22	R672 at Kilcooney south of Clooncogaile Cross Roads	SR, AH, LCV, MR	4.4km (T12)	NE
VP23	Local road at Kilbrien	CP, SR, AH, LCV	3.8km (T12)	N
VP24	Local road at Bohadoon	SR, AH	5.4km (T11)	N
VP25	R669 at Boherboyrea	SR, MR	15.3km (T12)	NE
VP26	R672 at Colligan	SR, MR, AH	7.8km (T12)	NE
VP27	Local road at Currabaha	SR	9.9km (T11)	N
VP28	Local road at Dromana east of the River Blackwater	AH	19.0km (T12)	NE
VP29	Davitts Quay, Dungarvan	CP, AH	14.7km (T11)	N
VP30	N25 layby at Windgap	SR, MR	19.0km (T11)	N



Viewpoint Locations

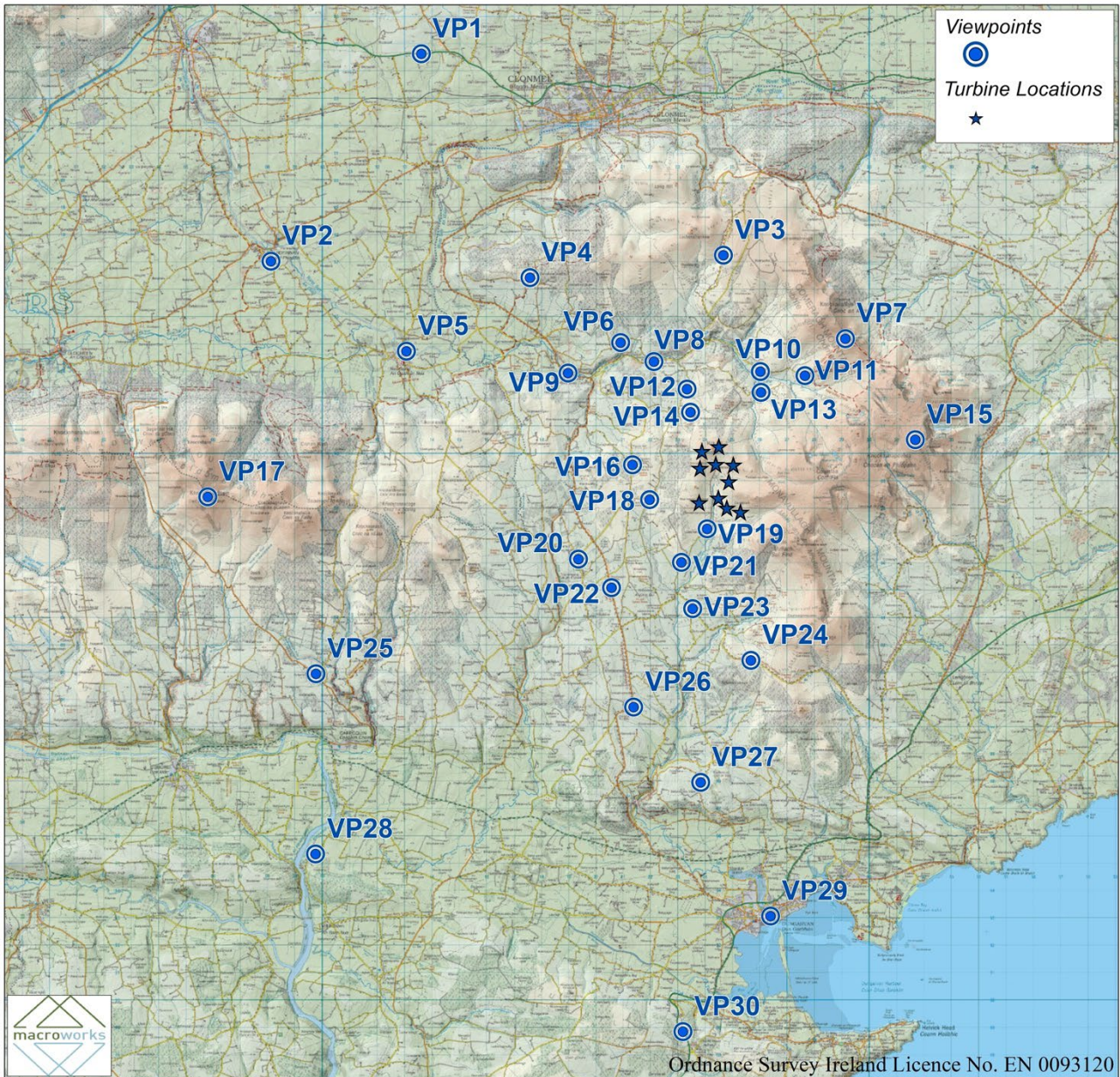


Image 16-13: Map of Viewpoint Locations



16.5 Potential Effects

Based on the assessment criteria employed herein, potential significant effects are considered most likely to occur in instances where highly sensitive landscape and visual receptors coincide with high order landscape and visual effects (see descriptions Table 16.1, Table 16.2 and Table 16.4). From Macro Works previous experience of this type of proposed development in a transitional rural setting, it is considered that potentially significant landscape and visual impacts have the potential to occur in the following ways.

Landscape Effects

- 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 Effects

- a) A combination of visual and spatial dominance as seen from highly sensitive receptor locations. This is most likely to occur within 0-3km of the Proposed Development as a result of the perceived scale of the proposed turbines (see Image 16-14).
- 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, some of the most highly sensitive physical landscape receptors are considered to be the Comeragh Mountains, Knockmealedown Mountains and the Nire river valley. The River Suir, River Blackwater and the coastal areas of the study area are also considered highly sensitive landscape receptors in this instance.

The most sensitive visual receptors are likely to be the designated scenic routes identified in the Waterford and Tipperary County Development Plans in addition to the numerous linear walking, cycling and driving routes that traverse Comeragh Mountains and its surrounding landscape context. These are considered to be sensitive receptor locations on the basis that they represent a notable degree of scenic and recreational amenity.

16.6 Mitigation Measures

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

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

- Avoidance in design
- Buffering of Residential Receptors



Mitigation by Avoidance and Design

Macro Works have been involved in the Proposed Development since 2020, when early-stage constraints and layout analysis assessments took place. One of the main mitigation by design measures employed after the early stage constraints and layout analysis assessments was to contain the development, insofar as possible, within the horse-shoe ridge the site is located along and within. A set of preliminary wireframe montages were generated from some key viewpoints throughout the study area, which identified that some of the turbines in the initial layout appeared slightly disjointed from the main turbine array and presented slightly out of context as they were located further uphill along the eastern extents of the site. Thus, when viewed from surrounding receptors, some of these turbines appeared as slight outliers and presented along the more elevated, rugged sections of the Comeragh Mountains, as opposed to the transitional foothills that the remaining turbines in the proposed array are located in.

