



White Hill Wind Farm

Environmental Impact Assessment Report

Chapter 9: Landscape

White Hill Wind Limited

Galetech Energy Services
Clondargan, Stradone, Co. Cavan Ireland
Telephone +353 49 555 5050
www.galetechenergy.com



Contents

9.1	Introduction	1
	9.1.1 Statement of Authority	2
	9.1.2 Description of Project	2
	9.1.3 Definition of Study Area	2
9.2	Methodology	3
	9.2.1 Desk Study	3
	9.2.2 Fieldwork	3
	9.2.3 Appraisal	3
9.3	Description of Existing Environment	9
	9.3.1 Landscape Baseline	9
	9.3.2 Landscape Policy Context Designations.....	12
	9.3.3 Visual Baseline.....	22
	9.3.4 Identification of Viewshed Reference Points	28
	9.3.5 Cumulative Baseline.....	31
9.4	Description of Likely Effects	33
	9.4.1 Landscape Impacts	33
	9.4.2 Visual Impacts.....	39
	9.4.3 Cumulative Effects	55
9.5	Mitigation Measures	58
	9.5.1 Construction Phase	58
	9.5.2 Operational Phase	58
	9.5.3 Decommissioning Phase	59
9.6	Summary	59
	9.6.1 Landscape Impacts	60
	9.6.2 Visual Impacts.....	61
	9.6.3 Cumulative Impacts.....	64
	9.6.4 Overall Significance of Impact	65



9.1 Introduction

This chapter describes the landscape context of the project and assesses the likely significant 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 project, which may alter its character, and how the landscape is experienced. This requires a detailed analysis of the individual elements and characteristics of a landscape that go together to make up the overall landscape character of that area. By understanding the aspects that contribute to landscape character, it is possible to make judgements in relation to its quality (integrity) and to identify key sensitivities. This, in turn, provides a measure of the ability of the landscape in question to accommodate the type and scale of change associated with the project, without causing unacceptable adverse changes to its character.

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

Cumulative landscape and visual impact assessment is concerned with additional changes to the landscape or visual amenity caused by the project in conjunction with other developments (associated or separate to it), or actions that occurred in the past, present or are likely to occur in the foreseeable future. While this assessment predominately focuses on the likely impacts of the proposed wind turbines due to their scale, detailed appraisal of all elements of the overall project have been assessed including ancillary infrastructure (access tracks and site entrances), electricity substation and associated grid connection, haul route upgrade works, and forestry re-planting.

This assessment uses methodology as prescribed in the following guidance documents:-

- European Union (2017) *Guidance on the preparation of the EIA Report (Directive 2011/92/EU as amended by 2014/52/EU)*;
- Environmental Protection Agency (EPA) publication '*Guidelines on the Information to be contained in Environmental Impact Statements (2022)*' and the accompanying *Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (Draft 2015)*;
- Landscape Institute and the Institute of Environmental Management and Assessment publication entitled '*Guidelines for Landscape and Visual Impact Assessment – Third Addition*' (2013);
- Scottish Natural Heritage (SNH) '*Guidance Note: Cumulative Effect of Wind' Farms (2012)*';
- Department of the Environment, Heritage, and Local Government (2006) *Wind Energy Development Guidelines for Planning Authorities 2006*;
- Department of the Housing, Planning, and Local Government (2019) *Draft Revised Wind Energy Development Guidelines*; and,
- Scottish Natural Heritage (SNH) '*Visual representation of wind farms: Best Practice Guidelines*' (version 2.2 - 2017).

9.1.1 Statement of Authority

This landscape and visual assessment (LVIA) was prepared by Cian Doughan (BSLA MILI) and reviewed by Richard Barker (MLA MILI) of Macro Works Ltd, 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 no. on-shore wind farm proposals throughout Ireland, including numerous Strategic Infrastructure Development (SID) projects. Macro Works and its senior staff members are affiliated with the Irish Landscape Institute.

9.1.2 Description of Project

In summary, the project comprises the following main components as described in **Chapter 3**:-

- 7 no. wind turbines with an overall tip height of 185m, and all associated ancillary infrastructure;
- All associated and ancillary site development, excavation, construction, landscaping and reinstatement works, including the provision of site drainage infrastructure;
- Upgrades to the turbine component haul route; and,
- Construction of an electricity substation and installation of c. 15km of underground grid connection cable between the White Hill Wind Farm and the existing Kilkenny 110kV electricity substation.

The wind farm site traverses the administrative boundary between counties Carlow and Kilkenny; with 4 no. turbines located in Co. Carlow and 3 no. turbines within Co. Kilkenny. The electricity substation is located within Co. Carlow while the majority, c. 14km, of the underground electricity line is located in Co. Kilkenny. Off-site and secondary developments; including the forestry replant lands and candidate quarries which may supply construction materials; also form part of the project.

The turbine component haul route and associated upgrade works as described in **Chapter 3**. It is envisaged that the turbines will be transported from the Port of Waterford, through the counties of Kilkenny, Waterford, Carlow and Kildare to the project site. However, as the route follows motorway and national roads through counties Waterford and Kildare, it is assessed that there is no likelihood of effects on the landscape and, therefore, these areas have been screened out from further assessment.

A full description of the project is presented in **Chapter 3**.

9.1.3 Definition of Study Area

The *Wind Energy Development Guidelines for Planning Authorities 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 energy developments. The extent of this study 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.

These radii are mirrored in the *Draft Revised Wind Energy Development Guidelines 2019*. In the case of this project, the blade tips are 185m in height and, given the absence of national and internationally important landscapes, the recommended ZTV radius is 20km from the outermost turbines of the scheme.

Notwithstanding the full 20km extent of the study area, there will be a particular focus on receptors and effects within the central study where there is higher likelihood of significant effects occurring. When referenced within this assessment, the 'central study area' is the landscape within 5km of the site.

9.2 Methodology

The production of this LVIA involved desktop studies to understand the existing baseline environment; fieldwork recording the elements and characteristics of the landscape and the selection and capture of images to allow the preparation of photomontages; and the professional evaluation of the baseline environment and the effects which may occur as a result of the project based on the photomontages prepared.

9.2.1 Desk Study

The desk study involved:-

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

9.2.2 Fieldwork

The fieldwork undertaken to inform this assessment included:-

- Recording 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; and,
- Following the selection of VRPs, photo-realistic images (photomontages) of the project were prepared by Galetech Energy Services (GES).

9.2.3 Appraisal

This assessment, undertaken following the completion of fieldwork and the preparation of photomontages & wireframes has included:-

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

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

9.2.3.1 Assessment Criteria for Landscape Impact

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 (**Table 9.1**) 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. The value and sensitivity of landscapes is classified using the following criteria.

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

Table 0.1: Landscape Value and Sensitivity

The magnitude of a predicted landscape impact (**Table 9.2**) is a product of the scale, extent or degree of change that is likely to be experienced as a result of the project.

The magnitude takes into account whether there is a direct physical impact resulting from the loss of landscape components and/or a change that extends beyond the project site boundary that may have an effect on the landscape character of the area.

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.

Table 0.2: Magnitude of Landscape Effects

The significance of a landscape impact (**Table 9.3**) 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 table.

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

Table 0.3: Landscape Impact Significance Matrix

**The significance matrix provides an indicative framework from which the significance of impact is derived. The significance judgement is ultimately determined by the assessor using professional judgement. Due to nuances within the constituent sensitivity and magnitude judgements, this may be up to one category higher or lower than indicated by the matrix.*

*** Significance judged to be 'Substantial' and above is deemed to be significant in EIA terms*

9.2.3.2 Assessment Criteria for Visual Impact

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

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 are 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. The susceptibility criteria 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* visual receptors most susceptible to changes in views and visual amenity are:-

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

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

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

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 Landscape Character Assessment, which is then incorporated into 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.

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.

Visual Impact Magnitude

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

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

It should be noted that as a result of this two-sided analysis, a high order visual presence can be moderated by a low level of effect on visual amenity and vice versa. Given that wind turbines do not represent significant bulk, visual impacts result almost entirely from visual 'intrusion' rather than visual 'obstruction' (the blocking of a view). The magnitude of visual impacts is classified at **Table 9.4** below.

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

Table 0.4: Magnitude of Visual Impact

9.2.3.3 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 0.1**

9.3 Description of Existing Environment

9.3.1 Landscape Baseline

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

A description of the landscape context of the project 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, and recreational and heritage features form part of the visual baseline and are dealt with in **Section 9.3.3** below.

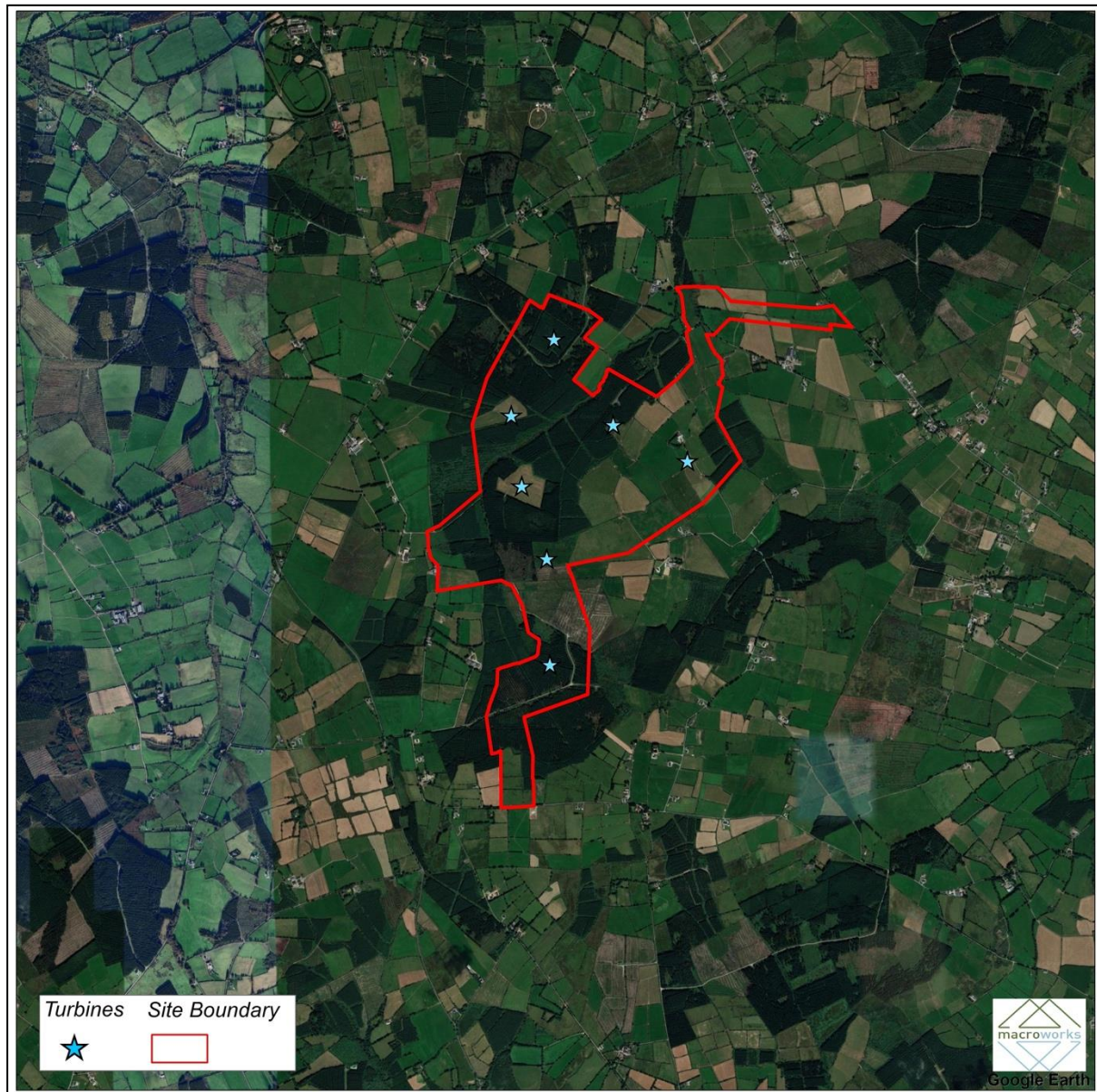


Figure 0.1: Aerial photography showing the landscape context in the immediate surrounds of the turbines

9.3.1.1 Landform and Drainage

The wind farm is located across an area of elevated rolling hills and ridges known as the Castlecomer Plateau, which is bound to the east by the River Barrow and to the west by the River Nore. Whilst the terrain of the wider Castlecomer Plateau rises to a max elevation of c. 340m AOD, the maximum elevation of the wind farm site is c. 290m AOD. The terrain of the site and its immediate context comprises several rolling upland hills and ridges, none of which are particularly distinctive in the context of the Castlecomer Plateau. The wind farm is located in the eastern extents of the Castlecomer Plateau, which swiftly descends towards the lowlands and the River Barrow valley some c. 1km east of the wind farm site, whilst the rolling elevated hills and ridges and winding river valleys occur throughout much of the central study area to the north, west and south of the site.

The River Coolcullen traverses the site along the Carlow–Kilkenny county bounds, whilst several other streams also flow throughout the central study area. The River Dinin is located to the north of the site and flows in a westerly direction throughout the study area before it merges with the River Nore to the west of the site. The River Barrow and the River Nore are the principal watercourses within the study area, with the Barrow located c. 6km east of the wind farm site at its nearest point, and the Nore located some c. 12km southwest of the wind farm site at its closest point. Many of the small streams and rivers that flow through the small winding valleys within the Castlecomer Plateau discharge into one of these two rivers located east and west of the wind farm site. Beyond the Castlecomer Plateau, the River Nore and River Barrow valleys are notable landscape features within the wider study area. Whilst some elevated hills and ridges rise in the wider study area to the north, south and west, the terrain beyond the context of the Castlecomer Plateau is typical of a lowland landscape.

9.3.1.2 Vegetation and Land Use

In terms of land use, the wind farm site and central study area are typified by rolling pastoral farmland bound by dense hedgerow vegetation and extensive conifer forest plantations. Areas of mature riparian vegetation also bind the winding river valleys that meander towards the surrounding lowlands, whilst densely wooded thickets and mature stands of conifers enclose some residential dwellings and farmsteads throughout these elevated lands. Despite its elevated nature, there are some isolated rural dwellings and farmsteads within the vicinity of the wind farm. The villages of Coan and Oldleighlin are also located within the central study area and account for the most notable area of urban land cover within 5km of the wind turbines.

Beyond the central study area, the landscape comprises a much more diverse land use mix. Although the most prominent land use is pastoral farmland throughout the central and wider study area, the wider study area comprises several large urban centres, including Carlow Town and Kilkenny City. Numerous quarries are also located throughout the wider study area and are often found in the near surrounds of the Barrow and Nore river corridors; whilst the M9, N80, N78 and N77 are notable linear land uses within the wider study area. The existing Gortahile Wind Farm is located c. 6km northeast of the wind farm site and is also a notable land use within the Castlecomer Plateau. In terms of vegetation, the wider study area comprises a dense network of hedgerows that surround the broad areas of pastoral farmland. The wider study area also encompasses commercial conifer forest plantations, with many of these contained along areas of elevated rolling terrain. Both the River Barrow and River Nore are contained by linear swathes of riparian vegetation and wetlands.

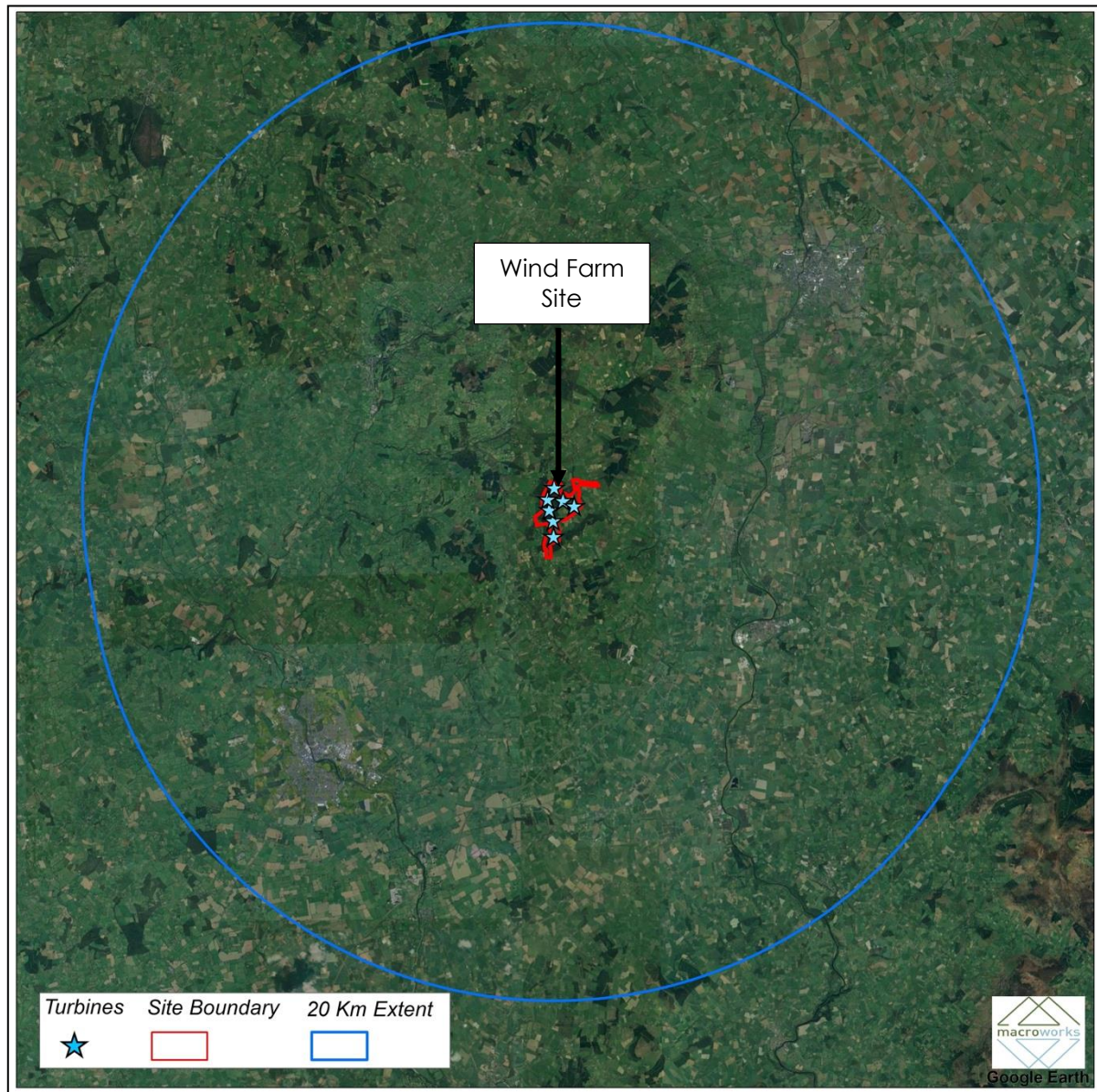


Figure 0.2: Aerial photograph showing the landscape context of the Wider Study Area

9.3.2 Landscape Policy Context Designations

9.3.2.1 Wind Energy Development Guidelines for Planning Authorities 2006 (and 2019 draft revision)

The *Wind Energy Development Guidelines for Planning Authorities 2006* (and 2019 draft revision) provide guidance on wind farm siting and design criteria for a number of different landscape types. The site of the wind farm is considered to be located within a landscape that is consistent with the 'Hilly and Flat Farmland' landscape type. In such instances, the Guidelines recommend consideration of the advice for each landscape type including:-

Location *"Although hilly and flat farmland type is usually not sensitive in terms of scenery, due regard must be given to houses, farmsteads and centres of population."*

"Location on ridges and plateaux is preferred"

<i>Spatial extent</i>	<i>"This can be expected to be quite limited in response to the scale of fields and such topographic features as hills and knolls."</i>
<i>Spacing</i>	<i>"The optimum spacing pattern is likely to be regular, responding to field pattern...However ... a balance will have to be struck between adequate spacing to achieve operability and a correspondence to field pattern."</i>
<i>Layout</i>	<i>"The optimum layout is linear, and staggered linear on ridges and hilltops but a clustered layout would also be appropriate on a hilltop"</i>
<i>Height</i>	<i>"Turbines should relate in terms of scale to landscape elements and will therefore tend not to be tall. However, an exception to this would be where they are on a high ridge or hilltop of relatively large scale."</i>
<i>Cumulative</i>	<i>"It is important that wind energy development is never perceived to visually dominate. However, given that these landscapes comprise hedgerows and often hills, and that views across the landscape will likely be intermittent and partially obscured, visibility of two or more wind energy developments is usually acceptable."</i>

In general, the White Hill Wind Farm is consistent with the siting and design guidelines for the 'Hilly and Flat Farmland' landscape type. The proposed wind farm is considered to be especially consistent with the locational guidance, as the turbines are situated across a broad plateau of rolling hills and ridges.

Siting in Relation to Individual Properties ('Setback')

Section 6.18 of the *Draft Revised Wind Energy Development Guidelines 2019* (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 SPPR2 which is included below:-

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

The nearest residential dwelling to any of the proposed turbines is c. 450m. This residence, and 2 no. others which are located within 740m (i.e. 4-times overall turbine tip height) are involved in the project and have agreed to and accepted the siting of the wind turbines. In accordance with Section 6.18.2 of the *Draft Revised Wind Energy Development Guidelines 2019*, written confirmation of the residents' acceptance of this reduced separation distance has been submitted in

accompaniment of the planning application. All other dwelling in the surrounds of the project site are fully compliant with the necessary setback distances.

9.3.2.2 Carlow County Development Plan 2022-2028 – Landscape Character

A Landscape Character Assessment has been incorporated in the *Carlow County Development Plan (CDP)*. This separates the county into four specific landscape character areas (LCAs) (**Figure 0.3** and **Figure 0.4** refer). The proposed wind farm is located in the 'Killeshin Hills' LCA which is described as *"almost entirely a rural agricultural landscape with a moderate level of sensitivity and moderate potential capacity to absorb different types of development."* Four Landscape Character Types (LCTs) occur within the 'Killeshin Hills' LCA and include; 'uplands', 'farmed ridges', 'farmed lowlands' and 'broad river valley'. The wind farm is entirely located within the 'uplands' LCT and is designated with a level '5 – Most Sensitive' classification (**Figure 0.5** refers).

Nonetheless, whilst the site is located within the level '5– Most Sensitive' sensitivity classification, the CDP states that *"subject to appropriate mitigation measures there may also be moderate scope to absorb extractive industry and wind farming"* within the Killeshin Hills LCA. The Killeshin Hills LCA is classified with an overall 'Moderate' capacity for 'wind farming'. General policy objectives for the Killeshin Hills LCA that are considered relevant to the project are included below:-

- Balance conservation with enhancement of the existing landscape character; and,
- New developments to maintain integrity of landscape character area through careful location, siting and design.

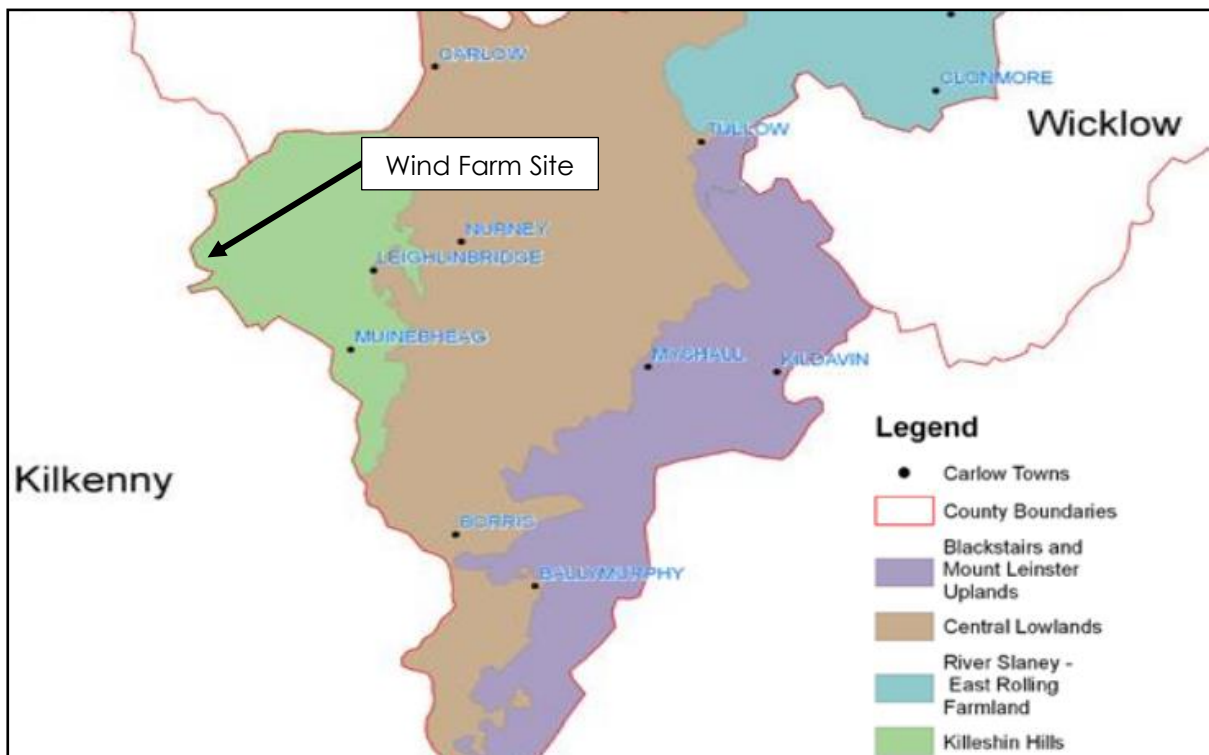


Figure 0.3: Excerpt from Figure 5 of the Carlow County Landscape Character Assessment

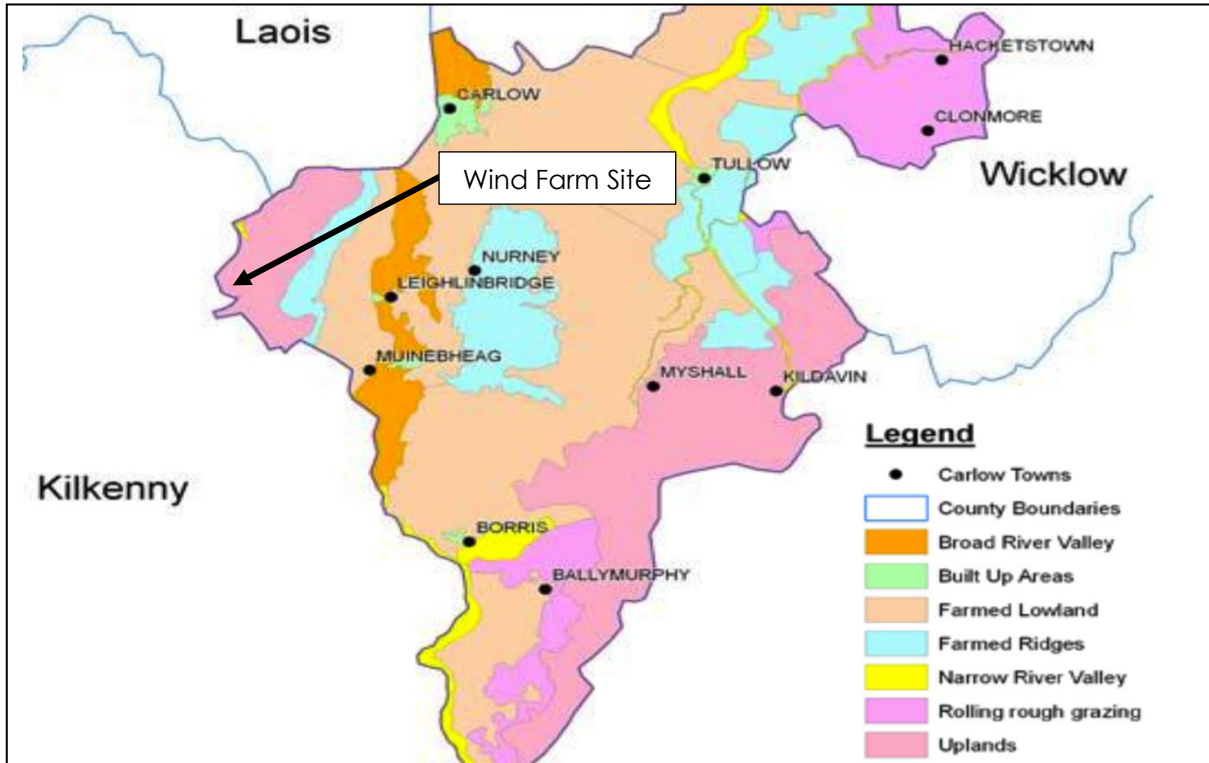


Figure 0.4: Excerpt from Figure 6 of the Carlow County Landscape Character Assessment

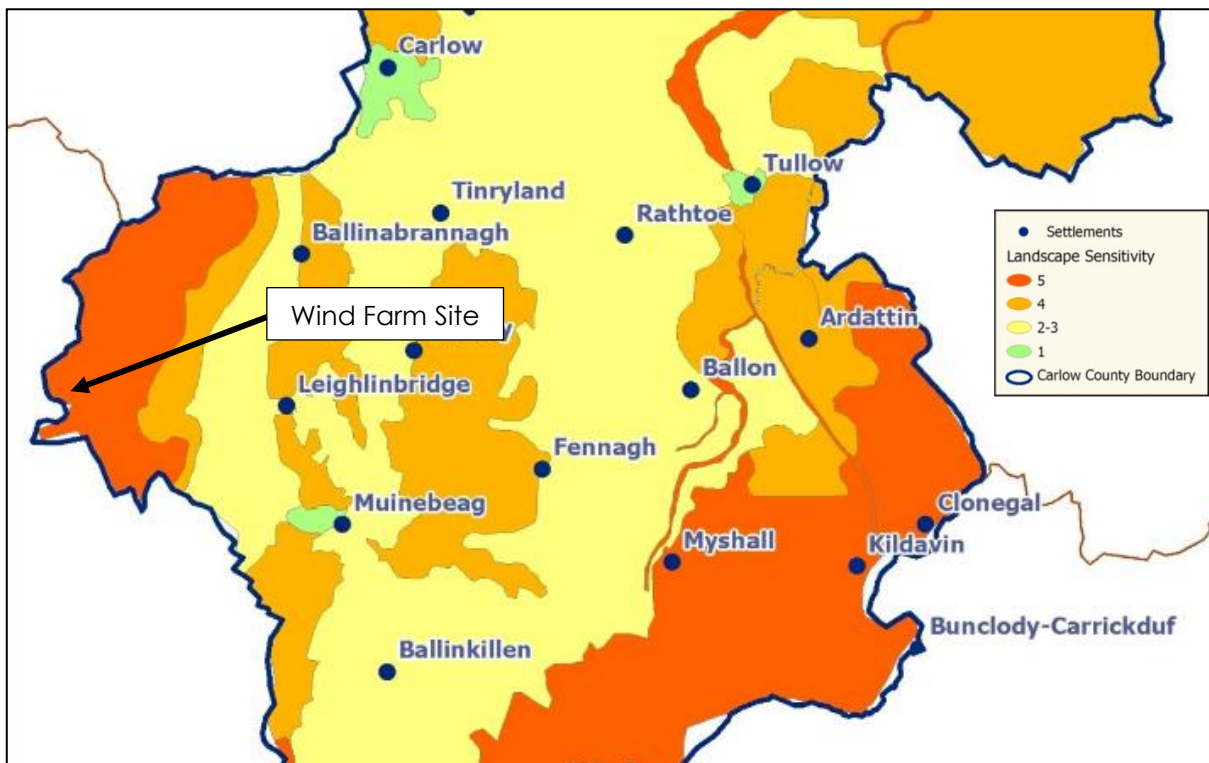


Figure 0.5: Excerpt from Figure 4 of the Carlow County Landscape Character Assessment

9.3.2.3 Kilkenny City & County Development Plan 2021-2027 – Landscape Character

A Landscape Character Assessment was completed for County Kilkenny and is incorporated within the current *Kilkenny City & County Development Plan*. This divides the landscape of County Kilkenny into four Landscape Character Types (LCTs) and 14 geographically specific Landscape Character Areas (LCAs). The areas of the wind farm located within County Kilkenny are situated in the LCT – Uplands and the LCA ‘B – Castlecomer Plateau’ (**Figure 0.6** refers). This LCA is described as “an extensive upland area with an almost circular shape that lies between the valleys of the Rivers Nore and Barrow, covering most of the north-east of the County. The terrain steeply slopes from the river valleys to the surface of the Plateau, which gently undulates and gives rise to several small ridgelines at an elevation of between 200 and 340m above the sea level.”

The CDP identifies ‘landscape areas of highly scenic and significant visual amenity value’; however, the nearest of these designations are located outside of the central study area, some c. 7km west of the wind farm site.

Landscape sensitivity within County Kilkenny is addressed by ‘areas of greater sensitivity’. These are “areas throughout the county that are highly sensitive to development and have a limited capacity for change”...in general, areas of elevated topography, with low growing or sparse vegetation are little existing development are landscape of high sensitivity and have a low potential to absorb new development”. As identified at **Figure 0.7** below, the nearest and most relevant landscape sensitives in relation to the wind farm are ‘ridgelines’ and ‘contours’. The CDP also sets out a number of ‘development management requirements’, some of which relate to the wind farm and are listed below:-

- “To protect the landscape character, quality and local distinctiveness of County Kilkenny, and have regard to the guidance set out in the Landscape Character Assessment;
- Where necessary, to require that applications are accompanied by a visual impact assessment, particularly in upland areas, river valleys and areas of greater sensitivity;
- To facilitate appropriate development that reflects the scale, character and sensitivities of the local landscape throughout the county, and require that developments minimise the loss of natural features such as trees, hedgerows and stone walls;
- To facilitate, where appropriate, developments that have a functional and locational natural resource requirement to be situated on steep or elevated sites (e.g. reservoir, telecommunications or wind energy structures) with reference to the appropriate County strategies currently in place, and to ensure that any residual adverse visual impacts are minimised or mitigated;
- To ensure that development in upland areas or on steep slopes will not have a disproportionate or dominating visual impact (due to excessive bulk, scale or inappropriate siting) and will not significantly interfere or detract from scenic upland vistas, or when viewed from public areas, scenic routes, viewpoints or settlements;
- To have particular regard to the potential impacts of new development on sensitive upland areas, and to materially consider the difficulty of establishing and maintaining screening vegetation when assessing development proposals in these areas; and,

- To maintain the visual integrity of areas of greater sensitivity in the county and ensure that any development in these areas is appropriately sited and designed. Applicants shall demonstrate that the proposed development can be assimilated into the landscape and will not have a disproportionate visual impact on the landscape.”

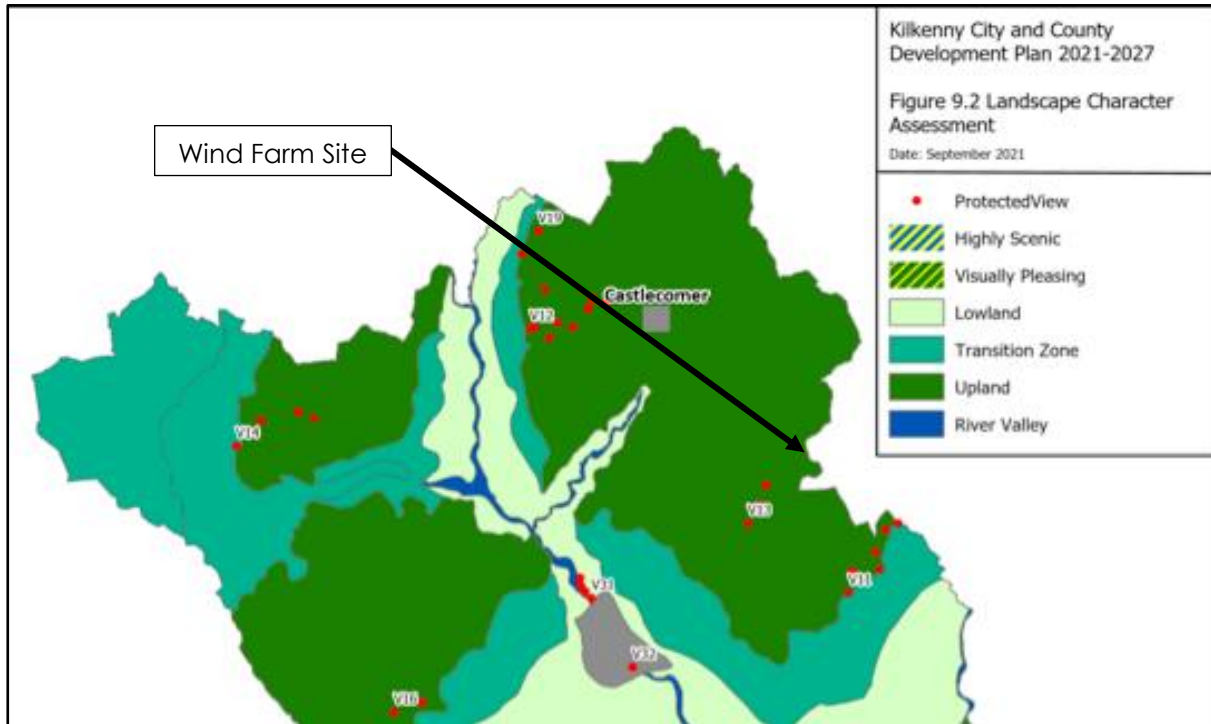


Figure 0.6: Excerpt from Figure 9.2 of the current Kilkenny City & County Development Plan 2021-2027

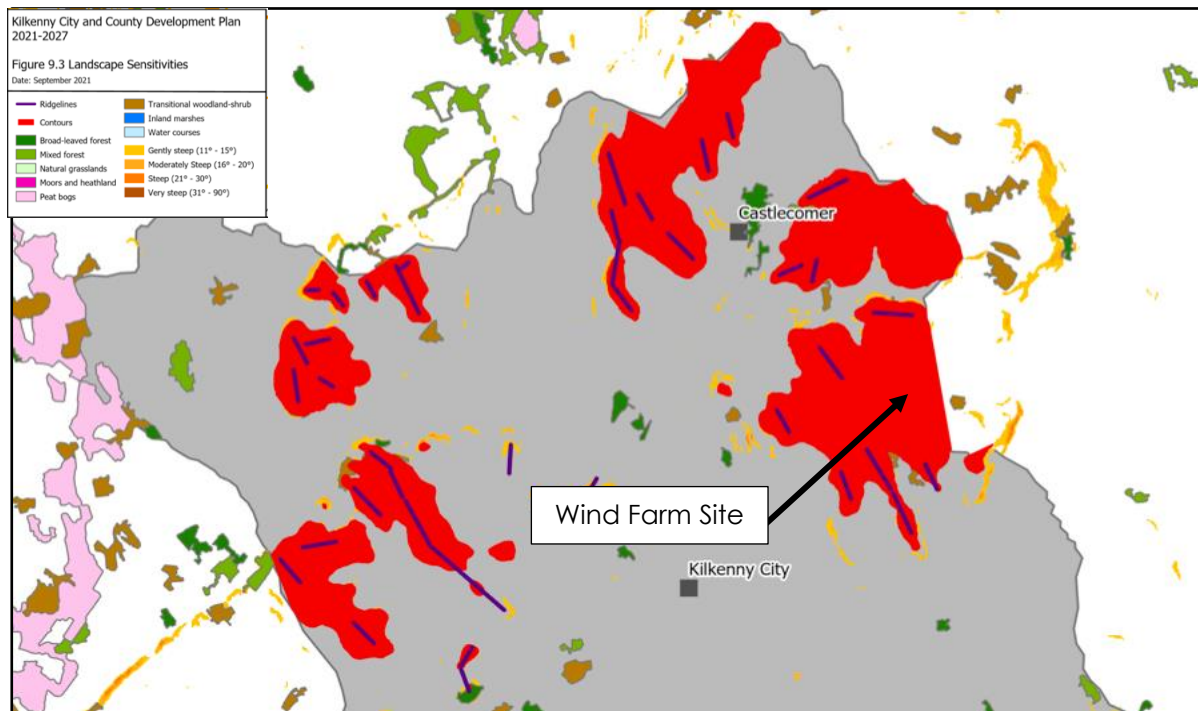


Figure 0.7: Excerpt from Figure 9.3 of the current Kilkenny City & County Development Plan 2021-2027

9.3.2.4 Laois County Development Plan 2021-2027 – Landscape Character

Although the project is not located within County Laois, it is situated some c. 4km south of County Laois, and therefore the landscape in Laois has the potential to be influenced by the project. Thus, it is important to assess landscape and visual policy in County Laois.