As part of further design iterations, an additional turbine was sited to the west of the horse-shoe ridge within an area of conifer forestry along the west-facing sloping lands. Further sets of preliminary wireframe montages identified this turbine presented as an outlier to the rest of the development. As part of further mitigation measures in line with the existing proposals to contain all proposed turbines within or along the horse-shoe ridge, this turbine was also relocated to the sloping lands within the horse-shoe ridge and landscape context of the remaining proposed turbines.

Furthermore, an assessment of various layouts was undertaken ranging from 10-14 turbines at tip heights ranging from 150-200m (refer to Appendix 16.3 – Comparative Views). It was considered that the layout of 14 turbines at a tip height 150m presented slightly disjointed in this landscape context with little sense of order and extended further in to the elevated uplands than then the 10 turbine arrays. With regard to the 10 turbine arrays, both of these were viewed in a much more compressible manner in this landscape context and presented as being contained within and along the horseshoe ridge. Nonetheless, it was considered that the 200m tip height turbines had more potential to generate a sense of overbearing for local receptors in this context than the 185m tip height turbines. As a result, a final layout comprising 10 turbines located within or along the horseshoe ridge at a tip height of 185m was then generated from this iterative design process.

Buffering of Residential Receptors

For the proposed Coumna­gappul Wind Farm, the minimum distance of any turbine from the nearest residential receptor is 820m, which is in excess of the draft Wind Energy Development Guidelines (2019) minimum set back of 500m and the setback distance of 4 times the tip height of the proposed turbines. In this instance the setback for visual amenity purposes would be 740m from residential receptors on the basis of the 185m high turbines.

Variation in residential buffer distances within the nearest kilometre has a much more noticeable effect on perceived turbine scale than when it occurs in the context of more distant views. This is due to the law of perspective – that doubling the distance to an object halves its perceived height. The reduction factor is even more pronounced when considered in the context of the ‘swept area’ of turbine blades and not just their tip height. This exponential ‘scale in relation to distance scenario is illustrated in Image 16-14 below.

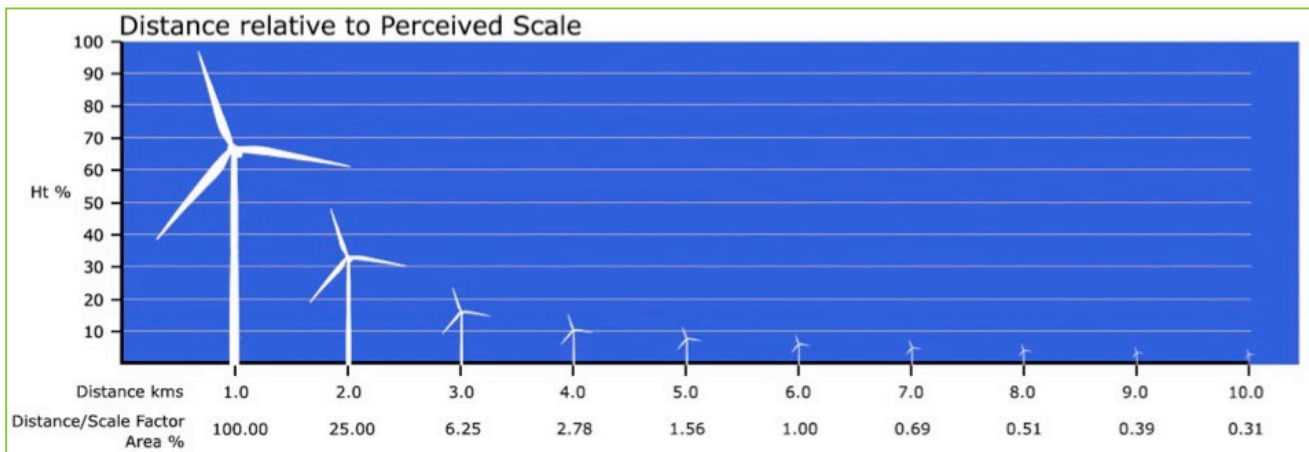


Image 16-14: Turbine 'scale in relation to distance' relationship

16.6.1.1 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 Site is located in a transitional area between a robust, rolling, working landscape and the more sensitive upland areas within the Comeragh and Monavullagh Mountains. This is clearly evident through the transition in landform that occurs within the central study area, which principally comprises a mix of pastoral farmland, commercial conifer forestry plantations and upland moorland and heath. The Site is contained by a horseshoe ridge that comprises Milk Hill to the north and Bleantassour Mountain to the east, both of which represent the transitional foothills of the Comeragh Mountains. The Knockavanniamountain Stream flows in a southerly direction through the central parts of the site, whilst the Coumavane Stream flows in a general westerly direction, downslope for the uplands in the eastern half of the study area, and merges with the Colligan River, which flows south and out of the mouth of the horseshoe ridge that contains the site. The clear delineation between rolling foothills and remote, rugged uplands is evident in the aerial mapping (see Image 16-1), where the more rugged and sensitive uplands are entirely cloaked in extensive areas of moorland in the eastern half of the central study area and comprise small upland lakes, rocky outcrops and steep cliffs. Overall, the central study area is considered a landscape of transition where the more typical working rolling lowlands interface with the more sensitive and remote uplands.



Due to the location of the study area adjacent to the two notable upland areas, the Comeragh and Monavullagh Mountains and the Knockmealedown Mountains, there is a notable degree of scenic amenity within the central study area, much of which relates to views to and from the elevated uplands. In terms of designated scenic amenity, several sections of Waterford scenic route designations occur throughout the central study area. These occur within the Nire Valley to the north, along the R672, a local road to the west, and along several local roads in the surrounds of Kilbrien Lower in the southern half of the central study area. In addition, due to the elevated and remote nature of the Comeragh and Monavullagh Mountains, there is also a notable degree of undesignated scenic amenity within these uplands. This is further reinforced by the notable number of walking, cycling and scenic driving routes that traverse the central study area, including the Nire Valley Trails, the Comeragh Mountain drive and the Sean Kelly Cycling Loops. Indeed, much of the recreational amenity within the study area solely relates to the Comeragh and Monavullagh Mountains. Nevertheless, some of the most highly scenic and visually susceptible aspects of the Comeragh Mountains, such as Coumshingaun Lough, Mahon Falls, and other rugged, steep escarpments, are all located outside of the central study area on the opposite side of the Comeragh and Monavullagh Mountains.

With regard to landscape designations within the central study area, the Site is contained within the western extents of the Upland landscape type and the subsequent landscape 'unit 6A – Comeragh Uplands'. As per the current Waterford CPD, the Site and parts of the central study area are contained within the 'Most Sensitive' landscape sensitivity classification, which carpets the entire Comeragh and Monavullagh Mountains and their surrounding foothills. It is also worth noting that the 'most sensitive' classification swiftly transitions to a broad 'Low' sensitivity classification in the northern, southern and western extents of the central study area, with some isolated areas of 'high sensitivity'. It is accepted that the eastern extents of the central study area that comprise the remote elevated uplands of the Comeragh and Monavullagh Mountains represent a highly sensitive landscape setting. However, at a more localised scale, it is considered that the Site and much of the immediate study area to the north, south and west, represent a more typical transitional working landscape setting that comprises a varied mix of productive uses including agricultural farmland and commercial forestry.