A Landscape Character Assessment has been produced for County Laois and is incorporated into the current CDP. Within this, the County is divided into 7 no. Landscape Character Types (LCTs). The nearest and most relevant of these is 'LCT 1 – Mountain, Hills and Upland Areas'. With regard to this LCT, the landscape character assessment states that *“although lacking in terms of dramatic peaks, hills and uplands are a prominent feature of the county, particularly in the north west and south-east. From the tops of these hills panoramic views of the lowland landscapes of Laois and adjacent counties are gained”*. This LCT is classified with a 'medium' sensitivity, which are *“areas with the capacity to accommodate a range of uses without significant adverse effects on the appearance or character of the landscape having regard to localised sensitivity factors”*. Policies and objectives for the 'Mountain, Hill and Upland Areas' are outlined in the development plan, some of which are deemed relevant to the project and are included below:-

- LCA 5: Ensure that development will not have a disproportionate visual impact (due to excessive bulk, scale or inappropriate siting) and will not significantly interfere with or detract from scenic upland vistas, when viewed from areas nearby, scenic routes, viewpoints and settlements; and,
- LCA 11: Protect the positive contribution that views across adjacent lowland areas and landmarks within the landscape make to the overall landscape character.

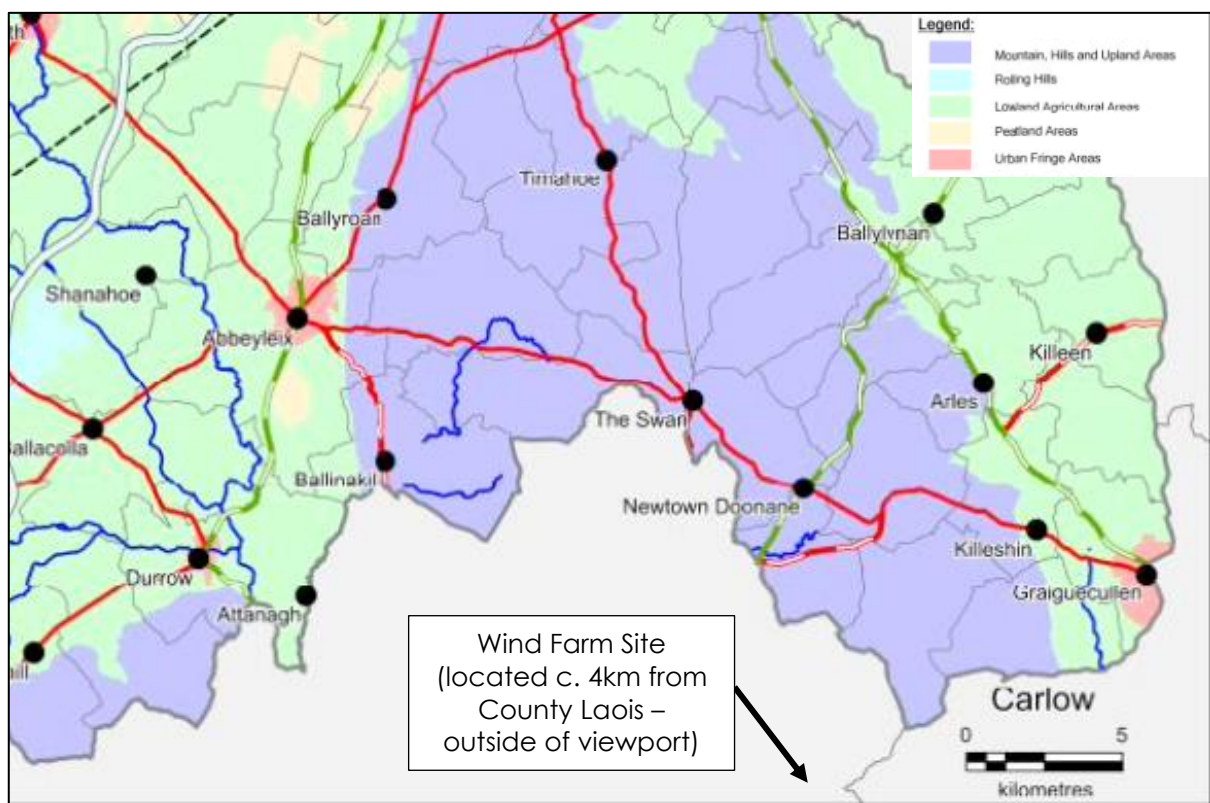


Figure 0.8: Excerpt from Map 11.7 of the Laois County Development Plan 2021-2027

9.3.2.5 Carlow County Development Plan 2022-2028 – Wind Energy

A Renewable Energy Strategy for County Carlow is included in Appendix 6 of the CDP. Section 6 relates to wind energy and identifies area with 'viable wind speed', 'available areas > 500m from housing' and 'available areas > 5km²'. The wind farm is located within an area classified as having 'viable wind speeds' but is neither located within the other 'available area' designations (**Figure 0.9** refers). It is important to note that the only available areas within County Carlow are located in the surrounds of the Mount Leinster-Blackstairs Mountains landscape character area. Furthermore, the Renewable Energy Strategy states *"this mapping exercise does not take into account landscape and visual capacity constraints"*.

Subsection 6.1.5.1 of the Renewable Energy Strategy relates to the capacity of the landscape in terms of landscape and visual. This refers back to the Landscape Character Assessment for County Carlow which was completed in 2008 and forms part of the CDP. As identified within the current Landscape Character Assessment, the Killeshin Hills LCA is classified with a 'moderate' capacity for wind farms. The Renewable Energy Strategy also states *"in the western area of the county, in the Killeshin Hills landscape character area, close to border with County Kilkenny, the wind speeds are favourable and there are no environmental designations that preclude wind farm construction. The landscape sensitivity in the area is '5', and 'moderate capacity' for wind farms is indicated in the LCA (2015). However, the constraints mapping suggests that it may be difficult to meet separation distances between wind turbines and dwelling, due to the dispersed settlement pattern."* Nonetheless, it is important to highlight that as noted in **Section 9.3.2.1**, the wind farm fully complies with the draft Wind Energy Development Guidelines 'Setback' distances.

Subsection 6.1.5.2 of the Renewable Energy Strategy relates to land use policy. The Renewable Energy Strategy identifies that the 'Uplands' landscape type, which the site is entirely located within, *"is more visually sensitive and has the highest landscape sensitivity rating of 5, out of a rating scale of 1 to 5. Therefore, wind farm development in the more elevated 'Uplands' Landscape Type are designated 'not normally permissible'"*. Nonetheless, whilst the site is located within the uplands landscape type, it is not considered that the site of the wind farm represents a typical upland landscape. Instead the site and surrounding area is characterised by pastoral farmland and extensive conifer forest plantations, and despite its elevated nature, this area of landscape has no strong tourism values and is not considered to be as scenic as the uplands in the surrounds of the Mount Leinster-Blackstairs Mountains uplands.

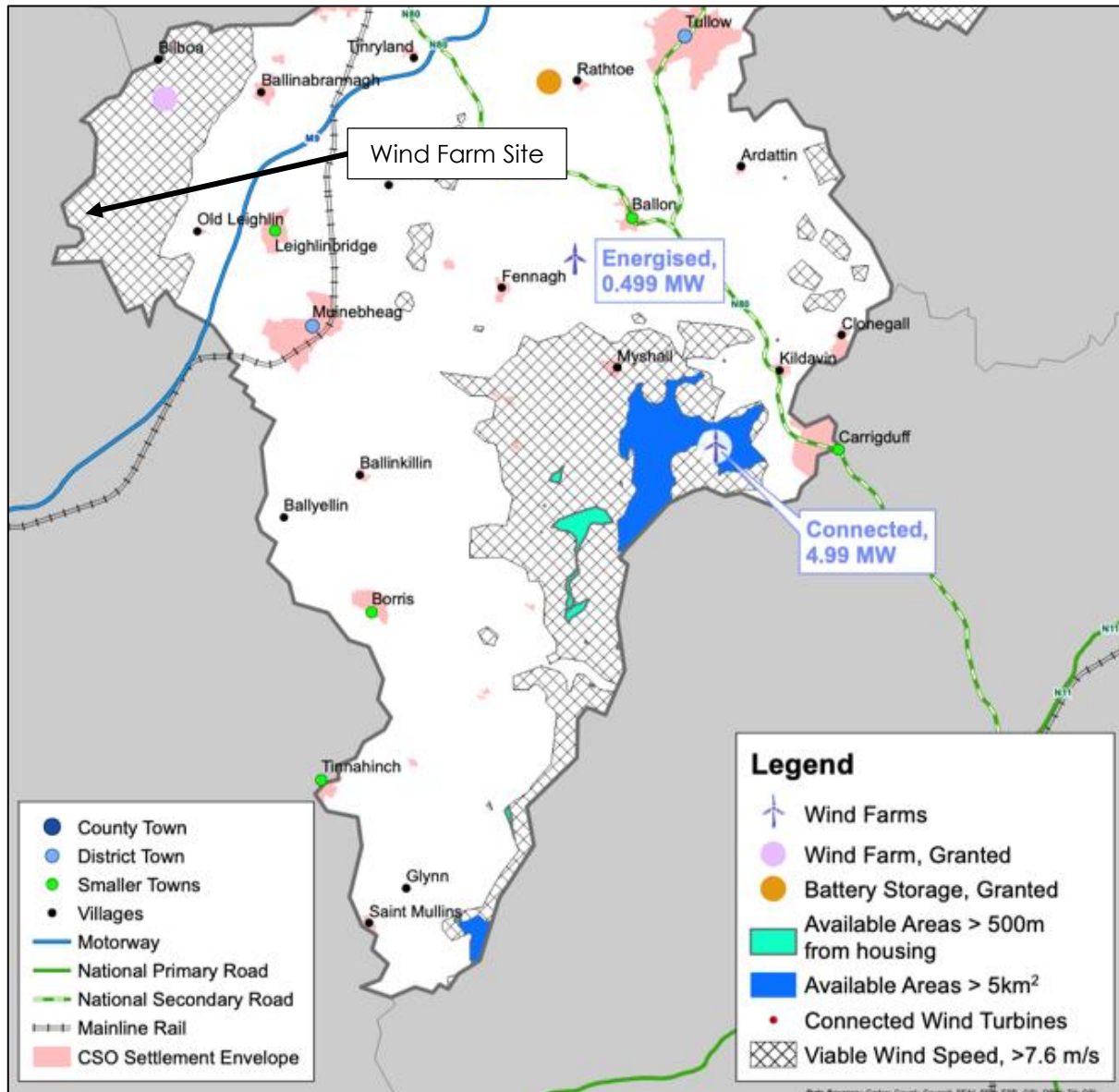


Figure 0.9: Excerpt from the Carlow County Development Plan 2022-2028 Renewable Energy Strategy

9.3.2.6 Kilkenny City & County Development Plan 2021-2027 – Wind Energy

A Wind Energy Development Strategy is included in Appendix K of the CDP. The Wind Energy Development Strategy includes ‘Figure 8 – Wind Energy Strategy Areas’ which identifies areas where wind energy development is ‘acceptable in principle’, ‘open to consideration’ and ‘not normally permissible’ (Figure 0.10 below refers). Areas of the wind farm site located within County Kilkenny are located within the ‘acceptable in principle’ designation. These parts of Kilkenny are “the preferred area for wind energy development, characterised by high wind speeds, and no significant conflict with environmental designations or sensitivities”. Much of the central study area in County Kilkenny is located within this wind energy designation, whilst some areas further to the west are classified with an ‘open to consideration’ wind energy classification, which further highlights the robust nature of this landscape context.

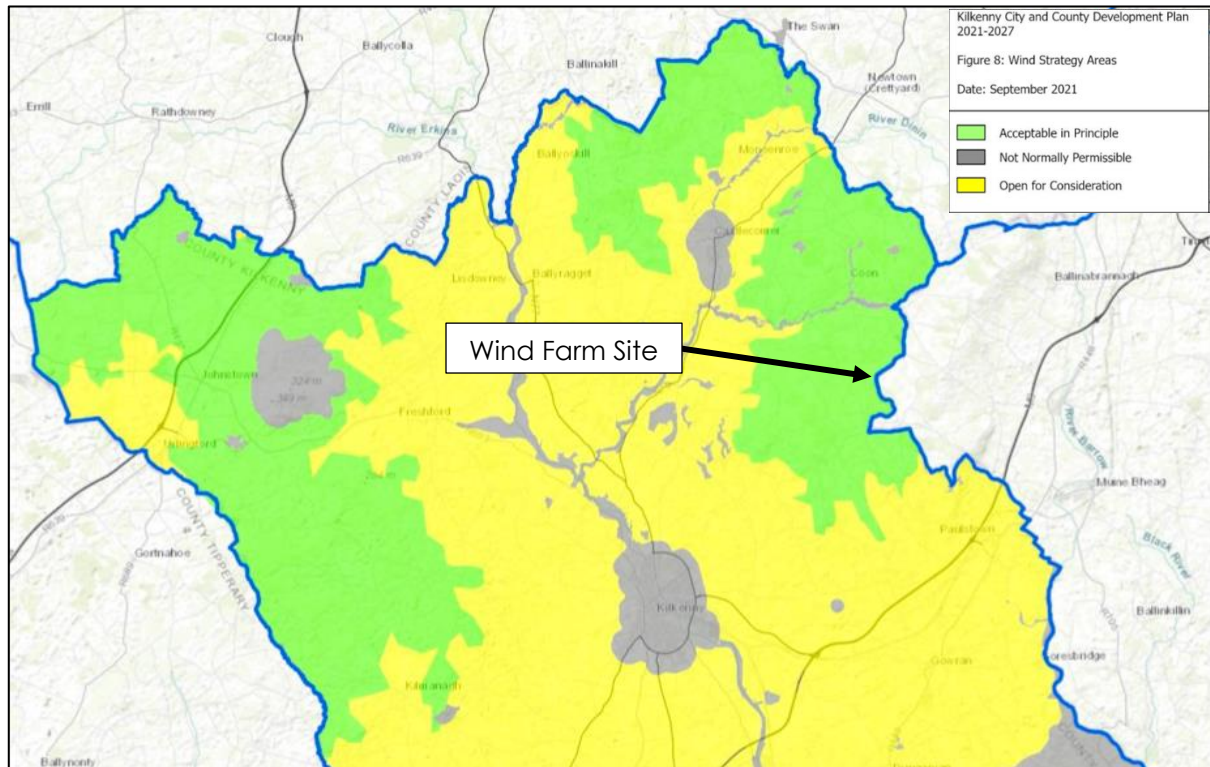


Figure 0.10: Excerpt from Figure 8 of the Kilkenny City & County Development Plan 2021-2027 Wind Energy Development Strategy

9.3.2.7 Laois County Development Plan 2021-2027 – Wind Energy

An Wind Energy Strategy for County Laois is included as Appendix 5 of the CDP. Whilst the wind farm is located some 4km south of the Laois – Kilkenny border, it is important to highlight the wind energy policy for the border areas as it gives an insight to the sensitivity and/or robustness of the surrounding landscape context. The Wind Energy Strategy includes 3 no. policy areas in relation to wind energy development; 'Preferred Area', 'Areas Open to Consideration' and 'Areas Not Open to Consideration'. The nearest wind energy policy designation is that of an 'Area Not Open to Consideration', however, it is important to note that the existing Gortahile Wind Farm is located within this wind energy classification. Furthermore, areas further north along the Kilkenny–Laois border are classified as 'Areas Open to (Figure 0.11 refers).

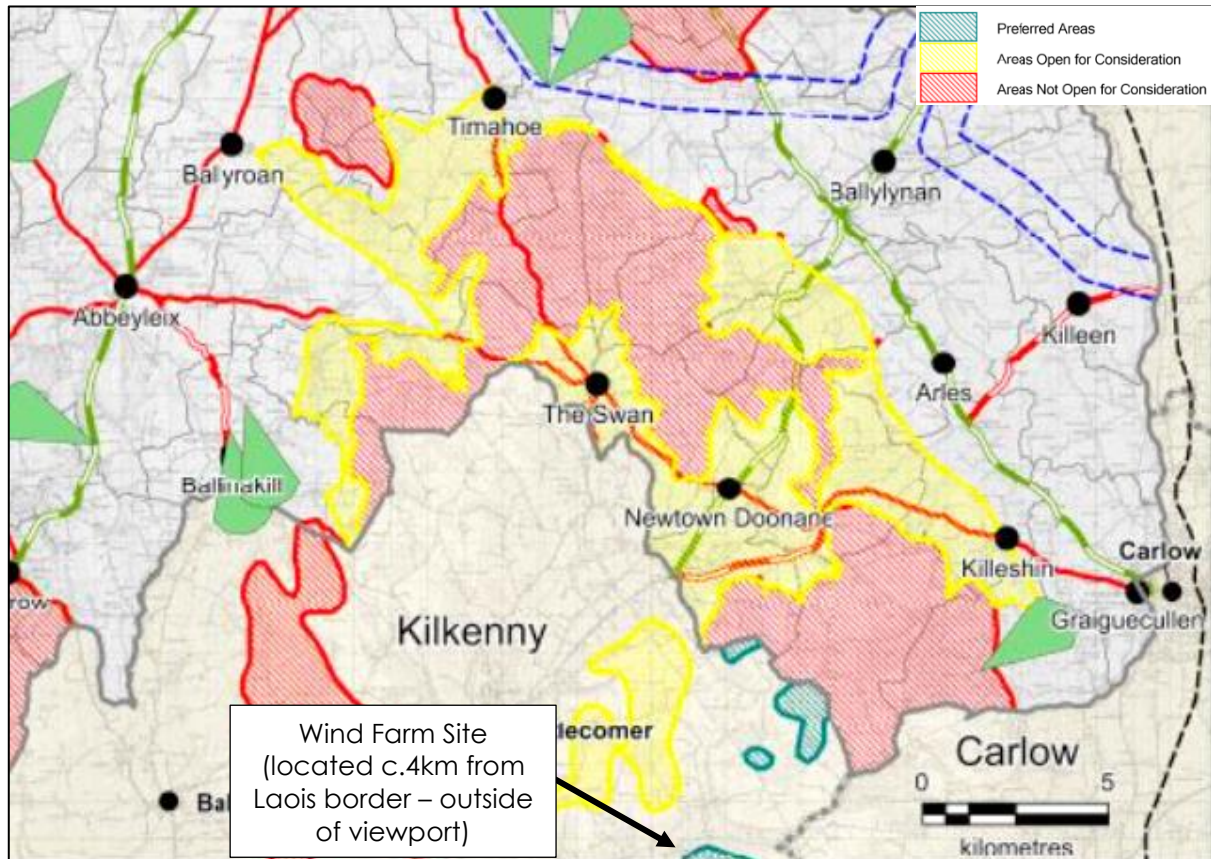


Figure 0.11: Excerpt from Map 3.2 of the Laois County Development Plan 2021-2027 Wind Energy Strategy

9.3.3 Visual Baseline

Only those parts of the study area that potentially afford views of the wind farm 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.

9.3.3.1 Zone of Theoretical Visibility (ZTV)

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

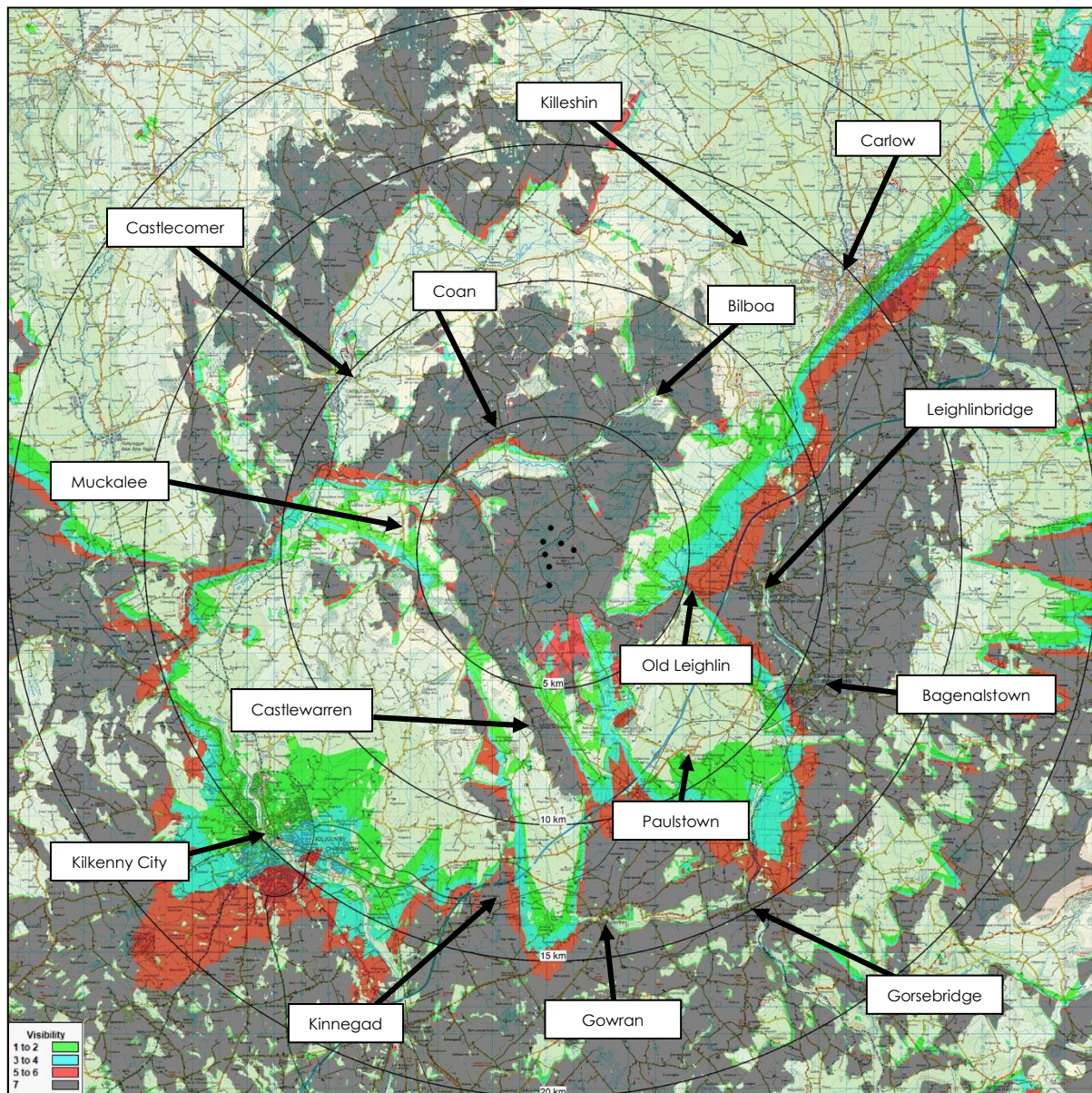


Figure 0.12: Bare-ground Zone of Theoretical Visibility (ZTV) Map (re-produced in full at Annex 9.1)

The following key points are illustrated by the 'bare-ground' ZTV map (**Figure 0.12** refers). It should be noted that the colouring system used in the above ZTV relates to the degree of turbine visibility based off a 'bare-ground' scenario (Grey/Black = 7 no. turbines theoretically visible, Red = 5-6 no. turbines theoretically visible, Blue/Cyan = 3-4 no. turbines theoretically visible and Green = 1-2 no. turbines theoretically visible). Where there is no colour pattern, visibility of the proposed turbines is entirely eliminated:-

- Due to the elevated nature of the site and its immediate surroundings, much of the central study area will have the potential to afford views of up to 7 no. of the proposed turbines;
- Beyond the central study area, the terrain becomes more sporadic and comprises rolling hills, valleys and broad ridgelines. Thus, the potential for visibility becomes more sporadic, with many of the low lying valleys entirely screened from the proposed turbines;

- A more notable area of theoretic visibility of all 7 no. proposed turbines occurs to the north of the site, where the elevated Castlecomer Plateau extends throughout the northern parts of the study area. Both the elevated settlements of Coan and Bilboa have the potential to afford views of up to 7 no. of the proposed turbines;
- An area of no turbine visibility occurs throughout the eastern half of the 20km study extents, where the elevated parts of the Castlecomer plateau swiftly descend toward the more lowland rolling landscape in the surroundings of the River Barrow corridor. Nonetheless, as the terrain begins to level out in the lowlands in the surrounds of the River Barrow, the potential for turbine visibility re-emerges. On the west-facing slopes of the River Barrow valley, a broad linear band of theoretic visibility pattern of up to 7 no. of the turbines occurs throughout the wider eastern half of the study area, extending north from Carlow town as far as Goresbridge in the southeast quadrant of the study area. Whilst there will be limited potential for visibility in the surrounds of Carlow Town and Paulstown, the settlements of Leighlinbridge, Bagenalstown and Goresbridge in the eastern half of the study all have the potential to afford views of all 7 no. of the proposed turbines;
- Comprehensive visibility of the proposed turbines also has the potential to occur throughout the wider southern half of the 20km study extents, where the terrain begins to rise towards a plateau of rolling hills and ridges located on the southern periphery of the study area;
- A broad, consistent area of no ZTV pattern (no turbine visibility) occurs throughout the southwest quadrant of the study area. However, views of up to 2 no. turbines have the potential to be afforded from the northern extents of Kilkenny, whilst visibility of up to 4 no. turbines has the potential to be afforded from the central parts of Kilkenny City. On the southern outskirts of Kilkenny City, there is potential for visibility of up to 6 no. of the proposed turbines to be afforded. Southwest of Kilkenny City and its environs, the potential for theoretical visibility of up to 7 no. of the proposed turbines re-emerges; and,
- In the wider northwest quadrant of the study area, a band of comprehensive visibility occurs in the elevated areas west of the settlement of Castlecomer, whilst areas in the wider northern half of the study area along the Kilkenny–Laois border also have the potential to afford views of all 7 no. of the proposed turbines. However, the central areas of the settlement of Castlecomer will be entirely screened from the proposed turbines.

9.3.3.2 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 may also be indicated on touring maps, guide books, road side rest stops or on post cards that represent the area.

All of the scenic routes and views that fall inside the ZTV pattern were investigated during fieldwork to determine whether actual views of the 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.

9.3.3.3 Carlow County Development Plan 2022-2028 – Views and Prospects

Part 6 of the Carlow Landscape Assessment, which forms part of the CDP includes a schedule of views prospects and scenic routes. All identified views situated within the

20km study radius are listed at **Table 0.5** below in addition to their relevance to the wind farm.

Carlow CDP Reference	Relevance to visual impact appraisal	VP Reference (Annex 9.1)
Scenic Views		
22	Not relevant – Scenic view oriented in the opposite direction to the wind farm	-
23	Relevant – Views oriented in the direction of the site	VP2
24	Not relevant – Localised views of the Burren River valley	-
25	Not relevant – Scenic view oriented in the opposite direction to the wind farm	-
26	Not relevant – Scenic view located outside of ZTV	-
27	Relevant – Views oriented in the direction of the site	VP9
28	Relevant – Views oriented in the direction of the site	VP9
29	Not relevant – Scenic view located outside of ZTV and relates to localised views of the river corridor	-
30	Not relevant – Scenic view located outside of ZTV and relates to localised views of the river corridor	-
31	Not relevant – View oriented in the opposite direction to the wind farm	-
32	Not relevant – View oriented in the opposite direction to the wind farm	-
33	Not relevant – View oriented in the opposite direction to the wind farm	-
34	Not relevant – View oriented in the opposite direction to the wind farm	-
35	Not relevant – View oriented in the opposite direction to the wind farm	-
36	Not relevant – View oriented in the opposite direction to the wind farm	-
37	Not relevant – View oriented in the opposite direction to the wind farm	-
50	Not relevant – View oriented in the opposite direction to the wind farm	-
57	Not relevant – Views oriented in the opposite direction of the site	-
58	Not relevant – Scenic view located outside of ZTV	-
59	Not relevant – Scenic view located outside of ZTV	-
Scenic Routes		
SR4	Not relevant – Views to the south across Carlow's central plain, in the opposite direction to the wind farm	-
SR5	Relevant – Views oriented in the direction of the site	VP9

SR6	Not relevant – Views to the east across Carlow's central plain, in the opposite direction to the wind farm	-
SR7	Relevant – Scenic route located immediately adjacent to the site. Views of the wind farm are highly likely to be afforded from here, albeit they will be located in the opposite direction to the main aspect of visual amenity along this route, which is to the east " <i>across the central plain</i> ".	VP11
SR8	Relevant – Whilst scenic route designation relates to views to the southeast, visibility of the proposed turbines has the potential to be afforded to the southwest	VP7
SR9	Not relevant – Views to the east across Carlow's central plain, in the opposite direction to the wind farm	-
SR23	Not relevant – Views oriented in the opposite direction to the wind farm	-
SR24	Relevant – Views oriented in the direction of the wind farm	VP24

Table 0.5: Scenic Designations within the Carlow County Development Plan 2022-2028

9.3.3.4 Kilkenny City & County Development Plan 2021-2027 – Views and Prospects

Views and prospects to be protected in County Kilkenny are contained in Appendix H of the CDP and are shown on Figure 9.2 of the CDP. All identified views situated within the 20km study area are listed at **Table 9.7** below in addition to their relevance to the wind farm.

Kilkenny CDP Reference	Relevance to visual impact appraisal	VP Reference (Annex 9.1)
SV11	Not relevant – View located outside of ZTV	-
SV12	Relevant – Views oriented in the direction of the site	VP4
SV13	Not relevant – Views oriented in the opposite direction to the wind farm	-
SV19	Not relevant – View located outside of ZTV	-
SV31	Not relevant – View oriented in the opposite direction to the wind farm	-
SV32	Not relevant – View oriented in the opposite direction to the wind farm	-

Table 0.6: Scenic Designations within the Kilkenny City & County Development Plan 2021-2027

9.3.3.5 Laois County Development Plan 2021-2027 Views and Prospects

Scenic views and prospects are illustrated at Map 11.8 of the CDP. Only one scenic view designation is located within the study area (V001); however, this is located outside of the ZTV and is oriented in the opposite direction to the wind farm.

9.3.3.6 Centres of Population and Houses

The largest and most notable centre of population in relation to the project is that of Kilkenny City. The outskirts of Kilkenny City are located some c. 11km southwest of the wind farm at its nearest point, whilst the centre of the city is c. 14km from the wind farm. Carlow town is the second largest urban centre within the study area and is located c. 13km northeast of the site.

Located to the north of the River Dinin, the nearest settlement to the wind farm is the small village of Coan, which is c. 3.5km north of the site at its nearest point. The settlement of Oldleighlin is located along the sloping foothills of the Castlecomer Plateau and is c. 4km east of the site. The settlement of Leighlinbridge is located a short distance further to the east along the corridor of the River Barrow and is c. 6.5km from the site. Bagenalstown is similarly situated along the corridor of the River Barrow and is located c. 8.5km southeast of the site, whilst further south along the River Barrow is the settlement of Goresbridge, which is c. 13km southeast of the site.

Other settlements in the near vicinity of the site include the small village of Castlearran located c. 4km south of the site, the settlement of Muckalee is situated c. 5km west of the site, whilst Bilboa is located just over 5.5km northeast of the site. Other notable town and village settlements within the wider surrounds of the study area include Paulstown (c. 7km southeast), Ballyfoyle (c. 9km southwest), Castlecomer c. 9km northwest, Gowran (c. 11km south), Killeslin (c. 11km northeast), Jenkinstown (c. 14km west), Ballyragget (c. 15km west), Bennettsbridge (c. 16km southwest), Borris (c. 18.5m southeast) and Freshford (c. 20km west).

Regarding the immediate surroundings of the site, a modest rural population exists in the elevated hills surrounding the wind farm and along the grid connection route. This comprises isolated rural dwellings, farmsteads and small linear clusters of dwellings and crossroad settlements such as The Ridge and The Butts, both of which are situated some c. 1.5km from the nearest turbine.

9.3.3.7 Transport Routes

The M9 motorway is the principal transport route within the study area and is located 5km east of the site at its nearest point. The M9 motorway, which will be utilised in the transportation of turbine components, enters the study area east of Carlow town and traverses the eastern and southern half of the study area. The M9 exits the study area south of Kilkenny City and southwest of Bennettsbridge. The N76, N77 and N78 national secondary routes all occur throughout the western half of the study area. The N78, which will also be utilised in the transportation of turbine components, is the nearest of these and is located 9km west of the site at its nearest point. The N77 is located some 12km southwest of the site at its nearest point, while the N76 is located some 15km southwest. The N80 national secondary route passes throughout the wider northeast quadrant of the study area and is located c. 12km from the site at its nearest point.

Whilst a dense network of interconnecting local roads traverse the elevated hills within the central study area, no major route crosses the Castlecomer Plateau within the central study area. Nonetheless, the lowland that encircles the Castlecomer Plateau comprises numerous regional routes connecting many smaller towns and village settlements within the wider study area. The nearest of these is the R448 regional road which traverses the eastern half of the study area and is located just over 6km from the wind farm at its nearest point.

A section of the national railway line also traverses the eastern half of the study area connecting the settlements of Carlow Town, Bagenalstown and Kilkenny City. The national railway line passes just over 6.5km southeast of the wind farm at its nearest point, and c. 180m from the grid connection route as it enters the Kilkenny 110kV electricity substation.

9.3.3.8 Tourism, Recreational and Heritage Features

Whilst the central study area is not synonymous with tourism, heritage and recreational activities, a number of these features occur within the study area's wider surrounds. The most notable of these is the Barrow Way national waymarked walking trail. The Barrow Way is a 114km riverside walking route that flanks the River Barrow in the eastern half of the study area and is located less than 7km east of the wind farm at its nearest point. A section of the Nore Valley Walk, another waymarked walking trail, is also located in the wider study area and is some 12.5km southwest of the wind farm at its nearest point.

Other local walking trails within the study area include the Coolgrannane Wood Loop, the Oak Park Loop, the Castlecomer-Ardrá Loop, and the Jenkinstown Wood Loop walks. The nearest of these is the Coolgrannane Wood Loop, which is situated east of the small village of Bilboa, c. 7km northeast of the wind farm. Several looped cycling routes also emanate from Kilkenny City and include the north, east and south Kilkenny cycle routes. The North Kilkenny Cycle route is located just over 8km west of the wind farm and is the nearest of these three cycle routes. The Carlow-Kilkenny National Cycling Route partially follows the R712 to the east of Kilkenny City and c. 1.8km of grid connection infrastructure will be installed within the carriageway of the R712.

In terms of heritage features, several of these are located in the wider surrounds of the study area. Dunmore Caves are located c. 10km west of the wind farm and are a series of limestone chambers and are said to be some of the most impressive calcite formations found in any Irish underground structure. The remnants of Ballymoon Castle are located 13km east of the wind farm and date back to the 14th Century. Brownshill Dolmen is a large megalithic portal tomb located 3km east of Carlow Town and 15km northeast of the wind farm. Kilkenny City is a popular tourism destination in Ireland and comprises numerous notable heritage features. One of the most notable of these is Kilkenny Castle which dates back to the 12th Century and is set in extensive parkland adjacent to the River Nore. St. Canice Cathedral is also located in Kilkenny City and dates back to the 13th Century. The cathedral's grounds also contain St. Canice's round tower, which dates to the 9th Century and is one of the few round towers in the country that can still be climbed to the top.