Overall, the central study area represents a varied mix of land uses and the interface of the Comeragh and Monavullagh Mountain uplands. To the north, south and west, the land use comprises more typical lowland/transitional land cover such as pastoral farmland and conifer forestry. To the east, the terrain swiftly transitions to the more remote uplands of the Comeragh and Monavullagh Mountains and represents some of the most sensitive aspects of the central study area that present with a notable degree of scenic amenity and recreational amenity. There is also some sense of the naturalistic in the more elevated remote parts of the uplands. On balance of the reasons outlined above, the landscape of the central study area is deemed to be Medium as it is heavily influenced by the robust working landscapes in the northern, southern and east parts of the central study area. Furthermore, even some of the landscape in the immediate surrounds of the Site represents typical working rural uses, such as to the south, where the landscape that flanks the Colligan River is cloaked in pastoral farmland. Nonetheless, some localised parts of the central study area, such as the most elevated sections of the Comeragh and Monavullagh Mountains to the east, are considered highly sensitive landscapes.



Wider Study Area (c. 5-20km)

The wider study area is similar to the central study area in that it comprises similar landscape characteristics and values, albeit in some areas, the landscape sensitivity and landscape values are heightened. Some of the most sensitive landscape areas within the wider study area include the Comeragh and Monavullagh Mountains and the Knockmealdown Mountains. These broad upland areas present with a high degree of scenic amenity and have strong recreational amenity values, highlighted by the various waymarked walking trails, cycling routes and scenic route designations that cloak these uplands and the near surrounds. Other sensitive landscape features and landscape areas within the wider study area include the River Suir and River Blackwater Valleys, located in the north and south-western portions of the study area, respectively. The coastline is also located within the south-eastern quadrant of the study area and is a highly sensitive landscape feature that presents with similarly susceptible scenic and recreational landscape values as the uplands. The popular Waterford Greenway occurs in the wider southeast quadrant of the study area and connects the settlement of Dungarvan to Waterford City. At a more localised scale, the wider study area also comprises a variety of notable heritage features such as stately houses, demesne landscapes and castle remnants, a large proportion of which are situated along the major river corridors such as the River Suir and Blackwater River.

Indeed, whilst the study area comprises a complex mix of highly sensitive landscape areas and susceptible visual receptors, the most notable land use within the study area is that of pastoral farmland, which underpins the more typical rural nature of much of the wider study area. The wider study area also encompasses several moderate-sized settlements, such as Dungarvan to the south and Clonmel to the north, all interconnected by numerous major route corridors, including the N24, N25, N72 and N76, in addition to the national railway line. The lowland landscape that encircles much of the sensitive uplands within the study area is also influenced by a broad range of highly anthropogenic land uses, including active quarries, a range of industrial and commercial land uses, blocks of commercial conifer forest, in addition to existing wind farm development. The robust and working nature of these lowlands is further highlighted in the Waterford CDP, which identifies large parts of the rolling lowlands within the wider study area as a 'Low' sensitivity landscape. Furthermore, whilst the landscape in the surrounds of the Knockmealdown Mountains is classified as 'Primary' and 'Secondary Amenity Areas' in County Tipperary, the majority of the wider landscape in Tipperary is neither classified as 'Primary' or 'Secondary Amenity Areas', and instead represents a typical non-distinctive rural landscape context.

Overall, it is considered the landscape of the wider study is complex and encompasses a variety of landscape types, values and sensitivities. Indeed, it encompasses some highly sensitive landscape areas and features whilst also comprising broad landscape areas that are more typical and robust in nature. As a result of the reasons outlined above, it is considered that the wider landscape has an overriding **Medium** landscape sensitivity, albeit some parts of the Study Area, such as the uplands, river valleys and the coastline, have a landscape sensitivity of High and in some cases Very High.

16.6.1.2 Magnitude of Landscape Effects

The physical landscape as well as the landscape character of the Site and its central study area (<5km) is affected by the proposed wind turbines as well as ancillary development such as internal roads including grid connection, areas of hard standing for the turbines, the borrow pit, bridge crossing and the substation compound. By contrast, for the wider landscape of the study area, landscape impacts relate exclusively to the influence of the proposed turbines on landscape character. The aspects of the Proposed Development that are likely to have an impact on the physical landscape and landscape character are described in Chapter 2 (Description of Proposed Development) with construction processes described in the Construction and Environmental Management Plan (CEMP) at Appendix 2.1.



16.6.1.2.1 Construction Stage Effects on the Physical Landscape

It is considered that the Proposed Development will have a modest physical impact on the landscape within the Site as none of the Proposed Development features have a large 'footprint' and land disturbance/vegetation clearing will be relatively limited. The topography and land cover of the Site will remain largely unaltered with construction being limited to tracks, areas of hard standing for the turbines, the on-site substation compound, temporary site construction compounds, proposed met masts, borrow pit and the proposed bridge crossing. Excavations will tie into existing ground levels insofar as possible 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. Tree felling of approximately 5.4 ha of coniferous forestry is required at the main entrance to the proposed wind farm and along a short section of the internal access tracks (for approximately 1.2km) to accommodate the construction. .

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

There will be one 110kV on-site substation compound constructed to collect the generated power from the proposed development before distributing it to the existing network substation at Dungarvan. The 110kV on-site substation will be located in a pastoral field west of the local access lane that enters the site from the south and west of the Knockavanniamountain Stream. The proposed sub-station compound will comprise of two single storey buildings with pitched roofs and will have a concrete render finish. The proposed substation compound, which will be enclosed by a 2.5 metre high steel palisade fence and will be 135m in length by 63m in width. The most notable construction stage landscape impacts resulting from the proposed on-site substation relate to the construction of concrete foundations to facilitate that substation building. Overall, these construction stage effects are relatively minor and compare to the construction of a large industrial farm shed.

All internal site cabling will be underground and will follow site access tracks without the need for trenching through open ground. Indeed, the land cover of the Site will only be interrupted as necessary to build the structures of the proposed wind farm and to provide access. Impacts from land disturbance and vegetation loss at the site are considered to be modest in the context of this transitional foothill landscape setting that is influenced by an array of working rural land uses. Some forest felling will be necessary to accommodate the construction access tracks in the western extents of the Site. All forestry that is removed will be subject to forest replanting provisions.

One permanent meteorological (Met) masts will be erected on site and will comprise of 110m high lattice steel masts with a shallow concrete foundation. The most notable construction stage effects here relate to the minor amount of ground excavation required to facilitate the shallow foundations for the steel mast structure. The Proposed Development also includes the construction of a new access to the met mast along a local road in the townland of Reanadampaun Commons west of Bleantasour Mountain.

A watercourse bridge crossing will also be constructed as part of the Proposed Development and comprise a single span bridge c. 15m in length which will rise some c. 2.5m above the existing ground levels. The bridge structure will be constructed using a mix of steel and concrete, generating localised landscape impacts in its immediate surroundings. Nonetheless, due to its relatively modest scale and relatively contained location, it has limited potential to generate any notable landscape impacts on within the immediate or central study area.



A borrow pit is also proposed as part of the proposed wind farm development with excavations occurring to a depth of 14m within an area of 150m (L) x 100m (W). During the construction stage this borrow pit will generate some notable landscape impacts in its immediate surrounds, however, it will be fully reinstated to existing ground levels using material excavated on site – refer to the Peat and Spoil Management Plan, Appendix 11.2, Volume III.

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

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

There will be some long term/permanent construction stage effects on the physical landscape in the form of turbine foundations and hardstands, access tracks and a substation, but only the substation 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 Site and it will be reinstated / restored to the prevailing land cover. Thus, the construction stage landscape effects of the Proposed Development are largely reversible.

There will be some construction stage effects on landscape character generated by the intensity of construction activities (workers and heavy machinery) as well as areas of bare-ground and stockpiling of materials as identified in the Construction and Environmental Management Plan (CEMP). Such effects will be temporary/short term in duration and are, therefore, not considered to be significant. Overall, construction stage landscape effects are considered to be of a **High-medium** magnitude.

16.6.1.2.2 Operational and Decommissioning Stage Effects on Landscape Character

For most commercial wind energy developments, the greatest potential for landscape impacts to occur is as a result of the change in character of the immediate area due to the introduction of tall structures with moving components. Thus, wind turbines that may not have been a characteristic feature of the area become a new defining element of that landscape character. In this instance, wind turbines are not a characteristic feature of the immediate study area, albeit, the wider study area is influenced by some existing wind farm development the most notable of which is an 8 turbine development (Woodhouse) in the wider southern periphery of the 20km extents. Two single turbine developments are also located within the wider study area, however, due to their scale, they have little notable influence on the character of the wider landscape (Refer to Section 16.6 for further assessment of cumulative effects).



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 broad scale of the landform, landscape elements and land use patterns. These attributes prevent the height and extent of the proposed wind farm from causing the type of scale conflict that can occur in more intricate landscape areas. Some of the rolling hills, ridges and the foothill landscape in the immediate surrounds of the Site have a notable working character due to the presence of the existing commercial conifer plantations and broad areas of pastoral farmland that occur within and around the Site. Although the Proposed Development represents a stronger human presence and level of built development than currently exists on the Site, it will not detract significantly from transitional working character.

It is important to note that in terms of duration, this development proposal represents a long term, but not permanent impact on the landscape and is reversible. The lifespan of the project is 40 years, after which time it will be dismantled and the landscape reinstated to prevailing conditions. Within 2-3 years of decommissioning there will be little evidence that a wind farm ever existed on the Site, albeit the proposed on-site substation will remain in perpetuity as part of the national grid infrastructure, in addition to residually useful access tracks.

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

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

16.6.1.3 Significance of Landscape Effects

The significance of landscape effects is a function of landscape sensitivity weighed against the magnitude of the landscape impact. This is derived from the significance matrix (Table 16.3) used in combination with professional judgement.

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

Based on a Medium sensitivity judgement and a High-medium / Medium magnitude of operational stage landscape impact, the localised significance of impact is considered to be **Substantial-moderate / Negative / Long-term** within and immediately around the Site. Thereafter, significance will reduce to Moderate and Slight at increasing distances as the development becomes a progressively smaller component of the wider landscape fabric even in the context of higher sensitivity landscape units / features such as the Uplands to the east and west and the coastline in the southeast quadrant of the Study Area.



16.6.2 Visual Effects

Table 16.9 below summarises the full textual assessment of visual effects for each Viewshed Reference Point (VRP) contained in Appendix 16.1. 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.

Table 16.9: Summary of Visual Effects at Viewshed Reference Points (VRP’s)

VRP No.	Distance to nearest turbine km	Visual receptor Sensitivity (see appendix 16.1)	Visual Impact Magnitude	Significance of Visual effect
VP1	17.8km (T1)	Medium	Negligible	Imperceptible / Negative / Long Term
VP2	17.2km (T1)	Medium	Low-negligible	Slight-imperceptible / Negative / Long Term
VP3	7.0km (T2)	High-medium	Low	Slight / Negative / Long Term
VP4	9.0km (T1)	High-medium	Low	Slight / Negative / Long Term
VP5	11.4km (T1)	Medium	Low-negligible	Slight-imperceptible / Negative / Long Term
VP6	4.9km (T1)	Medium	Medium-low	Moderate-slight / Negative / Long Term
VP7	6.1km (T2)	High	Medium-low	Moderate / Negative / Long Term
VP8	3.7km (T1)	High-medium	Negligible	Imperceptible / Negative / Long Term
VP9	5.7km (T1)	Medium	Low	Slight / Negative / Long Term
VP10	3.1km (T2)	High-medium	Medium-low	Moderate-slight / Negative / Long Term
VP11	4.1km (T2)	High-medium	Medium-low	Moderate-slight / Negative / Long Term
VP12	2.4km (T1)	Medium	Medium-low	Moderate-slight / Negative / Long Term
VP13	2.5km (T2)	Medium	Medium-low	Moderate-slight / Negative / Long Term
VP14	1.5km (T1)	Medium	Medium	Moderate / Negative / Long Term
VP15	6.7km (T6)	High	Low	Moderate-slight / Negative / Long Term
VP16	2.4km (T4)	High-medium	Medium	Moderate / Negative / Long Term



VRP No.	Distance to nearest turbine km	Visual receptor Sensitivity (see appendix 16.1)	Visual Impact Magnitude	Significance of Visual effect
VP17	17.9km (T12)	High	Low-negligible	Slight / Negative / Long Term
VP18	1.8km (T12)	Medium	Medium	Moderate / Negative / Long Term
VP19	967m (T12)	Medium	High	Substantial-moderate / Negative / Long Term
VP20	4.9km (T12)	Medium	Low	Slight / Negative / Long Term
VP21	2.2km (T12)	Medium	Medium	Moderate / Negative / Long Term
VP22	4.4km (T12)	High-medium	Medium-low	Slight / Negative / Long Term
VP23	3.8km (T12)	High-medium	Medium-low	Moderate-slight / Negative / Long Term
VP24	5.4km (T11)	High	Low	Moderate-slight / Negative / Long Term
VP25	15.3km (T12)	High-medium	Low-negligible	Slight-imperceptible / Negative / Long Term
VP26	7.8km (T12)	High-medium	Low	Slight / Negative / Long Term
VP27	9.9km (T11)	High-medium	Low	Slight / Negative / Long Term
VP28	19.0km (T12)	High-medium	Low-negligible	Slight-imperceptible / Negative / Long Term
VP29	14.7km (T11)	Medium	Negligible	Imperceptible / Negative / Long Term
VP30	19.0km (T11)	High	Low-negligible	Slight-imperceptible / Negative / Long Term

16.6.2.1 Impacts on Designated Views

Due to the complex and dynamic nature of the landscape within the study area, up to 13 (VP1, VP3, VP8, VP10, VP11, VP16, VP22, VP23, VP24, VP25, VP26, VP27 & VP30) viewpoints were selected to represent scenic view and route designations. Whilst a notable number of scenic view and scenic route designations occur within the study area, many of these, especially those in the wider eastern and northern half of the study area, will afford no visibility of the proposed turbines. Furthermore, large sections of the scenic route designations that occur along the southern foothills of the Knockmealedown Mountains in the wider western half of the study area will also experience a very limited degree of turbine visibility, with many sections of these routes experiencing no visibility at all.