9.3.4 Identification of Viewshed Reference Points

The results of the ZTV analysis provides a basis for the selection of Viewshed Reference Points (VRPs/VPs), which are the locations used to study the landscape and visual impact of the 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, receptor locations were selected that are likely to provide views of the wind farm from different distances, different angles and different contexts.

The visual impact of a wind farm is assessed using up to 6 no. categories of receptor type as listed below:-

- Key Views (from features of national or international importance);

- Designated Scenic Routes and Views;
- Local Community views;
- Centres of Population;
- Major Routes; and,
- Amenity and heritage features.

The characteristics of each receptor type vary as does the way in which the view is experienced. These are described below.

9.3.4.1 Key Views

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

9.3.4.2 Designated Scenic Routes and Views

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

9.3.4.3 Local Community Views

This type of VRP represents those people who live and/or work in the locality of the wind farm, usually within a 5km radius of the wind farm. 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.

9.3.4.4 Centres of Population

VRPs are selected at centres of population primarily due to the number of viewers that are likely to experience that view. The relevance of the settlement is based on the significance of its size in terms of the study area or its proximity to the wind farm. 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.

9.3.4.5 Major Routes

These include national and regional level roads and rail lines and are relevant VRP locations due to the number of viewers potentially impacted by the wind farm. 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.

9.3.4.6 Tourism, Recreational and Heritage Features

These views are often one and the same given that heritage locations can be important tourist and visitor destinations and amenity areas or walking routes are

commonly designed to incorporate heritage features. Such locations or routes tend to be sensitive to development within the landscape as viewers are likely to be in a receptive frame of mind with respect to the landscape around them. The sensitivity of this type of visual receptor is strongly related to the number of visitors they might attract and, in the case of heritage features, whether these are discerning experts or lay tourists. Sensitivity is also heavily influenced by the experience of the viewer at a heritage site as distinct from simply the view of it. This is a complex phenomenon that is likely to be different for every site.

Experiential considerations might relate to the sequential approach to a castle from the car park or the view from a hilltop monument reached after a demanding climb. It might also relate to the influence of contemporary features within a key view and whether these detract from a sense of past times. It must also be noted that the sensitivity rating attributed to a heritage feature for the purposes of a landscape and visual assessment is not synonymous with its importance to the Archaeological or Architectural Heritage record.

VRP No.	Location	Representative of	Distance to nearest turbine	Direction of view
VP1	R430 at Newtown	Centre of population, Major Route	12.05km	S
VP2	L4015 Palatine Road	Scenic View	18.93km	SW
VP3	N80 overbridge of River Burren	Centre of population	15.01km	SW
VP4	R694 at Attanagh	Scenic route, Major route	11.92km	SE
VP5	Bilboa Crossroads	Centre of population	6.33km	SW
VP6	Saint Bridged's Church, Coan	Centre of population, Local community views	3.77km	SE
VP7	L7130 at Coolnakisha	Scenic route, Local community views	4.60km	SW
VP8	L3037 local road at the Butts	Local community views	1.88km	S
VP9	L3052 at Ballyryan	Scenic route, Centre of population	11.62km	W
V10	L7122 at Knocknabranagh	Local community views	799m	SW
VP11	L3037 northwest of Ridge Crossroads	Scenic route, Local community views	1.47km	W
VP12	The Barrow Way at Rathornan	Amenity feature	7.85km	W
VP13	L30373 at Ridge	Local community views	891m	W
VP14	Local road north of Kane's Bridge	Local community views	1.41km	E
VP15	St Lazarian's Cathedral and Graveyard	Centre of population, Heritage feature, Local community views	4.10km	W
VP16	R705 east of Leighlinbridge	Centre of population	7.74km	W

VP17	L30373 at Baunreagh	Local community views	972m	N & W
VP18	Local road at Coolcullen	Local community views	1.00km	N & E
VP19	L7117 at Baunreagh	Local community views	905m	N
VP20	Local road at Reevanagh	Local community views	2.35km	NE
VP21	R724 at Kilcarrig Bridge, Bagenalstown	Centre of population	10.47km	NW
VP22	Local road at Castlewarren	Centre of population, Local community views	4.91km	N
VP23	Round Tower at St Canice's Cathedral	Heritage feature, Centre of population	14.11km	NE
VP24	L7022 at Ballinkillin	Scenic route	14.48km	NW
VP25	M9 at Rathcash East	Major route	11.07km	N
VP26	R702 Gore's Birdge, Gorsebridge	Centre of population	13.86km	NW

Table 0.7: Outline description of selected Viewshed Reference Points (VRPs)

9.3.5 Cumulative Baseline

The Scottish Natural Heritage (SNH) *Guidelines relating to the Cumulative Effects of 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*:-

"Combined visibility occurs where the observer is able to see two or more developments from one viewpoint. Combined visibility may either be in combination (where several wind farms are within the observer's arc of vision at the same time) or in succession (where the observer has to turn to see the various wind farms).

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

Cumulative impacts of wind farms tend to be adverse rather than positive, as they relate to the addition of moving manmade structures into a landscape and viewing context that already contains such development. Based on guidance contained within the SNH *Guidelines relating to the Cumulative Effects of Wind Farms (2005)* and the DoEHLG *Wind Energy Development Guidelines for Planning Authorities (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 wind farm that are seen stacked in perspective against the turbines of nearer or further developments tend to cause visual clutter and confusion. Such effects are exacerbated when, for example, the more distant turbines are larger than the nearer ones and the sense of distance is distorted. **Table 9.8** below provides criteria for assessing the 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.
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.

Table 0.8: Outline Magnitude of Cumulative Impact

There is 1 no. operational wind farm contained within the study area and 2 no. operational single turbine development located within the study area. However there are two consented wind farms within the northern half of the study area and 3 no. proposed wind farms in the northern half of the study area that are yet to be submitted for planning. These are set out in **Table 0.9** below.

Wind Farm Name	Number of Turbines	Distance and Direction from Wind farm Site	Status
Seskin Wind Farm*	7	c. 1.5km northeast of site	Proposed
Bilboa Wind Farm	5	c. 4km northeast of site	Permitted
Gortahile Wind Farm	8	c. 5km northeast of site	Operational
Jerry Bolger Turbine	1	c. 12km southeast of site	Operational
Kildrenagh Turbine	1	c. 14km east of site	Proposed
Ballynalacken Wind Farm*	9	c. 14.5km northwest of site	Proposed
Pinewoods Wind Farm	11	c. 17km northwest of site	Permitted
Coolglass Wind Farm*	13	c. 18km north of site	Proposed
Freneystown Wind Farm*	10	c. 4.5km southwest of site	Proposed
Ballon Meats Turbine	1	c. 20km east of site	Operational

Table 0.9: Wind Energy Developments within the Study Area

**Pre-planning development stage; planning application yet to be progressed*

9.4 Description of Likely Effects

9.4.1 Landscape Impacts

Landscape impacts are assessed on the basis of landscape sensitivity weighed against the magnitude of physical landscape effects within the project site and effects on landscape character in the wider landscape setting. This wider setting is considered in respect of the central study area (<5 km) as well as the broader scale of the study area (5-20km).

9.4.1.1 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 (<5km), as well as the broader scale of the study area (5-20km). Landscape sensitivity in this project level LVIA-context needs to go beyond the generic measures of sensitivity employed in the county Landscape Character Assessment and focus on the attributes of the project. In terms of sensitivity to this project, the most sensitive landscapes and landscape features are likely to be those that exhibit enclosed, intricate landform and land-use patterns, and/or a strong sense of heritage or past times not strongly influenced by modern development. Areas with a strong sense of the naturalistic, or with low levels of built development, are also likely to be sensitive to the project.

Central Study Area (<5km)

The central study area is contained within the elevated Castlecomer Plateaux, which rises to between 200m and 340m above sea level. Whilst the Castlecomer Plateau is one of the few elevated areas in the wider surrounds of the study area, it does not contain any distinctive ridges or hilltop summits, and instead is defined by broad low

rolling ridges and hills. The wind farm site itself is located within the eastern extents of the Castlecomer Plateau and is typified by rolling hills and broad ridges that rise to a similar elevation, none of which are highly distinctive. In terms of land use, the wind farm site and its surroundings are principally contained in rolling farmland and blocks of commercial conifer forest. Several small settlements are located throughout these elevated areas; the nearest to the site include the villages of Coan and Oldleighlin. Oldleighlin is situated along the steeply sloping hills that rise from the lowlands to form the Castlecomer Plateau in the eastern parts of the central study area. Despite its elevated location, the wind farm site and central study area are considered a relatively robust modified landscape with little if any sense of the naturalistic. Instead, a notable rural population comprising one-off houses, farmsteads, and small linear clusters of rural residential dwellings occupies the near surrounds of the wind farm site.

There is some scenic amenity within the central study area, however, much of this relates to the periphery of the Castlecomer Plateau, where broad, sweeping, panoramic vistas are afforded from the plateau edge, across the Carlow central plain and towards the southern extents of County Kilkenny. Several designated scenic views and routes are located immediately east of the wind farm in County Carlow, however, all of these are designated for their broad views across Carlow and further west toward Mount Leinster and the Wicklow Mountains foothills. Whilst there is some localised sense of scenic amenity in the central study area, it is not considered that the central areas of the Castlecomer Plateau are highly scenic or unique. Furthermore, the central study area is a productive rural landscape setting and is not strongly associated with any susceptible recreational, heritage or tourism values.

In terms of landscape policy and context, the central study area encompasses landscape units in both Carlow and County Kilkenny. Parts of the central study area within County Carlow are located in the landscape character area 'Killeshin Hills' and are principally contained within the landscape type 'uplands'. This landscape type has been classified with a '5 - Most sensitive' landscape sensitivity classification, however, "*subject to appropriate mitigation measures, there may also be moderate scope to absorb extractive industry and wind farming*". There are some disparities within the landscape assessment, as the Killeshin Hills is described as "*almost entirely a rural agricultural landscape with a moderate level of sensitivity*", which contrasts with the 'most sensitive' sensitivity classification previously identified. Furthermore, the previous wind energy policy (*Carlow County Development Plan 2014-2020*) identifies a broad 'Preferred Area' for wind energy development, which slightly overlaps with the southern extents of the wind farm site. However, the *Carlow County Development Plan 2022-2028* shows the wind farm site to be located outside of these small geometric preferred areas. Nonetheless, the current CDP states that these areas are considered suitable for wind energy development "*because their scenic value is limited, and the landscape has capacity to visually absorb wind farms because of the relatively level terrain and high incidence of forest plantations*", further highlighting the robust nature of the central study area.

Landscape policy in County Kilkenny also highlights the robust nature of the central study area and its wider surrounds. Parts of the wind farm site and central study area in County Kilkenny are located within the landscape character area 'B – Castlecomer Plateau', however, neither the wind farm site or central study area does not contain the more susceptible 'landscape areas of highly scenic and significant visual amenity value'. The landscape character assessment also identifies landscape sensitivities throughout the county on Map 9.3. The wind farm site is located within the 'contour'

classification. It is not considered that this is a highly sensitive landscape designation. In terms of wind energy policy, the central study area encompasses a broad 'acceptable in principal' designation in relation to wind farm development, highlighting the robust working nature of this elevated landscape.

On the basis of the factors outlined above, it is considered that this is principally a productive rural landscape of strong integrity and one that contributes to the rural subsistence and amenity of the surrounding rural population. The central study area contains no strong landscape values associated with recreational amenity, scenic amenity or tourism. This is a robust landscape comprising a range of working rural land uses. The study area also has a strong historical association with industrial land uses, as the Castlecomer Plateau was previously the home of the Leinster coalfield, Ireland's largest coalfield. Overall, the central study area is a modified landscape principally influenced by conifer forest and agriculture. Despite its elevated nature, this is not a highly distinctive or unique landscape and instead comprises typical landscape features, and land uses found throughout Ireland. Landscape values here tend to relate to rural productivity over any susceptible scenic, naturalistic or recreational ones, and as a result, the sensitivity of the central study area is considered to be 'Medium-low'.

Wider Study Area (5-20km)

The wider study area comprises a variety of landscape features and land uses and is strongly diverse in terms of heritage and amenity features. The wider study area can be divided into three sections; its eastern half in County Carlow, its northern areas in County Laois and the western and southern extents of the study area in County Kilkenny.

The wider eastern half of the study area in County Carlow is home to the most notable watercourses within the study area, the River Barrow. The River Barrow meanders through the eastern half of the study area, entering north of Carlow and exiting south of Borris on the Kilkenny - Carlow county border. The river corridor has a notable influence on the landscape and provides a high degree of scenic amenity at a localised scale. It is bound by swathes of riparian vegetation and connects many of the main town and village settlements within this part of the study area. The river corridor is also home to the Barrow Way national waymarked walking trails and many local riverside walks and parks.

Further east into Carlow, the landscape is more typically rural and comprises flat to low rolling terrain, which is not highly scenic or distinctive. Nonetheless, a high degree of designated scenic amenity occurs in this part of Carlow and primarily relates to landscape features in the wider surrounds of the study area and outside of the study area, such as the Mount Leinster-Blackstairs Mountains, which backdrop many views and vistas within County Carlow. Whilst much of the recreational value tends to be associated with the River Barrow in this part of the study area, a notable agglomeration of heritage features is also scattered throughout the wider Carlow area, including Ballymoon Castle, Ballyloughan Castle and Browne's Hill Dolmen. A section of the Mount Leinster heritage drive also traverses this part of the study area, passing through the settlements of Borris, Bagenalstown and Fenagh.

The wider northern half of the study area is primarily contained in County Laois but also encompasses parts of Carlow and north Kilkenny. This part of the study area has similar characteristics to the central study area: an elevated plateau-like landscape comprising rolling hills, ridges and winding valleys. In similar circumstances to the

central study area, the wider northern half of the study area is not considered to be highly unique or distinctive. Instead, it is influenced by numerous anthropogenic features such as major routes, existing wind farm development, quarries and commercial conifer forest plantations. The most notable settlements here are Carlow Town and Castlecomer. The settlement of Castlecomer is a picturesque rural town located within the River Dinin valley, which is cloaked in mature vegetation. The settlement of Castlecomer has a rich coal-mining heritage as it was the home to one of the largest opencast coal mines in the country, Deer Park mines. There are still remnants of Castlecomer's mining heritage throughout the landscape, whilst a museum relating to mining is also located within the town.

While some designated scenic amenity is present within this part of the study area, most notably to the west of Castlecomer, the landscape here is not considered highly scenic. The only notable recreational values within this part of the study area relate to the settlement of Castlecomer, which hosts woodland walks, a discovery park and an 18-hole golf course.

The southern and western half of the study area are entirely contained within County Kilkenny. Beyond c. 4-5km south and west of the site, the terrain swiftly descends from the plateau of hills and ridges that contain the site and its wider surrounds and offers broad elevated views towards Kilkenny City and the wider southern and western half of the study area. The terrain descends towards a more typical lowland landscape where the primary land use is pastoral farmland bound by networks of hedgerow vegetation. The settlement of Kilkenny City has a considerable influence on this part of the study area and is connected by numerous major route corridors, including the N77, N78, N76 and N10. The most notable tourism and amenity values within the study area are also associated with Kilkenny City, as it is one of Ireland's five cities and comprises an array of impressive heritage features such as Kilkenny Castle, St. Canice Cathedral and St Canices round tower. The Nore Valley walk waymarked walking trail also emanates south from Kilkenny City, whilst several looped cycle routes spread north, west and south from the city centre. The River Nore itself is also a notable landscape feature within this part of the study area and presents a localised sense of scenic amenity. Despite the notable recreational and tourism values associated with the settlement of Kilkenny, this wider southern and western half of the study area is a modified landscape intersected by numerous major routes and medium to large-sized settlements. It comprises some isolated heritage and amenity features and has a localised sense of scenic amenity in the surrounds of the Nore river corridor. Nonetheless, this is a modified rural landscape that is not highly distinctive on a local or regional level.

Overall, the wider study area comprises a vast array of landscape features and land uses and presents with various landscape values associated with tourism, heritage and recreation. The most notable of these landscape designations within the wider study area is the 'landscape areas of highly scenic and significant visual amenity value' in County Kilkenny. These occur along the corridor of the River Nore and some of its tributaries within the wider study area. Overall, it is considered that much of the wider study area constitutes a typical modified rural landscape where landscape values relate mostly to rural productivity and the subsistence of the rural economy. On balance of the reasons outlined above, it is considered that the wider study area has a combined 'Medium-low' landscape sensitivity, albeit some of the heritage features in Kilkenny City and the wider Carlow area have localised pockets of high and even very high landscape sensitivity.

9.4.1.2 Magnitude of Landscape Impacts – Construction Phase

The physical landscape, as well as the character of the wind farm site and its immediate surrounds, will be affected by the wind turbines as well as ancillary development such as access tracks, areas of hardstanding and site entrances. By contrast, for the wider landscape of the study area, landscape impacts relate almost exclusively to the influence of the wind turbines on landscape character.

It is considered that the wind farm will have a modest physical impact on the landscape within the site as none of the wind farm infrastructure has a significant 'footprint'. The topography and land cover of the wind farm site will remain largely unaltered with construction being limited to turbine locations, access tracks and site entrances, areas of hardstanding, spoil deposition areas, the temporary site construction compound and underground cabling.

A temporary meteorological mast currently exists at the wind farm site. It is proposed to remove this mast and replace it with a permanent 30m meteorological mast comprising of a slender lattice structure. Some ground works, including the construction of a concrete foundation and anchors, will be required to erect the proposed permanent mast. Mast components will be brought to site by 4x4 vehicles which will utilise the proposed access tracks and site entrances.

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 newly constructed roadway whilst utilising existing tracks within the site. It is proposed to construct some 7.5km of new access tracks within the site. The access track layout has been designed to follow the natural contours of the land where possible. All internal and grid connection cabling will be located underground. Indeed, the land cover of the wind farm site will only be interrupted as necessary to build the structures of the wind farm and to provide access.

Whilst many of the access tracks and turbine locations will be located in open pastoral fields, some turbines and sections of access track are proposed to be situated in areas of existing conifer woodland. As a result, c. 15ha of tree felling will be required to facilitate proposed infrastructure, including turbine hardstand and set down areas and access tracks. Impacts from land disturbance and vegetation loss at the site are considered to be relatively minor in the context of this modified and managed landscape setting. Furthermore, it is proposed to replant the c. 15ha of felled forestry at replacement forestry lands in Drumagelvin, Co. Monaghan. The replant lands are relatively modest in scale, characterised by undulating terrain, and are situated in a productive rural landscape context. It is assessed that the planting of these will not generate any significant landscape effects.

An electricity substation is also proposed as part of the development. The proposed substation is situated in the southern-most extent of the wind farm, and is located in an existing pastoral field, adjacent to an area of existing conifer forestry. The substation location will be heavily screened by existing forestry located immediately north, east and west of the site, and will be heavily screened from the local road to the south by several intervening layers of hedgerow vegetation. Thus, the substation will not be a prominent visual element in the local landscape. It is proposed to bolster the existing hedgerows as necessary, with a native whip planting mix and advanced nursery stock. The bolstered and existing hedgerow vegetation will be let 'grow out' to reach a consistent height of c. 3-4m, creating a strong visual screen from receptors along the local road south of the site.