Scenic Route S8

Scenic Route S8 is described in the current Waterford CDP as “North-West from Dungarvan to Tooraneena on the R672. Third class North to Ballymacarbry. Join R671 to Clonmel taking the R678 and turning south for a third class route through the Comeraghs.” It is one of the most extensive scenic routes that passes through the study area and is located just under 2.5km west of the nearest proposed turbine at its nearest point. Due to the expansive nature of this scenic route designation, it is represented by five viewpoints, including VP3, VP9, VP16, V22 and VP26. Sections of this route also form part of the Comeragh Mountain Drive and Sean Kelly Cycle routes, further heightening its sensitivity. The most notable visual impacts along this scenic route designation are likely to occur within the central study area. The nearest and most visually prominent views afforded of the proposed development from this scenic route are represented by VP16. Viewpoint VP16 affords a view of the turbines within a transitional foothill context, where they will present as prominent features and at a notable scale. Whilst the turbines will generate a notable increase in the intensity of built development in this transitional landscape context, they will not appear over-scaled, nor do they appear out of place in this landscape context that comprises a range of other working transitional land uses. Overall, the significance of visual impact was deemed Moderate at VP16, which was the highest significance of visual impact along scenic route S8. Whilst clearer views of the entire development have the potential to be afforded from other sections of this scenic route, such as viewpoint VP26, these views are afforded from a distance of over 8km, where the proposed turbines are considered to have a sub-dominant visual presence and are viewed in the context of a broad sweeping view of the Comeragh Mountains, where they do not appear out of place in terms of their scale or function. The significance of visual impact at all other representative views along the scenic route S8 was deemed to be Slight or less due to the viewing distances from the site and, in some instances, the partially screened nature of the proposed development.

Scenic Route 9

Scenic route 9 is located in the northern half of the study area along a local road that traverses the River Nire Valley and is described in the current Waterford CDP as “Third class route east of the R671 at Ballymacarbry along the banks of the Nire, joining with route.” Three viewpoints were chosen to represent this scenic route (VP8, VP10 and VP11) and also represent members of the local community and amenity features such as walking trails and cycling routes. It is important to note that some parts of this route will be entirely screened from the proposed development by intervening terrain, whilst dense vegetation along the sloping valley sides will also heavily screen the view of panels. VP8 is located immediately south of the River Nire corridor in a heavily contained section of the river valley. Whilst the ZTV identifies some potential for theoretical visibility of the proposed turbines, the dense mature vegetation on the sloping north-facing valley sides will entirely screen the proposed development. Thus, the significance of visual impact is deemed ‘Imperceptible’ at VP8.

In contrast, VP10 and VP11 represent more elevated sections of this scenic route along the sloping terrain north of the River Nire. Both viewpoints afford clear views of the proposed development, where up to 6 of the proposed turbines will be visible to varying degrees rotating along the distant ridge. In both views, the turbines present with some minor negative aesthetic effects and will marginally detract from the partially enclosed and scenic nature of the river valley context. Nonetheless, the overall scale of the development is heavily diminished from this viewing context as nearly half of the turbines will be entirely screened, whilst only glimpses of turbine blade tips will be afforded along this transitional rolling ridge. Furthermore, the turbines are viewed well offset from the more visually sensitive parts of the Comeragh Mountain uplands. As a result, the visual impact significance at both of these viewpoints was deemed Moderate-slight at both VP10 and VP11.



Scenic Route 10

The only other scenic route that passes through the central study area is scenic route 10, which is located in the southern half of the central and wider study area and is described as “*Third class route through the Monavullagh Mountains from the R672 at Lemybrien*”. This route is represented by both viewpoints, VP23 and VP24, albeit VP24 is marginally outside the central study area. It is important to note that the eastern extent of this scenic route designation is entirely outside of ZTV and will afford no visibility of the proposed turbines. VP23 represents one of the nearest sections of this route to the proposed development and is also located at the small village settlement of Kilbrien. A clear view of up to nine of the proposed turbines is afforded from here, where they will likely draw the eye in the view to the north. The turbines present with some notable instances of overlapping blade sets, generating a degree of visual clutter in the view. Nonetheless, the turbines are well accommodated in this landscape context and are viewed within and along the horseshoe ridge that contains the site. Overall, the visual impact significance was deemed Moderate-slight at VP23. Viewpoint VP24 affords a similar view of the proposed development from an elevated part of this scenic route in the Monavullagh Mountains. In similar circumstances to VP23, the proposed moving turbine components are likely to draw the eye in this view. However, they are viewed from a further distance and present with a sub-dominant visual presence in this sweeping broad panorama that extends across the lowlands to the west and south, and towards the distant Knockmealedown Mountains. Thus, the significance of visual impact at VP24 was deemed Slight.

Whilst clear distant views have the potential to be afforded from other scenic designations in the wider study area, due to the distance from the site, they were all deemed to have a visual impact significance of Slight or less. Furthermore, in almost all instances the Proposed Development presents well offset from some of the most visually sensitive aspects of scenic amenity from scenic route and view designation within the central and wider study area. As a result of the reasons outlined above, it is not considered that there will be significant visual impacts at scenic route and scenic view designations throughout the study area.

16.6.2.2 Impacts on Local Community views

Local Community views are considered to be those experienced by those people who live, work and move around the area within approximately 5km of the Site. These are generally the people that are most likely to have their visual amenity affected by a wind energy proposal due to proximity to the turbines, a greater potential to view turbines in various directions, or having turbines as a familiar feature of their daily views. Up to 14 views were chosen to represent the local community and include VP6, VP8, VP9, VP10, VP11, VP12, VP13, VP14, VP16, VP18, VP19, VP21, VP22 and VP23.

The highest impact significance of ‘Substantial-moderate’ occurs at VP19, which is one of the nearest potential views afforded of the Proposed Development and represents the local community at the mouth of the horseshoe ridge that contains the site. All ten of the proposed turbines have the potential to be viewed from this landscape context, albeit some of the turbines will be partially screened by intervening vegetation in the surrounds of some of the nearest dwellings. Nonetheless, the proposed turbines will present here at a considerable scale and with a dominant visual presence, where they cloak the lower and upper reaches of the horseshoe ridge viewed to the north. Whilst the turbines will be one of the most distinctive features of the view to the north, they do not present with any notable sense of overbearing and do not appear over-scaled when viewed in combination with the surrounding broad landscape features and land uses. Furthermore, the turbines will not block or obstruct the view of the more elevated uplands viewed to the east.



Four viewpoints were classified with a residual visual impact significance of Moderate and include VP14, VP16, VP18 and VP21, all representing local community receptors in the central study area's northern, western and southern extents. VP14 represents the nearest local community receptors to the north of the site. Whilst more than half of the turbines will be heavily screened from this near view, turbines T01 and T02 will be visible rotating above Milk Hill and its surrounding ridgeline at a notable scale, further accentuated by the uphill nature of the view. Nonetheless, this is a relatively simple view of the proposed turbines where they do not present over-scaled or incongruous in this robust transitional foothill landscape context. Both viewpoints, VP16 and VP18, are situated along the rolling landscape west of the site. Whilst the turbines will be clearly visible at a notable scale from both viewpoints, they do not present with any sense of overbearing and are viewed in the context of the transitional robust foothill context that comprises a range of working land uses. Whilst the turbines will be distinctive features of the view to the east, they do not present at an overwhelming scale and will not block or obstruct the view of the more elevated uplands. Viewpoint VP21 affords a similar view of the proposed development to VP19, albeit further away. The proposed turbines will present contained within the horseshoe ridge context, and whilst they will be a prominent feature of the view and will contribute to a notable increase in the intensity of built development in this remote transitional context, they will not appear out of place in terms of their scale or function in this broad transitional landscape.

All other viewpoints representing local community views within the study area were deemed to have a visual impact significance of 'Moderate-slight' or less. Whilst some clear views of the entire development will be afforded from some of these parts of the study area, especially the southern half of the central study area where the mouth of the horseshoe ridge is oriented, the turbines generally appear in a legible manner do not appear over-scaled in the context of the wider Comeragh and Monavullagh Mountains. Furthermore, the perceived scale of the overall development is notably diminished in the northern half of the central study area, where up to half of the proposed turbines will be screened by the horseshoe ridge that contains the Site.

Overall, the Proposed Development will present in a dominant manner at some of the nearest residential receptors located to the south of the Site. Nonetheless, the most notable visual impacts for local community receptors will be contained to this relatively remote part of the central study. Whilst some of these local receptors will experience borderline significant impacts (Substantial-moderate), it is not considered that the proposed development will generate significant visual impacts at local community receptors within the study area.

16.6.2.3 Impacts on Centres of Population

Six viewpoints (VP2, VP5, VP9, VP20, VP23 & VP29) were chosen to represent centres of population within the central and wider study area. It is important to note that many of the larger settlements within the study area including Clonmel, Kilmactomas, Carrick-on-Suir, Cappoquin and Lemybrien were screened out as requiring viewpoints for assessment at an early stage of the assessment, as they have no potential for visibility (refer to the ZTV at Image 16-11 above).



The only notable settlements within the central study area with the potential for turbine visibility include the small villages of Kilbrien and Tooraneena, located to the south and west of the Site, respectively. Located in a similar transitional foothill context to the proposed development, Kilbrien is the nearer of the two and is represented by viewpoint VP23. A clear view of all but one of the proposed turbines has the potential to be afforded from the centre of the village of Kilbrien. Viewed to the north of the settlement, the proposed turbines will likely draw the eye, however, they do not present as spatially overbearing, nor are they viewed in some of the more sensitive viewing aspects afforded from this settlement. Whilst the proposed development will present with some negative aesthetic effects, principally associated with the overlapping of turbine blade sets, the turbines will not appear out of place in terms of their scale or function at this settlement. A significance of visual impact of Moderate-slight was deemed appropriate in this instance, however this is heavily influenced by the High-medium sensitivity of visual receptor, as this view is also representative of a designated scenic route and section of the Sean Kelly cycle route.

Viewpoint VP20 represents the settlement of Tooraneena, which is just under 5km west of the Site. In contrast to Kilbrien, a more screened view of the proposed development is afforded from VP20. The nacelles of up to three of the turbines have the potential to be viewed from here, whilst partial views of blade sets also have the potential to be afforded from the outskirts of this small settlement. It is also important to highlight that the proposed development is viewed opposite to the main aspect of visual amenity afforded at the settlement of Tooraneena, which relates to views of the Knockmealedown Mountains further to the west. Thus, VP20 was classified with a visual impact significance of Slight.

All other centres of population represented by viewpoints within the wider study area were deemed to have a visual impact significance of Slight or less, which is principally influenced by their distance from the Site combined in some instances by the high degree of vegetation in the direction of the Site.

As a result of the reasons outlined above, it is not considered that any significant visual impact will occur in respect of centres of population within the central and wider study area.

16.6.2.4 Impacts on Major Routes

The most notable major routes within the study area include the N24, N25, N72 and N76, all of which are situated within the wider study area. Both the N25 and N26 within the study area will be entirely screened from the proposed development by the surrounding upland terrain, whilst limited potential visibility of the proposed development has the potential to be afforded from the brief sections of both the N24 and N72. VP1 represents the N24 national primary route and affords a brief view of the proposed turbines from a distance of just under c.18km. Due to the considerable viewing distance, combined with the busy nature of this major route, the brief view of the proposed development will have little notable impact on the visual amenity of this route, and thus, the significance of visual impact was deemed Slight-imperceptible.

The nearest major route to the proposed development is the R672 regional road which passes just over 3.8km west of the Site at its nearest point and is represented by viewpoints VP22 and VP26. A section of this regional road within the central study area is also a designated scenic route and forms part of the Sean Kelly on-road cycling routes and the Comeragh Mountain drive. Whilst relatively clear views of the proposed turbines will be afforded from some sections of this regional road, they will often be viewed in the context of a broad panoramic view of the Comeragh and Monavullagh Mountains and present in a clear and comprehensible manner. The turbines will not block or obstruct the view of these upland areas and present on the sloping transitional lands further west of the more visually sensitive upland areas. As a result, both VP22 and VP26 were classified with a Slight significance of visual impact.

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



16.6.2.5 Impacts on Heritage and Amenity Features

Due to the scenic and dynamic nature of some of the surrounding landscape features, a considerable number of representative views were chosen to represent amenity and heritage features within the study area, many of which are associated within the elevated uplands. 17 viewpoints (VP2, VP3, VP4, VP5, VP7, VP8, VP9, VP10, VP11, VP15, VP17, VP22, VP23, VP24, VP26, VP28 and VP29) were chosen to represent heritage and amenity features within the study area, almost all of which were also chosen as representative viewpoints for scenic routes, major routes or centre of population.