The grid connection will run from the wind farm site across public roads which will generate some land disturbance works and the removal of some small pockets of vegetation. This will require ground excavation, laying of cables and subsequent reinstatement of trenches, and will result in minor and very localised construction stage landscape effects. No overhead lines are required for the grid connection.

Minor and temporary land disturbance is likely to occur as a result of the proposed haul route works; however, these effects will be temporary and reversible and therefore are not assessed to be significant.

Site activity will be at its greatest during the construction phase due to the operation of machinery on site and movement of heavy vehicles to and from site. This phase will have a more significant impact on the character of the site than the operational phase but is a 'short-term' impact that will cease as soon as the wind farm is constructed and becomes operational (approximately 15-18 months from the commencement of construction).

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

9.4.1.3 Magnitude of Landscape Impacts – Operational Phase

For most commercial wind energy developments, the greatest likelihood of 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 the landscape character. In this instance, wind turbines are a characteristic feature of the study area and the effect, therefore, is the intensification of an existing land uses as opposed to introduction of a new and unfamiliar form of land use.

In terms of scale and function, the proposed wind farm is well assimilated within the context of the central study area. This is due to the broad scale of the elevated landform and land use patterns that contain the site and wider Castlecomer Plateau. These attributes prevent the height and extent of the wind farm causing the type of scale conflict that can occur in more intricate landscape areas. Despite its elevated location, the site and its surrounds are that of a modified working setting comprising extensive conifer forest plantations and a patchwork of working farmland. Overall, the wind farm represents a notable intensification of built development within this elevated setting, however, it will not detract significantly from the surrounding productive rural character, which wind turbines already contribute to.

In summary, there will be physical impacts on the land cover of the site as a result of the wind farm during the operational phase, but these will be relatively minor in the context of this productive working landscape that comprises existing wind energy development and extensive commercial conifer forests. The scale of the wind farm will be well assimilated within its landscape context without undue conflicts of scale with underlying land form and land use patterns. For these reasons, the magnitude of the landscape impact is deemed to be 'Medium' with the Central Study Area, whereas, beyond 5km from the site, the magnitude of landscape impact is deemed to reduce to Low and Negligible at increasing distances as the wind farm becomes a proportionately smaller component of the overall landscape fabric.

9.4.1.4 Magnitude of Landscape Impacts – Decommissioning Phase

It is important to note that in terms of duration, this development proposal represents a long term, but not permanent, impact on the landscape and is reversible. The lifespan of the project is 35-years, after which time it will be dismantled (unless planning permission shall have been obtained for its continued use) and the landscape reinstated to prevailing conditions. Within 2-3 years of decommissioning, there will be little evidence that a wind farm ever existed on the site.

The decommissioning phase will have similar temporary impacts as the construction phase with the movement of large turbine components away from the wind farm 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 redundant hard standing 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 reduced timeframe to that of the construction phase.

9.4.1.5 Significance of Landscape Impacts

The significance of landscape impacts is a function of landscape sensitivity weighed against the magnitude of landscape impact. This is derived from the significance matrix (**Table 0.3**) used in combination with professional judgement. Based on a 'Medium-low' sensitivity judgement and a 'Medium' magnitude of landscape impact, the significance of impact is considered to be 'Moderate-slight' within the central study area. Thereafter, significance will reduce to 'Slight' and 'Imperceptible' at increasing distances as the development becomes a progressively smaller component of the wider landscape fabric even in the context of higher sensitivity landscape features.

9.4.2 Visual Impacts

9.4.2.1 Visual Receptor 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 assessor uses a range of criteria and provides a four point weighting scale to indicate how strongly the viewer/view is associated with each of the criterion identified in **Section 9.2.3.2** above. The visual receptor Sensitivity rating is provided at **Table 9.11** below.

Strong association	Moderate association	Mild association	Negligible association
:			

Table 0.10: Analysis of Visual Receptor Sensitivity at Viewshed Reference Points

Values associated with the view	VP1	VP2	VP3	VP4	VP5	VP6	VP7	VP8	VP9	VP10	VP11	VP12
Susceptibility of viewers to changes in views												

Recognised scenic value of the view												
Views from within highly sensitive landscape areas												
Primary views from residences												
Intensity of use, popularity (number of viewers)												
Viewer connection with the landscape												
Provision of vast, elevated panoramic views												
Sense of remoteness / tranquility at the viewing location												
Degree of perceived naturalness												
Presence of striking or noteworthy features												
Sense of Historical, cultural and / or spiritual significance												
Rarity or uniqueness of the view												
Integrity of the landscape character within the view												
Sense of place at the viewing location												
Sense of awe												

Overall sensitivity assessment	ML	M	L	M	ML	ML	HM	ML	HM	ML	M	HM
--------------------------------	----	---	---	---	----	----	----	----	----	----	---	----

Values associated with the view	VP13	VP14	VP15	VP16	VP17	VP18	VP19	VP20	VP21	VP22	VP23	VP24	VP25	VP26
Susceptibility of viewers to changes in views	Grey	Grey	Grey	Grey	Grey	Grey	Grey	Grey	Grey	Grey	Grey	Grey	Light Grey	Grey
Recognised scenic value of the view												Grey		
Views from within highly sensitive landscape areas											Grey			Grey
Primary views from residences	Grey	Grey	Grey	Grey	Grey	Grey	Grey	Grey	Grey	Grey	White	Grey	Grey	Light Grey
Intensity of use, popularity (number of viewers)	Light Grey	Light Grey	Grey				Light Grey	Light Grey	Grey	Light Grey	Grey	Light Grey	Grey	Grey
Viewer connection with the landscape	Grey	Grey	Grey	Grey	Grey	Grey	Grey	Grey	Light Grey	Grey	Grey	Grey	Light Grey	Grey
Provision of vast, elevated panoramic views					Grey			Grey	Light Grey	Light Grey	Grey	Grey		
Sense of remoteness / tranquility at the viewing location														
Degree of perceived naturalness														Grey
Presence of striking or noteworthy features											Grey			
Sense of Historical, cultural and / or spiritual significance			Grey								Grey			
Rarity or uniqueness of the view											Grey			

Integrity of the landscape character within the view														
Sense of place at the viewing location														
Sense of awe														
Overall sensitivity assessment	ML	ML	HM	ML	ML	ML	ML	ML	ML	ML	H	HM	ML	M

Table 0.11: Visual Receptor Sensitivity

N = Negligible; L = low sensitivity; ML = medium-low sensitivity M = medium sensitivity; HM = High-medium sensitivity; H = high sensitivity; VH = very high sensitivity

9.4.2.2 Magnitude/Significance of Visual Impacts at Viewshed Reference Points

VP No.	Existing View	VP Sensitivity	Visual Impact Magnitude	Significance / Quality / Duration of Impact
VP1	R430 at Newtown – This is a locally elevated view from the R430 regional road at the settlement of Newtown west of the N78 national secondary route. The depicted view is partially screened by areas of intervening hedgerow vegetation in the near foreground. A broad ridge contains the view's background where the existing Gortahile Wind Farm turbines are discernible, rotating backed by the sky.	Medium-low	Whilst the wireframe identifies the potential for visibility of blade tips of up to 5 no. of the wind turbines, they will be entirely screened from here by the intervening vegetation in the near foreground. Even if viewed from this part of the study area, the turbines will have little impact on the visual amenity afforded from here, and therefore the magnitude of visual impact is deemed Low-negligible.	Slight-Imperceptible / Negative / Long Term
VP2	L4015 Palatine Road – This is a pleasant view of a broad working landscape afforded from the L4015 in the townland of Ballyvergal. The scenic view extends across the lowland landscape throughout the fore-to-middle ground and is contained in the background by a broad low-ridge cloaked in a patchwork of pastoral farmland and blocks of conifer forest.	Medium	Three of the proposed turbines will be visible at a small scale rotating along the broad ridge in the background of the view at a distance of some 19km. The turbines will have a minimal visual presence from this distance and will have little impact on the visual amenity of this scenic view, which is comprised of numerous other working land uses and highly anthropogenic built features. On balance of the reasons outlined above, the magnitude of visual impact is deemed Low-negligible.	Slight-Imperceptible / Negative / Long Term
VP3	N80 overbridge of River Burren – This is a partially contained view from the N80 overbridge of the River Burren southeast of Carlow Town.	Low	The wind farm will be entirely screened by mature intervening vegetation. Thus, the magnitude of visual impact is Negligible by default.	Imperceptible / Neutral / Long Term
VP4	R694 at Attanagh – This is a pleasant locally elevated scenic view afforded from the R694 regional road at	Medium	Up to 6 no. of the proposed turbines will be visible to the southeast at a distance of just under 12km. The turbines present as modest scale features in this view	Slight / Negative / Long Term

	<p>Attanagh. The depicted view is oriented east from the road corridor and affords a brief view of the Castlecomer Plateau. Mount Leinster rises in the distance and contains the background of the view. Partial views of the existing Gortahile Wind Farm turbines are also visible in the distance to the east above and through the near roadside hedgerow.</p>		<p>and are viewed backed by the sky and partially backed by Mount Leinster and its surrounding elevated terrain. The proposed turbines will be intermittently and briefly visible along this section of the R694 and will have a sub-dominant visual presence. The proposed turbines will slightly detract from the brief view of Mount Leinster from here, albeit they present in a clear and legible manner and do not appear out of place in the rural working scene. On balance of the reasons outlined above, the magnitude of visual impact is deemed Low-negligible.</p>	
VP5	<p>Bilboa Crossroads – This is a contained view from the small village settlement of Bilboa on the eastern facing extents of the River Dinin valley.</p>	Medium-low	<p>The wind farm will be entirely screened by a mature conifer forest that cloaks the near ridge. Thus, the magnitude of visual impact is Negligible by default. <i>*Note: The turbines visible in this photomontage are the permitted Bilboa Wind Farm.</i></p>	Imperceptible / Neutral / Long Term
VP6	<p>Saint Brigid's Church, Coan – This is a pleasant view afforded from a local road immediately east of Saint Brigid's Church at the settlement of Coan. The depicted view extends across a small valley contained in dense mature vegetation towards a near rolling ridge cloaked in pastoral farmland and dense, mature hedgerow vegetation.</p>	Medium-low	<p>The blade sets of up to 6 no. of the proposed turbines have the potential to be viewed here rotating along the vegetated ridgeline at a distance of just 3.7km. The moving turbine blades will be viewed at a modest scale and are likely to be noticed by the casual observer as one of the few built features visible along the near ridgeline. Nonetheless, the mature vegetation will heavily screen many of the turbine blade sets, and therefore the magnitude of visual impact is deemed Low.</p>	Slight / Negative / Long Term
VP7	<p>L7130 at Coolnakisha – This broad panoramic view is afforded from a designated scenic route along the L7130 local road, the Coolnakisha. It is important to note that the scenic view designation relates to the panoramic view to the southeast, whilst the</p>	High-medium	<p>All 7 no. of the proposed turbines will be visible here to varying degrees, ranging from partial views of blade sets to almost fully revealed turbines (2 no. of the turbines will only have blade tips visible). The visible turbines are viewed at a distance of some 4.6km and present in silhouette against the sky with a low degree of visual contrast. The proposed turbines are viewed</p>	Slight / Negative / Long Term

	depicted view is oriented to the southwest. The view to the southwest extends across the eastern edge of the Castlecomer Plateau, where the terrain begins to descend towards Carlow central plain and is contained in sloping farmland and blocks of conifer forest.		with relatively even spacing characteristics and will have a sub-dominant visual presence in the context of this broad elevated panoramic view. Whilst the turbines will increase the intensity of built development in this broad working scene, they will not notably detract from the visual amenity of this view. Furthermore, the proposed turbines are peripheral features to the main aspect of this scenic route, which is to the southeast. On balance of the reasons outlined above, the magnitude of visual impact is deemed Low.	
VP8	L3037 local road at The Butts – This is a heavily contained view afforded the intersection of the L3037 and L30371 local roads in the townland of Ridge.	Medium-low	The blade sets of the most northern turbines will be partially visible, rotating above the roofline of the near outbuildings and against the mature vegetation just beyond. The partial view of blade sets generates a notable sense of visual ambiguity here as to the actual location of the proposed turbines. Despite being heavily screened from here, the turbines will likely catch the eye of the view as the nearest turbine (T7) is viewed at a relatively close distance of just less than 1.9km. Furthermore, intermittent but clearer views of the turbines also have the potential to be afforded from agricultural field entrances and gaps in vegetation on approach to this local road intersection on both the L3037 and L30371. Overall, the turbines will notably increase the intensity of built development when partially viewed from here, however, they will not appear incongruous in this working rural context. On balance of the reasons outlined above, the magnitude of visual impact is deemed Medium-low.	Moderate-slight / Negative / Long Term
VP9	L3052 at Ballyryan – This is a sweeping panoramic view afforded from the L3052 at Ballyryan, a short distance north of the settlement of Nurney. This	High-medium	All 7 no. of the proposed turbines will be revealed to varying degrees along the broad elevated ridge in the distant background. The proposed turbines are viewed here at a distance of 11.6km, backed by the	Slight-Imperceptible / Negative / Long Term

	<p>elevated scenic route affords views to the west across the lowland landscape and towards the Castlecomer Plateau, which contains the view's background.</p>		<p>sky with a very low degree of visual contrast. While many of the turbines are viewed rotating against the distant ridge, generating a sense of visual tension, any notable negative aesthetic issues are heavily diluted by the viewing distances involved. The proposed turbines will be viewed at a slightly larger scale than the existing Gortahile Wind Farm turbines that are partially visible along the same ridge further to the north. Overall, this is a relatively clear view of a distant wind farm that does not appear over-scaled or out of context. As a result of the reasons outlined above, the magnitude of visual impact is deemed Low-negligible.</p>	
<p>VP10</p>	<p>L7122 at Knocknabranagh – This is a partially contained view afforded from a bend in the L7122 local road at Knocknabranagh east of the Cooloullen River. The depicted view extends west across the small river valley towards a neighbouring mature conifer forest that truncates the view.</p>	<p>Medium-low</p>	<p>Up to 4 no. of the proposed turbines are viewed at a considerable scale rising from the near conifer forest plantation and surrounding farmland; while the blade tips of a further 1 no. turbine are also discernible above the forest plantation. The nearest of the proposed turbines, turbines T1 and T2, present here in a highly dominant manner from this near distance. Nonetheless, the near turbines do not present with any notable sense of overbearing as they are viewed in context of surrounding broad scale land uses and landscape features.</p> <p>Despite their scale, the proposed turbines present here in a relatively clear and comprehensible manner and generate a notable sense of perspective as a result of their variation in scale. Whilst the proposed turbines will strongly increase the intensity of built development in their near surrounds, they are not out of character in this working rural setting where commercial forestry is one of the principal land uses.</p> <p>Overall, this is a near distant view of turbines that present at a considerable scale, and therefore the magnitude of visual impact is deemed High.</p>	<p>Substantial-moderate / Negative / Long Term</p>

VP11	L3037 northwest of Ridge Crossroads – This is a relatively contained view from the L3037 local road northwest of the Ridge Crossroads. It is important to note that the scenic designation along this section of the local road is oriented to the east in the opposite direction to the site.	Medium	<p>All 7 no. of the proposed turbines have the potential to be partially and intermittently viewed from this section of the local road at a distance of c. 1.5km. The proposed turbines will be viewed beyond the near low ridge, where the blade sets are visible, rotating against the vegetated skyline. Despite being partially screened, the moving turbine components are likely to catch the eye of the casual observer and are considered to have a co-dominant visual presence.</p> <p>Whilst the partial view of turbines rotating against the near ridge will generate a degree of visual irritation, the turbines present well-spaced and with a notable degree of perspective, highlighting the depth and dispersion of the proposed wind farm development. The turbines will result in a marked increase in the intensity of built development in this elevated rural setting, however, they will not appear out of place in this rural working scene. On balance of the reasons outlined above, the magnitude of visual impact is deemed Medium.</p>	Moderate / Negative / Long Term
VP12	The Barrow Way at Rathornan – This is a view from a section of the Barrow Way National Waymarked Trail north of the settlement of Leighlinbridge. The view is oriented away from the river corridor and extends across a working rural landscape of pastoral farmland and intervening hedgerow vegetation. The view is contained in the distance by a low, broad ridge.	High-medium	Up to 5 no. of the proposed turbines will be partially visible, rotating along the broad working ridge at a distance of just under 8km. The partially revealed turbines are viewed backed by the sky with a low degree of visual contrast and will have a subdominant visual presence. Whilst a slight sense of ambiguity is generated by the partially revealed turbines as to their actual location, the partially visible turbines will have little impact on the visual amenity of this rural working scene. On balance of the reasons outlined above, the magnitude of visual impact is deemed Low-negligible.	Slight / Negative / Long Term
VP13	L30373 at Ridge – This is a view from the L30373 local road in the townland of ridge. The depicted view extends across	Medium-low	All 7 no. of the proposed turbines will be almost fully revealed from this near distance. Turbine T2 is viewed here at a distance of c. 891m and presents at a	Substantial-moderate /

	<p>a rolling elevated landscape context, cloaked in a patchwork of sloping farmland and blocks of conifer forest. A broad low ridge contains the view in the background.</p>		<p>considerable scale in a highly dominant manner. Although turbine T1 is viewed at a slightly smaller scale than T2, it still presents in a dominant manner from this near distance. The remaining turbines (T3-T7) are all viewed at a similar scale in the background with even spacing characteristics. Overall, the proposed wind farm will have a dominant visual presence in this rural working scene.</p> <p>In terms of aesthetics, the proposed turbines present in a relatively clear and legible manner and do not generate any strong sense of overbearing. There will be some turbine overlap between turbines T1, T2 and T6, which can generate a sense of visual clutter. However, any notable negative aesthetic effects are diluted by the clearer views of the more distant turbines that present in a rhythmic sense across the broad ridge in the background. Nonetheless, the wind farm will result in a marked increase in the quantum of built development along this elevated plateau and will likely become one of the principal visual features in this elevated context. Despite this, the proposed turbines do not appear over-scaled, nor do they appear incongruous in this working landscape context that comprises broad landscape features and land-use patterns. On balance of the reasons outlined above, the magnitude of visual impact is deemed High.</p>	<p>Negative / Long Term</p>
<p>VP14</p>	<p>Local road north of Kane's Bridge – This is a slightly uphill and contained view afforded from a local road in the townland Coolcullen.</p>	<p>Medium-low</p>	<p>The proposed turbines will be partially and intermittently visible at a distance of just under 1.5km along this section of the local road. The nacelles of two turbines are visible here, whilst a partial view of the blade sets of several other turbines are also visible, rising just above the near dense conifer forest and intervening hedgerow vegetation. In this homogenous pastoral setting, the proposed turbines are deemed to</p>	<p>Moderate / Negative / Long Term</p>