A series of representative viewpoints were chosen to represent some of the most elevated parts of the surrounding landscape, including VP7, VP15 and VP17. VP7 is located along the summit of Knockanaffrin South, which forms part of the Nire Valley National Looped walking trails. This view represents one of the most elevated views afforded from these trails, where a broad panoramic view is afforded across the Comeragh and Monavullagh Mountains, the surrounding lowland landscape and distant mountain ranges such as the Knockmealedown Mountains. A relatively clear view of the northern and western extents of the proposed turbine array is afforded from this elevated location. Whilst the view of the proposed turbines will increase the intensity of built development in this upland setting, the turbines are well offset from the principal ridgeline of the Comeragh Mountains and present along the transitional terrain further downslope from some of more of the visually susceptible landscape features. In the context of this broad sweeping view, the visible turbines will only occupy a brief visual envelope of fewer than 20 degrees, and thus, VP7 was classified with a visual impact significance of Moderate. VP15 and VP17 were included as representative viewpoints from the Comeragh Mountains and Knockmealedown Mountains summits, respectively. From the summit of Kilclooney Mountain in the Comeraghs, the proposed development will be heavily screened by the rolling ridges in the western extents of the Comeraghs and will have a sub-dominant visual presence. It is important to note that the proposed turbines will only be briefly visible in this view. Furthermore, some of the most visually sensitive landscape features within the Comeragh Mountains, such as Coumshingaun Lough and its surrounding rugged cliffs and escarpments, are located on the eastern extent of the Comeragh Mountains and will be entirely screened from the proposed turbines. Nevertheless, VP15 was classified with a visual impact significance of Moderate-slight, which is heavily influenced by the 'High' receptor sensitivity classification as opposed to the visual impact magnitude. VP17 represents views afforded from the elevated Knockmealedown Mountains. In contrast to VP15, VP17 affords a clear view of the development in its entirety, albeit from a considerable distance of 18km and in the context of a broad sweeping panoramic view. Furthermore, the proposed turbines will be viewed in combination with other existing wind farm developments visible in the distant landscape to the south and west, and therefore the proposed turbines will not appear out of place. Thus, VP17 was classified with a visual impact significance of Slight, also heavily influenced by the 'High' visual receptor sensitivity.

With regard to all other amenity and heritage receptors within the study area, many of these have the potential to afford clear and partial views of the proposed development. Nonetheless, the significance of visual impact at amenity and heritage receptors within the study area ranges between Moderate-slight and Imperceptible. Thus, it is not considered that the Proposed Development will result in significant visual impacts at amenity and heritage receptors within the study area.



16.6.2.6 Significance of Visual Effects

Based on the visual impact assessments outlined in Sections 16.6.2.1 - 16.6.2.5 above, the significance of visual impacts for receptor types ranges between 'Substantial-moderate' to 'Imperceptible'. The most notable visual impacts will occur within the immediate surrounds of the turbines at local residential receptors to the south of the horseshoe ridge that contains the site. Whilst the turbines will be dominant features in this local landscape context, impacts beyond this tend to reduce quickly to 'Moderate' and 'Moderate-slight', as the horseshoe ridge and surrounding upland landscape context tends to screen and partially contain the overall perceived scale of the proposed wind farm development from surrounding receptors. Furthermore, even when clearly visible from surrounding receptors outside of the immediate site context, the proposed turbines generally present in a compressible manner and are well accommodated in this broad landscape context that comprises large-scale landscape features and broad transitional land uses.

It is also worth noting that due to the Site being located in a contained part of the western extent of the Comeragh Mountains, the Proposed Development will be entirely screened in the eastern half of the study area, whilst extensive parts of the settled wider southern and northern half of the study area will afford no visibility of the proposed development.

Overall, the turbines will generate some borderline significant visual impacts in a very localised part of the central study area immediately south of the site. Nonetheless, beyond this, visual impacts will reduce rapidly throughout the central and wider study area, and in over 66% of the 20km study area, there will be no visibility of the proposed turbines. Thus, it is not considered that the proposed Coumna Gappul Wind Farm will result in significant visual impacts at surrounding receptors.

16.6.3 Do Nothing Scenario

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

16.7 Cumulative Impacts

There are three operational wind farms, one consented wind farm and one wind farm development at pre-planning stage contained within the study area. These are set out in Table 16.10 below in

Table 16.10: Cumulative Wind Farms within the study area

Wind Farm Name	Number of turbines	Distance and Direction from proposed turbines	Status
Tierney Single Turbine	1	5.1km west of the proposed turbines	Operational
Dyrick Hill Wind Farm	12	7.9km southwest of the proposed turbines	Proposed
Kilnagrance Single Turbine	1	14km east of the proposed turbines	Operational
Woodhouse Wind Farm	8	17.2km southwest of the proposed turbines	Operational
Knocknamona Wind Farm	8	19km southwest of the proposed turbines	Consented

Note: all cumulative wind farm developments are located outside of the central study area.



The appraisal of cumulative effects with other wind energy developments is based on the cumulative ZTV maps and wireframes provided in **Figure 16.4**. Given the absence of other tall structures within the study area, it is considered that there is no potential for in combination effects with other types of development.

16.1.1 Nature of Cumulative Visibility

The nature of cumulative visibility within the study area is analysed in Table 16.11 below using the same viewpoints that are used for the main visual impact assessment.

Table 16.11: Nature of cumulative visibility

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



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

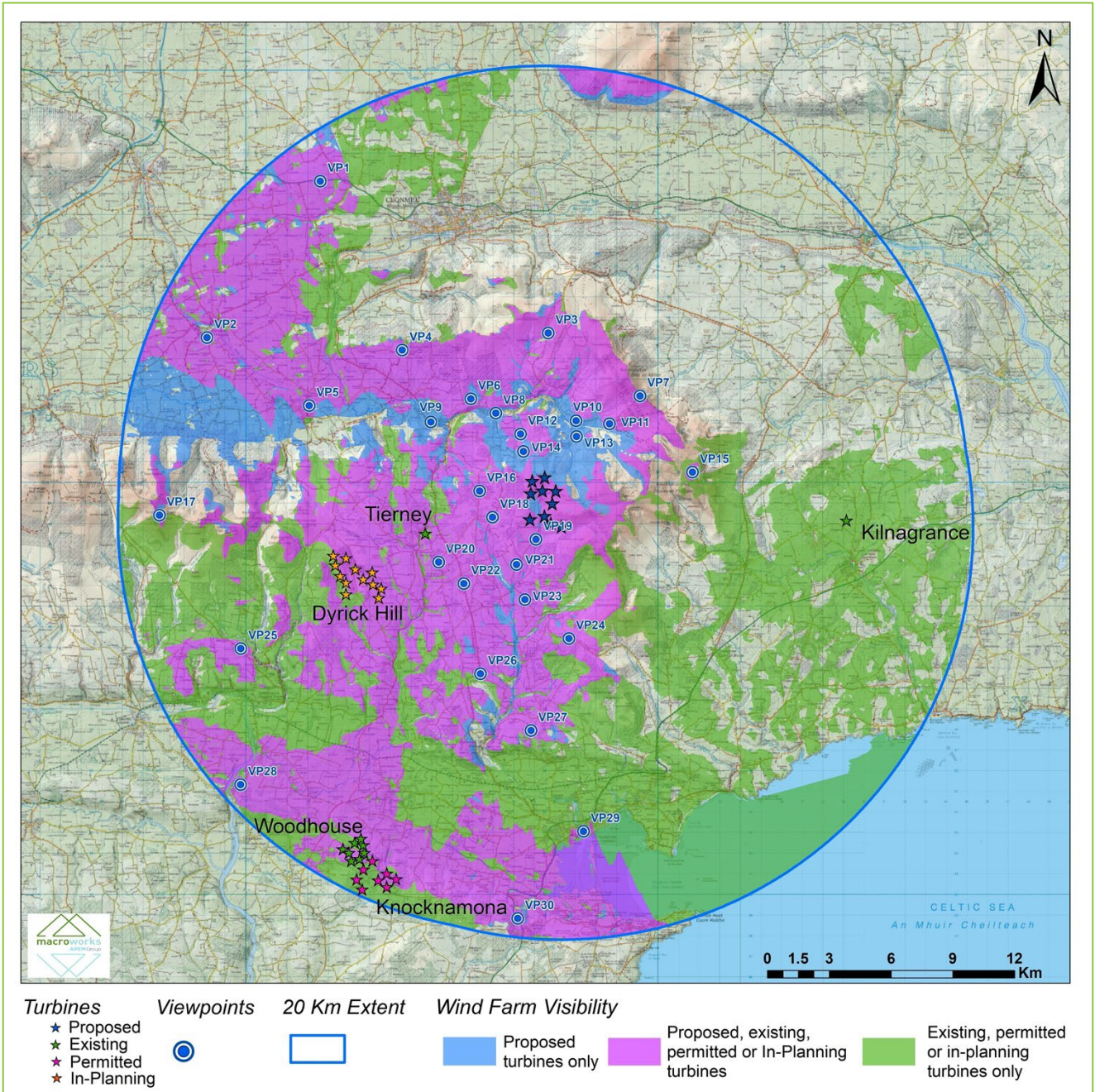


Image 16-15: Cumulative ZTV Map (Tip Height) for Coumnaagappul Wind Farm identifying the potential for intervisibility of the proposed Coumnaagappul Wind Farm and existing, permitted and proposed wind farms within the study area (See Volume IV Figure 16.4)

Although the analysis contained in Table 16.11 and consideration of the Cumulative ZTV map in Figure 16.4 relates principally to cumulative visual impacts (i.e. utilising the selected VP set), it also informs the closely related assessment of cumulative landscape impacts, particularly those relating to cumulative effects on the overall landscape character of the study area. The assessment below, therefore, relates to both cumulative visual effects and cumulative landscape effects.



The cumulative ZTV map (**Figure 16.4**) shows the potential for cumulative visibility between the proposed turbines and all other existing wind farm developments within the 20km study area. At present there is one other operating wind farm and two existing single turbine developments within the study area in addition to one other permitted development and one development at the pre-planning stage. The ZTV map (based on a bare-ground scenario), identifies that the proposed Coumnaagappul Wind Farm has the potential to be viewed in isolation for only 4.8% of the study area, whilst some c. 35% of the study area will have no visibility of any existing, permitted or proposed turbines. A further 31.9% of the study area will be entirely screened from the proposed Coumnaagappul development, albeit, these parts of the study area will afforded visibility of existing, permitted or proposed (Dyrick Hill Wind Farm) turbines. Finally, up to 28.3% of the study area has the potential to afforded views of the proposed Coumnaagappul turbines in combination with other existing permitted and proposed wind farms.

Table 16.11 above gives an analysis of the nature of cumulative visibility within the study area based on the selected VRPs. Whilst in the majority of instances, the proposed Coumnaagappul turbines will be viewed in combination with other existing, permitted or proposed wind turbines, there will also be some notable areas in the central study area where the proposed Coumnaagappul turbines will be viewed in isolation. The most notable area where the proposed turbines will only have the potential to be viewed in isolation occurs to the north of the Site and in the surrounds of the River Nire valley. Furthermore, a notable part of the northwest quadrant of the wider study area will only have the potential to afford views of the Proposed Development in isolation as the Knockmealedown Mountains, the foothills of the Comeragh Mountains, will screen other existing, permitted and proposed wind farm development. Nonetheless, as both the existing Tierney Turbine and the proposed Dyrick Hill turbines are situated within a similar landscape context to the Site, between the most elevated parts of the Knockmealedown Mountains and the Comeragh Mountains, there is some notable potential cumulative views of the Proposed Development in combination with existing and permitted developments. Furthermore, due to the elevated nature of the terrain surrounding the Site, there is notable potential to afford combined views of the Proposed Development and existing and permitted developments in the southern periphery of the study area. However, despite the potential for cumulative views to be afforded with existing, permitted, and other proposed development within the study area, they will present distinctly separate from the proposed Coumnaagappul turbines due to their notable offset distances (the nearest existing turbine to the Proposed Development is some c. 5.1km west).

Some of the more sensitive receptors within the study area include the scenic routes that traverse the central and wider study area, many of which travel across elevated terrain and afford broad views across the wider landscape. Due to the extensive nature of these linear routes, almost all will afford views of existing, permitted or proposed turbines. Where visibility of the proposed development in combination with other existing, permitted, and proposed developments is afforded, the wind farm developments and single turbines will typically appear as distinctly separate developments due to their considerable offset distances. Nonetheless, the combined turbine visibility along many of these routes will increase the intensity of built development, however, the turbines are typically viewed offset from the main aspects of visual amenity, which is generally oriented towards the most elevated upland sections of the surrounding mountains. Furthermore, due to the notable separation distances afforded from all existing, permitted and proposed developments within the study area, there is limited potential for the proposed Coumnaagappul Wind Farm to generate any notable negative cumulative aesthetics effects, such as stacked or ambiguous views of the proposed turbines.

As identified in Table 16.11 above, there is some notable potential for sequential views to be afforded of the Proposed Development, which reflects the high degree of linear receptors located within the study area, which principally comprise scenic routes, waymarked walking and hiking trails, cycling routes and major route corridors. With regard to waymarked trails, cycling routes and scenic routes, the majority of these typically traverse elevated terrain where broad views of the surrounding landscape are afforded. Whilst the potential for combined visibility of the Proposed Development and other existing, permitted and proposed developments will increase the quantum of built development along these linear receptors, it is not considered that the turbines will ever appear out of place or inappropriate in this landscape context.



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

Overall, the Proposed Development will result in an intensification of wind energy development within this landscape context and within the surrounds of the Comeragh and Knockmealedown Mountains. Furthermore, existing wind energy development is an established feature within the wider study area (existing Woodhouse Wind Farm), whilst an existing single turbine is located just over c. 5km west of the Proposed Development. A permitted development (Knocknamona) is also located along the southern periphery of the study area, which will notably increase the number of turbines within the study area when constructed. Nonetheless, due to the near distance of the existing Woodhouse and consented Knocknamona turbines, they will likely be read as one large wind farm development. There is also potential for an proposed large-scale wind farm development on the foothills of the Knockmealedown Mountains in the wider western half of the study area (Dyrick Hill Wind Farm), which will further intensify the quantum of wind energy development within the study area and within the landscape that lies between the Comeragh Mountains and Knockmealedown Mountains. Overall, the Proposed Development has the potential to be viewed in combination with other existing, permitted and proposed development, however, it is well offset from any other wind farm developments and, thus, will present with no notable negative cumulative aesthetic effects. On balance of the reasons outlined above and with reference to table Table 16.5, the Proposed Development is considered to contribute to a cumulative impact no greater than **Low** with other existing and permitted developments and no greater than **Medium** with existing permitted and proposed wind farm developments.



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