			<p>have a visual presence in the order of sub-dominant to co-dominant.</p> <p>Whilst there is some degree of ambiguity associated with the siting of and distance to the proposed turbines, this is a relatively legible view of a wind energy development. The turbines do not appear over-scaled in the context of the surrounding broad land-use patterns, nor do they appear incongruous in this rural working scene. On balance of the reasons outlined above, the magnitude of visual impact is deemed Medium.</p>	
VP15	<p>St Lazarian's Cathedral and Graveyard – This is a view from the graveyard adjacent to St. Lazarian's Cathedral in the village of Old Leighlin. The depicted view is oriented to the east and is partially truncated at a near distance by a line of mature planting on the western boundary of the Cathedral grounds.</p>	High-medium	<p>The proposed turbines will be entirely screened by the mature vegetation along the boundary of the Cathedral grounds. Thus, the magnitude of visual impact is Negligible by default.</p>	Imperceptible / Neutral / Long Term
VP16	<p>R705 east of Leighlinbridge – This is a view from the R705 regional road east of the settlement of Leighlinbridge. The fore-to-middle ground context of the view is heavily veiled by dense mature vegetation, whilst in the distance, the view is contained by a low, broad ridge.</p>	Medium-low	<p>All 7 no. proposed turbines will be partially revealed along the distant broad ridgeline. The partially visible turbines are viewed backed by the sky with a low degree of visual contrast. Up to three turbine blade sets present in a visually stacked manner from here, which will generate a slight degree of visual clutter and irritation. Nonetheless, the turbines are viewed at a distance of just under 8km, which will offset any notable adverse aesthetic effects. Overall, the turbines are viewed along a broad working ridge and will have little impact on the visual amenity of this peri-urban landscape context. Thus, the magnitude of visual impact is deemed Low-negligible.</p>	Slight-Imperceptible / Negative / Long Term

VP17	<p>L30373 at Baunreagh – This is a locally elevated view afforded from a local road in the townland of Baunreagh. Distant, broad views are afforded overtop of the near hedgerow towards a rolling landscape contained in pastoral farmland and extensive areas of conifer forest. The existing Gortahile turbines are visible in the distance, rotating along a low ridge.</p>	Medium-low	<p>The proposed turbines are visible in the middle-ground of the view rising above a near mature block of conifer forestry. Turbine T4 is viewed at a distance of just under c. 1km and presents at a notable scale. In this broad, locally elevated view, the turbines are considered to have a dominant visual presence.</p> <p>As a result of the variation in the scale of the turbines from nearest to further, the proposed wind farm presents with a strong degree of perspective, which highlights the depth of the scheme across this elevated plateau. Whilst the turbines will be a prominent feature from this near distance, they present in a clear and comprehensible manner and do not appear out of place in the context of this elevated setting which comprises broad landscape features, various working land uses and existing wind energy development. On balance of the reasons outlined above, the magnitude of visual impact is deemed High-medium.</p>	Moderate / Negative / Long Term
VP18	<p>Local road at Coolcullen – This is a partially contained view afforded from a local road intersection in the townland of Coolcullen west of the site. The depicted view extend north</p>	Medium-low	<p>All 7 no. of the proposed turbines are revealed here to varying degrees, from partial views of blade sets to almost fully revealed turbines. Turbine T4 presents at the most notable scale and is viewed at a distance of just over 1km. The proposed turbines will be one of the most prominent features of this aspect of the view and will have a dominant visual presence in this rural working scene.</p> <p>In terms of aesthetics, the proposed turbines appear in a relatively legible manner from this near distance. Nonetheless, the partial views of blade sets rotating against the vegetated skyline will generate a slight sense of visual irritation, whilst some of the turbines also appear slightly stunted as the surrounding dense vegetation partially screens their towers. The moving</p>	Substantial-moderate / Negative / Long Term

			<p>turbine components will become one of the defining features of this aspect of the view and will considerably increase the intensity of built development in this landscape setting. Nonetheless, the proposed turbines do not appear incongruous in this working rural landscape. Therefore, on balance of the reasons outlined above, the magnitude of visual impact is deemed High.</p>	
VP19	<p>L7117 at Baunreagh – This is a contained view afforded from a local road in the townland of Baunreagh. The depicted view looks through an agricultural field entrance across an area of farmland enclosed on the opposite side by a dense mature conifer forest.</p>	Medium-low	<p>The proposed turbines are viewed in a relatively condensed cluster rising from the near conifer forest plantation. T4 is viewed in a dominant manner at a considerable scale, whilst the remaining visible turbines are viewed at a more modest scale. In addition, partial views of the blade sets of the more distant turbines are afforded, rotating against tree-tops of the near conifer forest. Within this northern aspect of the view, the wind farm is deemed to have a dominant visual presence.</p> <p>The proposed turbines are viewed here with a notable degree of overlap, which will generate a degree of visual clutter and confusion. T2 also presents as a slight outlier located further to the east of the main turbine cluster. Nonetheless, due to the scale variation of the visible turbines, the wind farm presents with a strong degree of perspective, highlighting the depth and dispersion of the scheme beyond the near dense conifer forest. The proposed turbines will markedly increase the intensity of built development in this view, however, the proposed turbines are not considered an inappropriate feature in this elevated landscape context, which comprises various other working land uses and other existing wind energy development. Overall, the magnitude of visual impact is deemed High-medium.</p>	<p>Moderate / Negative / Long Term</p>

VP20	<p>Local road at Reevanagh – This is a pleasant, locally elevated view afforded from a local road in the townland of Reevanagh. The view extends across a folding landscape comprised of pastoral farmland and mature tree-lined hedgerows. In the background, the existing Gortahile turbines are visible, rotating along a rolling ridgeline.</p>	Medium-low	<p>All 7 no. of the proposed turbines will be revealed here (turbine T4 obscured by a near section of hedgerow), rising from in the middle-ground of the view above areas of intervening mature hedgerow vegetation. The turbines are viewed at a notable but modest scale in the view and will likely catch the eye of the casual observer from this distance of just over 2.3km. The turbines are viewed here backed by the sky with a low degree of visual contrast and are deemed to have a co-dominant visual presence in this elevated rolling landscape context.</p> <p>The proposed turbines are viewed in a relatively comprehensible manner, albeit there will be some degree of turbine overlap, leading to a sense of visual clutter and irritation. Nonetheless, the proposed turbines do not appear over scaled in this view that comprises other broad landscape features and land-use patterns. Furthermore, the proposed turbines will not appear out of place in this view currently characterised by existing wind energy development. On balance of the reasons outlined above, the magnitude of visual impact is deemed Medium.</p>	Moderate / Negative / Long Term
VP21	<p>R724 at Kilcarrig Bridge, Bagenalstown – This is a locally elevated view afforded from the national railway line overbridge at the settlement of Bagenalstown. The depicted view is oriented back across the urban settlement of Bagenalstown and is contained in the background by a broad low rolling ridge cloaked in a mix of working rural land uses.</p>	Medium-low	<p>All 7 no. of the proposed turbines are partially visible, rotating along the distant skyline ridge at a modest scale. The moving turbine components are viewed backed by the sky with a low degree of visual contrast from this distance of over 10km. While some sense of ambiguity is generated from the partially visible rotating blade sets, any negative aesthetic effects are diluted by the viewing distances involved here. It is also important to note that much of the central areas of Bagenalstown will afford limited and, in many cases, no visibility of the proposed turbines as they will be screened by the surrounding built development</p>	Slight-imperceptible / Negative / Long Term

			and areas of existing mature vegetation. Overall, the partial view of turbines in this highly anthropogenic scene will have little impact on the visual amenity of this setting. On balance of the reasons outlined above, the magnitude of visual impact is deemed Low-negligible.	
VP22	Local road at Castlewarren – This is a pleasant pastoral scene afforded from a local road intersection north of the village of Castlewarren. A view across the Monofelin river valley is afforded, whilst to the north the view is contained at a near distance by a dense mature tree-lined hedgerow.	Medium-low	The proposed turbines are almost entirely screened by the dense mature tree-lined hedgerows in the near foreground. A partial glimpse of the rotating turbine blade tips has the potential to be afforded along the skyline. Nonetheless, the main aspect of scenic amenity here is the cross-valley view to the east, which the proposed turbines will have little-to-no impact on. As a result, the magnitude of visual impact is deemed Low-negligible.	Slight-imperceptible / Negative / Long Term
VP23	Round Tower at St Canice's Cathedral – This is a broad sweeping panoramic view afforded from the St Canice's round tower in Kilkenny City. The view takes in the urban settlement of Kilkenny and is backdropped by a broad low ridge contained in a patchwork of pastoral farmland and blocks of conifer forest.	High	The wireframe identifies the potential for partial visibility of the blade sets of up to 4 no. of the proposed turbines along the broad ridgeline in the view's background. The turbines have the potential to be viewed at a distance of some 14km and will present backed by the sky with a very low degree of visual contrast. Nonetheless, even if viewed from here, the partially visible blade sets will have little impact on the visual amenity of this sweeping, broad panorama that is characterised by numerous anthropogenic land uses and built features. Thus, the magnitude of visual impact is deemed Low-Negligible.	Slight-imperceptible / Negative / Long Term
VP24	L7022 at Ballinkillin – This is a view afforded from a scenic route designation along a local road in the townland of Ballinkillin.	High-medium	Whilst the proposed turbines are heavily screened by a section of scrubby roadside vegetation in the near foreground, intermitted views of the distant turbines have the potential to be afforded from this elevated scenic route designation. Nonetheless, the turbines will be small-scale background features as they will be	Slight-imperceptible / Negative / Long Term

			partially visible at a distance of 14km and present backed by the sky with a very low degree of visual contrast. Furthermore, the turbines will be viewed in conjunction with other existing turbines further north along the distant ridge and, therefore, will not appear out of place. Overall, the proposed turbines will have little impact on the scenic amenity of this scenic route, and thus, the magnitude of visual impact is deemed Low-negligible.	
VP25	M9 at Rathcash East – This is a view from the M9 motorway corridor in the townland of Rathcash East.	Medium-low	Whilst the turbines are entirely screened by mature roadside vegetation in this view, partial glimpses of the proposed turbines have the potential to be afforded from this section of the M9 motorway. Fleeting views of partially rotating blade sets will be afforded along the distant broad ridgeline, where the turbines will be viewed backed by the sky with a low degree of visual contrast. The proposed turbines will have a minimal visual presence from this distance of over 11km and are viewed in the context of a robust working rural landscape. It is not considered that the proposed turbines will appear incongruous, nor will they notably impact this rural scene's character or visual amenity. Thus, the magnitude of visual impact is deemed Low-negligible.	Slight-imperceptible / Negative / Long Term
VP26	R702 east of Goresbridge – This is a partially contained view from the R702 east of the River Barrow and the settlement of Goresbridge.	Medium	A brief glimpse of the proposed turbine blade sets will be afforded along the distant broad ridge in the view's background. However, the turbines will be difficult to discern from this distance of just under 14km and will have little impact on the visual amenity of the River Barrow valley located throughout the fore-to-middle ground of the view. Thus, the magnitude of visual impact is deemed Low-negligible.	Slight-imperceptible / Negative / Long Term

Table 0.12: Magnitude/Significance of Visual Impacts at Viewshed Reference Points

9.4.3 Cumulative Effects

The appraisal of cumulative effects with other wind energy developments is based on the cumulative ZTV maps and wireframes provided at **Annex 9.1**. Given the absence of other tall structures within the study area, it is assessed that there is no potential for in combination effects with other types of development.

The cumulative ZTV map (**Figure 146, Annex 9.1**) shows the potential for cumulative visibility between the wind farm and all other permitted and proposed wind farm developments within the 20km study area. At present there is 1 no. operational wind farm and 2 no. operational single turbine development located within the study area. There are an additional 2 no. consented wind farms within the study area, whilst 3 no. other wind farms are in the pre-planning or planning stage. As a result, the cumulative assessment will be undertaken in 2 no. stages; existing baseline and potential future baseline. As the proposed Seskin Wind Farm, Ballynalackan Wind Farm, Coolglass Wind Farm, Freneystown Wind Farm, and Kildrenagh Single Turbine are in the pre-planning or planning stage, these will form part of the cumulative assessment as a potential future baseline.

9.4.3.1 Cumulative Impact – Existing Baseline

In respect of cumulative impacts with other wind energy developments, the most notable cumulative effects will occur from developments in the central study area of the White Hill Wind Farm. In this regard, the nearest existing wind farm development is Gortahile Wind Farm, located some 5km northeast of the site, in a similar elevated landscape context to the White Hill Wind Farm. Furthermore, an existing permission for an additional wind farm comprising 5 no. turbines is located immediately adjacent to the existing Gortahile Wind Farm and is located some 4km northeast of the subject site at its nearest point. Whilst there will be some intervisibility of the proposed White Hill Wind Farm, and the permitted and existing development within the central study area, the rolling nature of this landscape context, combined with the dense mature intervening vegetation, will limit clear visibility of these three developments as a whole. Nonetheless, there will be instances where views will be afforded of the proposed, permitted, and existing developments extending for more than a 180-degree visual envelope. In these instances, there will be a slight sense of wind farm proliferation within the central study area. However, it is important to note that turbines within the central study area will never block or be viewed in the principle aspect of designated scenic views, which are typically oriented away from cumulative developments towards the lowland landscapes that surround the plateau landscape context containing the three wind farm developments.

A set of cumulative montages were generated for viewpoints VP1, VP5, VP7, VP9, VP13 and VP17. Whilst clear views of the existing Gortahile Wind Farm turbines and consented Bilboa Wind Farm turbines will be afforded from VP5, the proposed White Hill Wind Farm turbines will be entirely screened by a dense conifer forest plantation, eliminating the potential for cumulative visual impacts.

At VP7, there will be some intervisibility of the consented Bilboa Wind Farm turbines, which will be viewed uphill, in the opposite direction of the depicted view at a near distance. It is important to note that neither the proposed (White Hill Wind Farm) nor consented (Bilboa Wind Farm) developments are viewed in the main aspect of the scenic route designation represented at VP7, which is to the east/southeast, across the broad lowland landscape backdropped by the Wicklow Mountains foothills and Mount Leinster – Blackstairs Mountain uplands.

VP13 affords a relatively close, prominent view of the proposed White Hill Wind Farm turbines. Whilst the existing Gortahile Wind Farm and permitted Bilboa Wind Farm are viewed in the opposite direction to the depicted view, the cumulative ZTV identified the potential for visibility of up to 3 no. permitted or existing wind farms within the study area.

South of the White Hill Wind Farm, VP17 affords a locally elevated view of the wind farm. Both the existing Gortahile Wind Farm and the permitted Bilboa Wind Farm will also be visible as modest scale background features further to the north. Whilst the cumulative view of all three developments will notably increase the intensity of wind energy development within this plateau landscape context, there is a strong visual separation between the wind farm and the existing and consented development, which aids the sense of dispersal.

Distant views of the wind farm in combination with other existing and consented development will also be afforded from visual receptors within the wider study area. There is a limited likelihood of notable cumulative visual impacts in the wider northern half of the study area as the White Hill Wind Farm turbines are heavily screened from here. As both the existing Gortahile Wind Farm, permitted Bilboa Wind Farm and proposed White Hill Wind Farm developments are located along the eastern periphery of the Castlecomer Plateau, there is greater potential for a higher degree of visual exposure of the 3 no. developments to occur in the wider eastern half of the study area. All 3 no. of the aforementioned developments will be viewed along the broad distance ridge in VP9, where the turbines are viewed as modest scale background features. Nonetheless, whilst the turbines will generate an increase in the intensity of wind farm development along this broad ridge, they are viewed in the context of a broad landscape setting that comprises a variety of productive land uses. The permitted Pinewoods Wind Farm is also located in the wider northwest quadrant of the study area. However, due to the considerable separation distances between the wind farm and the permitted Pinewoods Wind Farm, it is assessed that there will be no appreciable cumulative visual impacts.

Two operational single turbines (Ballon Meats Turbine and Jerry Bolger Turbine) are located in the eastern half of the study area. Nonetheless, due to their modest scale and considerable offset distance from the project, there is no likelihood of significant cumulative visual impacts with the White Hill Wind Farm.

In terms of sequential impacts, the most notable linear receptors in this instance are the M9 motorway and the Barrow Way National Waymarked Walking Trail. Both of these receptors follow a similar orientation throughout the wider eastern half of the study area and are located in a similar lowland context. Whilst intermitted views of the proposed White Hill Wind Farm, in combination with the permitted Bilboa Wind Farm and existing Gortahile Wind Farm, have the potential to be afforded from sections of these routes, they will often be heavily veiled by dense vegetation along the corridors of both the River Barrow and the M9 motorway. Furthermore, both routes are between 5-7km east of the nearest turbines, and therefore, the existing, consented and proposed turbines will never be prominent features of views afforded from these locations. In terms of the Barrow Way, the main aspect of visual amenity is the localised views of the naturalistic river corridor, which is enclosed by dense mature riverside vegetation and diminishes the potential for clear combined views of the cumulative wind farm developments. As a result of the reasons outlined above,

sequential cumulative visual impacts along these routes are not considered to be significant.

Overall, it is considered that the wind farm will generate cumulative visual impacts in the order of 'Medium' in respect of the impact classification at **Table 9.9** above. Nonetheless, it is considered that the proposed White Hill Wind Farm is entirely consistent with the guidance in the current *Wind Energy Development Guidelines for Planning Authorities 2006* which states, "given that these landscapes comprise hedgerows and often hills, and that views across the landscape will likely be intermittent and partially obscured, visibility of two or more wind energy developments is usually acceptable", in respect of the 'Hilly and Flat Farmland' landscape type.

9.4.3.2 Cumulative Impact Assessment – Potential Future Baseline

The potential future baseline scenario assesses the potential cumulative impact of the wind farm in respect of existing and permitted developments and all other known developments within the study area that are in the pre-planning and planning stage. 4 no. wind farm developments within the study area are at the pre-planning stage while 1 no. single turbine development is currently the subject of appeal to An Bord Pleanála.

The nearest of these, and most likely to have a marked cumulative impact with the White Hill Wind Farm, is the Seskin Wind Farm, situated c. 1.5km northeast of the White Hill Wind Farm and southwest of the permitted Bilboa Wind Farm. The introduction of the Seskin Wind Farm would generate a linear cluster of turbines extending for just under 10km through the central and wider study area. Due to the proximity of these 4 no. wind farms (White Hill, Seskin, Bilboa and Gortahile), there is the potential for them to be perceived as one large wind farm, especially from the wider eastern half of the study area, where all 4 no. developments may be viewed across the broad underlying ridgeline.

The perceived combined scale of the proposed Seskin Wind Farm and White Hill Wind Farm is evident in VP7, where the proposed White Hill Wind Farm turbines are viewed directly beyond the proposed Seskin Wind Farm turbines and appear as one development. This is also highlighted at VP9, where all four existing, permitted and proposed developments present with a broad visual envelope across the distant working ridgeline. There is some sense of separation between the existing and permitted developments further to the north; however, both the proposed Seskin Wind Farm and White Hill Wind Farm appear as one continuous development. Nonetheless, the sense that both developments appear as one consolidated development is less evident to the south of the proposed White Hill Wind Farm (VP17), where both proposed developments tend to present with a notable separation distance and in distinct clusters.

Due to the close proximity of the proposed White Hill Wind Farm turbines and the proposed Seskin Wind Farm turbines, the most notable cumulative impacts would occur in the areas between White Hill Wind Farm and Seskin Wind Farm along the L3037 local road north of Ridge Crossroads. Nonetheless, this area avails of a high degree of mature vegetative screening so that clear views of both developments in their entirety would be limited. The proposed developments are also contextually separated by a small valley containing the Coolcullen River located to the west of the L3037. Where intermittent combined views of both proposed developments are potentially afforded in both directions from a near distance, there is potential for wind

energy development to have a highly dominant localised visual presence and generate a sense of overbearing.

Three additional proposed wind farms (Ballynalacken Wind Farm, Coolglass Wind Farm and Freneystown Wind Farm) are located in the western half of the study area, whilst an additional single turbine development is situated in the wider eastern half of the study area. Due to considerable separation distances between the Ballynalacken Wind Farm and Coolglass Wind Farm and the White Hill Wind Farm, it is not considered that these will contribute to any notable sense of wind farm proliferation. Nonetheless, due to the scale of these developments to the northwest, which comprise 9 no. and 13 no. turbines respectively, they would generate an increase in the intensity of wind energy development within the context of the overall study area.

The proposed Freneystown Wind Farm is the nearest of these developments and has the potential to extend the visual envelope of wind farm development along this elevated rolling plateau. Nonetheless, as highlighted in both VPs 7 and 9, the turbines associated with the proposed Freneystown Wind Farm will have a limited degree of visual prominence within the wider eastern half of the study, as they are set back further into the elevated rolling plateau and are heavily screened by the surrounding terrain. However, the most notable cumulative impacts with regard to the proposed Freneystown Wind Farm will likely occur to the southwest of the White Hill Wind Farm, where both the Freneystown Wind Farm and White Hill Wind Farm will likely be viewed in combination at a near distance. Nonetheless, the c. 4.5km distance between the respective developments, combined with the rolling and heavily vegetated nature of this landscape context, will slightly diminish any notable sense of wind farm proliferation.

Overall, the White Hill Wind Farm is assessed as having have a notable cumulative visual impact with other wind energy developments within the central and wider study area. The most notable cumulative effects would occur in the immediate surrounds of the subject site in respect of the proposed Seskin Wind Farm. It is important to note that the likely cumulative impacts for the existing baseline scenario in **Section 9.4.3.1** above have been considered as part of the potential further baseline scenario. It is assessed, therefore, that the White Hill Wind Farm would contribute to a potential future cumulative effect that is consistent with a 'High-medium' classification, as identified in **Table 0.8** above.

9.5 Mitigation Measures

9.5.1 Construction Phase

Aside from construction stage mitigation measures to minimise land and vegetation disturbance and dust emissions (which may reduce visual amenity), there are no specific mitigation measures to be implemented. The appropriate management and reinstatement of excavations, in a timely manner, will ensure that any adverse effects caused, for example at site entrances or road upgrade locations, are minimised insofar as possible. Similarly, the progressive reinstatement and landscaping of the site will remediate any short term adverse effects on the local landscape.

9.5.2 Operational Phase

Given the highly visible nature of commercial wind energy developments it is not generally feasible to screen them from view using on-site screening measures typically employed for other forms of development during the operational phase. Instead,

landscape and visual mitigation measures have been incorporated into the siting and design of the project at an early stage (see **Chapter 2**). In the case of the wind farm, the guidance provided in the *Wind Energy Development Guidelines for Planning Authorities 2006* (and 2019 revision) was the principal consideration. The relevant guidance for the landscape types that constitute the landscape and visual setting of the wind farm are discussed in detail in **Section 9.3.2.1** above. It is considered that the wind farm is broadly in line with the recommendations contained within the Guidelines.

The project has embedded landscape and visual mitigation measures and thus, the appraisal of potential landscape and visual effects is equivalent to any appraisal of residual effects in this instance.

Some of the general mitigation measures that will be implemented to make the development less intrusive and less eye catching on a localised level include:-

- The colour will be industry standard off-white/light grey semi-matt non-reflective finish;
- Electricity lines between individual turbines and the substation, and the grid connection infrastructure, will be placed underground;
- Special care will be taken to preserve any features, insofar as possible, which contribute to the landscape character of the study area; and,
- Counter rotation of blade sets will be avoided.

9.5.3 Decommissioning Phase

The turbines are expected to be fully operational for up to 35-years. After this period, and if planning permission is not sought for an extension of this use at the site, the turbines and ancillary developments will be deconstructed and removed from the site with the exception of electricity grid infrastructure which may remain as part of the national grid network in perpetuity. Aspects of the ancillary site development including the access tracks may be retained in-situ. These may facilitate the use of the site for, as stated, suitable future rural development uses including animal grazing.

9.6 Summary

A summary table is provided below, which collates the assessments of visual impacts. A discussion of the results is provided thereafter.

Visual Impact			
VRP	Visual Receptor Sensitivity	Magnitude of visual impact	Visual Impact Significance
VP1	Medium-low	Low-negligible	Slight-Imperceptible
VP2	Medium	Low-negligible	Slight-Imperceptible
VP3	Low	Negligible	Imperceptible
VP4	Medium	Low-negligible	Slight
VP5	Medium-low	Negligible	Imperceptible
VP6	Medium-low	Low	Slight
VP7	High-medium	Low	Slight

VP8	Medium-low	Medium-low	Moderate-slight
VP9	High-medium	Low-negligible	Slight-Imperceptible
VP10	Medium-low	High	Substantial-moderate
VP11	Medium	Medium	Moderate
VP12	High-medium	Low-negligible	Slight
VP13	Medium-low	High	Substantial-moderate
VP14	Medium-low	Medium	Moderate
VP15	High-medium	Negligible	Imperceptible
VP16	Medium-low	Low-negligible	Slight-Imperceptible
VP17	Medium-low	High-medium	Moderate
VP18	Medium-low	High	Substantial-moderate
VP19	Medium-low	High-medium	Moderate
VP20	Medium-low	Medium	Moderate
VP21	Medium-low	Low-negligible	Slight-imperceptible
VP22	Medium-low	Low-negligible	Slight-imperceptible
VP23	High	Low-Negligible	Slight-imperceptible
VP24	High-medium	Low-negligible	Slight-imperceptible
VP25	Medium-low	Low-negligible	Slight-imperceptible
VP26	Medium	Low-negligible	Slight-imperceptible
Cumulative Impact			Medium

Table 0.13: Summary Impact Assessment

9.6.1 Landscape Impacts

The wind farm is located along the border of both County Kilkenny and County Carlow. The central study area also encompasses areas of County Laois. In County Carlow, the wind farm is located within the 'LCA-Killeshin Hills' and the landscape type 'uplands'. Whilst the 'Killeshin Hills' encompasses "a moderate level of sensitivity and moderate potential capacity to absorb different types of development", the uplands LCT that contains the site is classified with a 'most sensitivity' designation. Whilst the site of the wind farm is elevated, it is not considered that it represents a typical and highly sensitive upland setting such as the Mount Leinster-Blackstairs Mountains located in the southern extents of County Kilkenny, which are also classified with the same landscape sensitivity designation. The 'Killeshin Hills' LCA has also been classified with a 'Medium' potential capacity to accommodate wind energy development, further highlighting the robust nature of this landscape context.

The western half of the site and central study area is located within County Kilkenny and is situated in the LCT-‘Uplands’ and the LCA-‘Castlecomer Plateau’. The wind farm site and central study area is not located with ‘landscape areas of highly scenic and significant visual amenity value’ identified within the Kilkenny CDP. The Kilkenny CDP identifies ‘landscapes of greater sensitivity’, of which the most relevant landscape sensitivities in relation to the wind farm site include ‘ridgelines’ and ‘contours’. No highly sensitive susceptible landscape units or character areas are located within County Laois within the central study area.

The central and wider study area is principally a productive rural landscape of strong integrity. The central study area contains no strong landscape values associated with recreational amenity, scenic amenity or tourism. Instead, it is a robust and modified landscape comprising a range of working rural land uses. The central and wider study area also has a strong historical association with industrial land uses in the form of the extractive industry, whilst existing wind farm development is also contained to the north of the White Hill Wind Farm. There are some localised sense of heritage and amenity within the wider surrounds of the wind farm site, however, in general, this is a modified rural setting influenced by working land uses and a range of anthropogenic features. As a result, the sensitivity of the study area is considered to be ‘Medium-low’, with localised pockets of highly sensitive landscapes in the wider periphery of the study area.

There will be direct physical impacts on the landscape during the construction and operational stages of the development, but such effects are considered to be modest in scale and nature in this already modified working landscape. There will also be effects on the landscape character of the central study area from the introduction of tall moving structures, however, existing wind farm development already exists within the study area, and therefore these tall moving structures will not appear incongruous. Within the central study area, the magnitude of landscape impacts is deemed to be ‘Medium’, which, combined with the previously identified ‘Medium-low’ landscape sensitivity, results in a landscape impact significance of ‘Moderate-slight’.

Beyond the central study area (<5km), the wind turbines will have a lesser background influence on the prevailing working landscape character. Even when viewed from some of the more highly sensitive landscape areas, such as the River Barrow to the east, the proposed turbines will be heavily veiled by surrounded dense vegetation and will have limited potential to notably impact on the character of the riverside setting.

For the reasons contained herein, it is assessed that the wind farm will not give rise to significant landscape effects within either the central or wider study area. This reflects the fact that the wind farm has been located and designed in accordance with relevant local and national policy and guidance documents.

9.6.2 Visual Impacts

Visual impacts have been assessed at 26 no. visual receptor locations throughout the study area. As noted in the summary table above (**Table 0.13**), sensitivity ranged widely from ‘High’ to ‘Low’. Those locations with the highest levels of sensitivity (high/high-medium) tend to be sensitive heritage features such as the Round Tower at St Canice’s Cathedral and the heritage settlement of Kilkenny, the River Barrow and scenic designations that afford broad elevated views across the landscape. Other views with medium sensitivity typically relate to other scenic designations in the

current CDPs that are influenced by a range of working rural land uses. 'Medium-low' sensitivity tends to be attributed to less remarkable and contained views from local and regional roads, often comprising a range of anthropogenic land uses and built features. As identified in **Table 0.13** above, the majority of the viewpoints have been classified as 'medium-low' and lower sensitivity designations which reflect the robust working nature of this relatively typical landscape context.

Local Community Views

Local community views represent those who live, work, and move around the area within approximately 5km of the site (the central study area). These are generally the people most likely to have their visual amenity affected by a wind energy development due to their proximity to the turbines. The central study area is contained within an elevated plateau landscape setting comprising numerous rolling hills, ridges and river valleys. Despite its elevated nature, the rolling nature of this landscape context, combined with the high degree of mature vegetation, provides a notable degree of containment even in the near surrounds of the site. Nonetheless, some of the nearest residential receptors will afford clear views of the wind farm from a near distance and will generate some borderline significant visual impacts.

As the most notable visual impacts are likely to occur in the central study, it is important to have a high proportion of views that represent the local community. 11 no. viewpoints were specifically chosen from a variety of viewing angles and distances to represent the potential visual impacts likely to be experienced by the local community (VP6, VP8, VP10, VP11, VP13, VP14, VP17, VP18, VP19, VP20, & VP22). All 11 no. viewpoints located within the central study area were classified with a 'medium-low' sensitivity highlighting the robust, modified character of this landscape context.

Visual impacts at local community receptors varied from 'Low-negligible' to 'High', which highlights the variation in containment within this elevated plateau setting. As expected, the highest impacts relate to the clearest and nearest views of the wind farm. The highest visual impact of 'High' occurs at viewpoints VP10, VP13 and VP18. VP10 affords a near-distant view of the proposed turbines, where turbine T10 is visible at a distance of just under 800m, rising from a neighbouring conifer forest plantation. Whilst there is a slight degree of ambiguity as to the actual location of the proposed turbines, they present here in a relatively clear manner, albeit with a dominant visual presence.

At VP13, the proposed turbines present at a considerable scale and with a dominant visual presence, especially turbine T2, which is viewed at a distance of less than 900m. VP18 represents a view of the turbines to the southwest of the site, where they present at a similarly large scale as VP10 and VP13. Turbine T4 is the nearest visible turbine and is viewed at a distance of just over 1km. Nonetheless, despite their perceived scale, in all three instances, the turbines present in a relatively clear and comprehensible manner and do not appear incongruous in this heavily vegetated working landscape context.

VP17 and VP19 both received a High-medium visual impact magnitude judgement. VP17 affords a relatively clear view of all 7 no. turbines from a locally elevated point. The turbines present in a highly legible manner from this broad, locally elevated location where the existing Gortahile Wind Farm turbines are also visible. In contrast, VP19 represents a relatively contained vista afforded from to the south of the wind farm. The turbines present in a condensed cluster and in a cluttered manner, however,

several of the proposed turbines are heavily screened by the nearby conifer forest plantation. Nonetheless, in both cases, the wind turbines do not present as over-scaled or out of place in this robust working landscape.

All other viewpoints representing the local community received a visual impact magnitude of 'Medium' or lower, which highlights the contained nature of this elevated setting.

Centres of Population

The nearest settlement to the wind farm is the village of Coan, located some 3.5km north of the site and represented by VP6. Despite its relatively near distance to the site, the settlement will be heavily screened from the wind farm by a low rolling ridge located immediately north of the site. Residual visibility of partial blade tips will be afforded from here and will generate a slight sense of visual clutter and confusion. As the turbines will be heavily screened from the centre of the settlement, the magnitude of visual impact was deemed 'Low'.

Scenic Designations

Several scenic designations occur throughout the central and wider study area. In almost all cases, scenic views within the central study area are oriented away from the wind farm toward the lowland landscape that surrounds the raised broad plateau the site is contained within. The nearest of these scenic designations are scenic route SR7 and scenic view S31, both of which are situated in the surrounds of The Butts (County Carlow) crossroads, immediately east of the site. Nonetheless, both scenic designations are oriented out to the east towards Carlow's central plain in the opposite direction to the wind farm. VP11 represents the potential visibility from these scenic designations and highlights that, even from this near distance, the wind turbines will not be a visually dominant feature and instead are heavily screened by a near low ridge and intervening mature vegetation.

VP9 is one of few views within the study area where the turbines are viewed in the same orientation as the scenic designation. VP9 is representative of views from scenic route SR5, which is located along elevated lands in the wider eastern extents of the River Barrow valley. The scenic designation is oriented to the west and takes in a panoramic view of the River Barrow valley backdropped by a broad low ridgeline contained in a patchwork of pastoral farmland. The proposed turbines will be faintly visible, rotating along the distant ridge, however, they will have little impact on this scenic amenity of this broad view, where the existing Gortahile Wind Farm turbines are also partially visible in the distance.

Overall, it is not considered that the proposed turbines will generate significant visual effects and any scenic designations within the study area.

Tourism Amenity and Heritage Features

With regard to tourism heritage and amenity, one of the most notable features within the study area is the Barrow Way National Waymarked Walking Trail, which occurs in the eastern half of the wider study area. This linear walking trail is heavily enclosed by dense riverside vegetation, and typically, the most notable aspect of scenic amenity along this route is the riverside context itself. Whilst the wind turbines will be intermittently visible from here, they will have little material impact on the character of the river corridor. Several notable heritage features are also dotted throughout the

wider study area and include castles, dolmens, cathedrals and round towers. Kilkenny City has the most notable agglomeration of heritage features within the study area and is a popular tourist destination due to its heritage value. VP23 is a representative view from Kilkenny and the Round Tower at St Canice's Cathedral. The White Hill Wind Farm will be heavily screened from one of the most elevated vantage points within Kilkenny City, with limited views of blade sets afforded along the distant low ridge. In the context of this elevated, sweeping panoramic view, a partial view of distant turbine blade sets will have little material consequence on the visual amenity of this view that is heavily influenced by numerous other highly anthropogenic features.

The most notable point to make is that visual impacts are typically contained within the central portions of the study area, within the elevated plateau landscape that is influenced by existing wind energy development and extensive conifer forest plantations. This is further reinforced by the fact that visual impacts outside of the central study area are no greater than 'Slight', and in most cases, visual receptors in the wider study area are classified with a 'Slight-imperceptible' visual impact significance.

Whilst there will be some near-significant visual impacts within the immediate surrounds of the turbines, the wind farm often presents in a clear and comprehensible manner, and does not appear over-scaled, especially in the context of the broad underlying landscape uses and landscape features that characterise the study area. Overall, therefore, it is considered that the White Hill Wind Farm can be well assimilated into this robust working landscape context without any significant visual impacts.

9.6.3 Cumulative Impacts

Wind energy development is a relatively familiar feature within the study area, as the existing Gortahille Wind Farm is located c. 5km northeast of the site. Two single turbine developments are also located in the wider eastern half of the study area, whilst an additional 2 no. consented wind farms are also located within the study area, one of which is situated c. 4km northeast of the site. If constructed, the proposed, permitted and existing wind farms within the central study area will result in a marked increase in the intensity of wind energy development within this elevated plateau landscape.

Whilst there is some potential for a minor sense of wind farm proliferation to occur within the immediate surrounds of the 3 no. wind farm developments (under the Existing Baseline Scenario – White Hill Wind Farm, Bilboa Wind Farm, and Gortahille Wind Farm) in the central study area, in the majority of instances, any notable cumulative landscape and visual impacts will be offset by the separation distance between the White Hill Wind Farm and the permitted and existing developments; in addition to the high degree of dense vegetation, which limits intervisibility between the White Hill Wind Farm and existing and permitted wind energy developments in the central study area. Thus, it is assessed that the White Hill Wind Farm will not generate a significant cumulative impact in relation to other existing and permitted developments within the study area. Instead, a magnitude of cumulative effect of 'Medium' was deemed appropriate in this instance.

Notwithstanding the existing baseline cumulative scenario, there is a potential cumulative scenario that could include the adjacent Seskin Wind Farm, in addition to Freneystown Wind Farm, Ballynalacken Wind Farm and Coolglass Wind Farms, all of which are located in the western half of the study area. Each of these proposed developments are in the pre-planning phase. The most notable cumulative impacts

in relation to the proposed White Hill Wind Farm relate to its potential intervisibility with the proposed Seskin Wind Farm situated c. 1.5km northeast of the White Hill Wind Farm. In addition, a further sense of wind farm proliferation would likely be generated in the central study area where the 4 no. existing, permitted and proposed developments (White Hill Wind Farm, Seskin Wind farm, Bilboa Wind Farm, and Gortahile Wind Farm) have the potential to appear as a single wind farm development. Nonetheless, given the pre-planning status of Seskin Wind Farm, consideration of potential cumulative impacts is somewhat premature and should not necessarily be taken as the future reality. Overall, it is assessed that the White Hill Wind Farm will not generate a significant cumulative impact in relation to the potential future baseline scenario. It is assessed that a magnitude of cumulative effect of 'High-Medium' is appropriate in this instance.

9.6.4 Overall Significance of Impact

The highest level of impact significance occurs at VP10, VP13 and VP19, which are attributed 'Substantial-moderate' visual impact significance and represent worst-case views likely to be experienced by the local community (within 5km). Outside of the central study area, the significance of impacts considerably reduces and ranges between 'slight' and 'imperceptible' due to the robust working nature of this landscape context which is not assessed to be highly sensitive or susceptible to development. When coupled with the assessed landscape impact and cumulative impacts, it is assessed that the project will not give rise to any significant landscape impacts, visual impacts, or cumulative impacts.

