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

Volume 2 - Main EIAR

Chapter 15 - Landscape and Visual Impact

Prepared for:

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15. LANDSCAPE AND VISUAL IMPACT

15.1 Introduction

This LVIA describes the landscape context of the Proposed Development and assesses the likely landscape and visual impacts of the scheme on the receiving environment. Although closely linked, landscape and visual impacts are assessed separately.

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

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

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

15.1.1 Statement of Authority

This Landscape and Visual Assessment (LVIA) chapter was prepared by Jorden Derecourt, who holds a Masters in Landscape Architecture (MLA, Hons) and is a Corporate Member of the Irish Landscape Institute (MILI) with five years of experience. The chapter was reviewed by Richard Barker (Masters in Landscape Architecture and MILI) of Macro Works Ltd, who has 20 years of experience in the appraisal of effects from a variety of energy, infrastructure and commercial developments.

15.1.2 Study Area

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

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

In the case of this project, the maximum blade tips are 167m high and, thus, the minimum ZTV radius recommended is 20 km (refer to Figure 15-1 below) from the outermost turbines of the scheme. It should be noted T1 is 147.9m high. There are not considered to be any sites of national or international importance between 20 – 25km and thus, the radius of the study area will remain at 20km. Notwithstanding the full 20km extent of the LVIA study area, there will be a particular focus on receptors and effects within the central study where there is higher potential for significant impacts to occur. When referenced within this assessment, the 'central study area' is the landscape within 5km of the site.

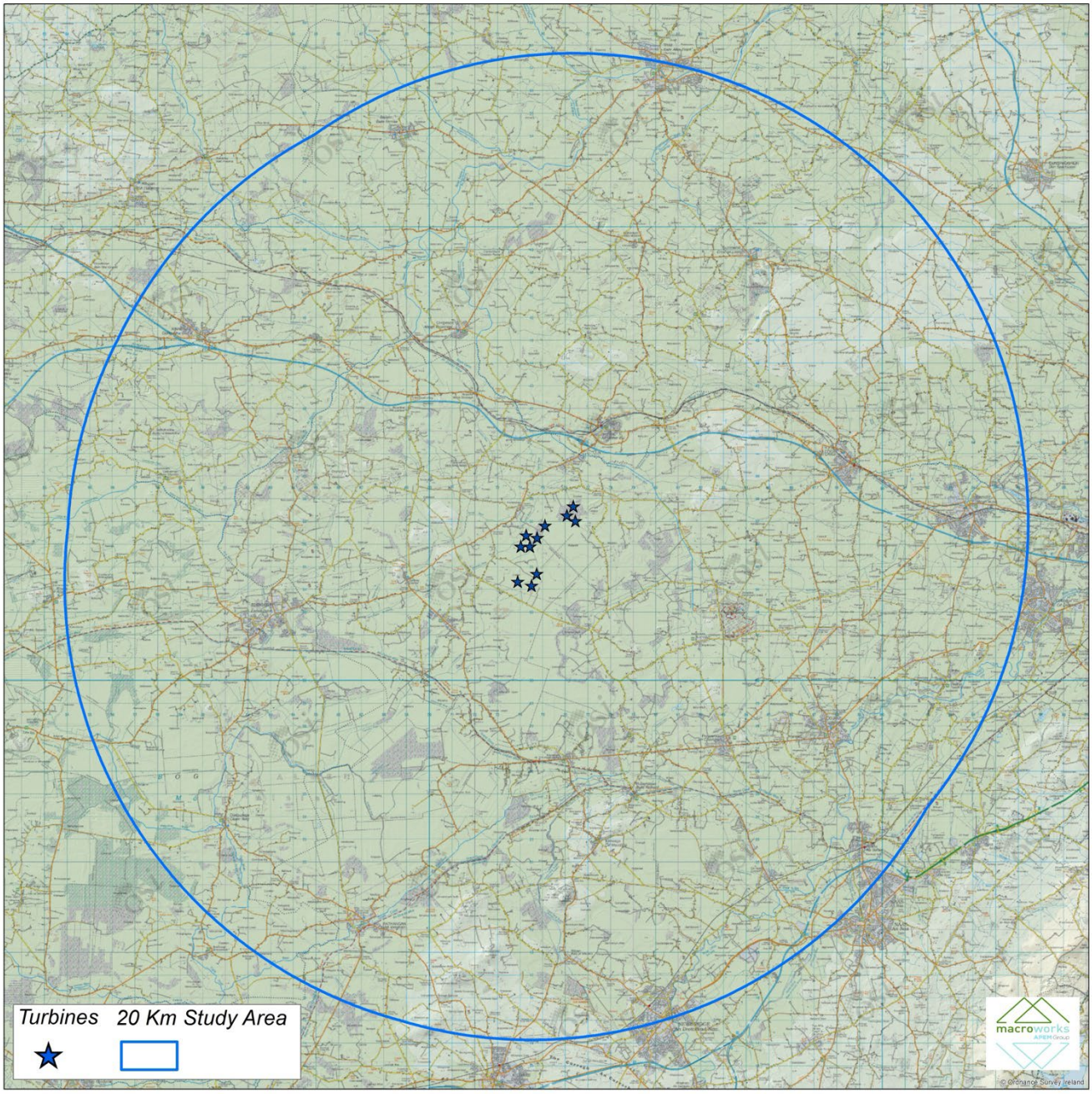


Figure 15-1 Full 20km extent of the study area

15.2 Assessment Methodology

This document uses methodology as prescribed in the Guidelines on Landscape and Visual Impact Assessment (GLVIA3), which follows the European Landscape Convention (ELC) definition of landscape:

'Landscape is an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors' (Council of Europe, 2000). Thus, GLVIA-2013 covers all landscapes from "high mountains and wild countryside to urban and fringe farmland (rural landscapes), marine and coastal landscapes (seascapes) and the landscapes of villages towns and cities (townscapes)" - whether protected or degraded.

Another useful document that has also been utilised for this assessment is the more recent 'Notes and Clarifications on aspects of the 3rd Edition Guidelines on Landscape and Visual Impact Assessment (GLVIA3) – Consultation', which is currently in draft format, with the final document due to be published imminently.

15.2.1 Relevant Policy and Guidance

The LVIA 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)
- Landscape Institute and the Institute of Environmental Management and Assessment (IEMA) publication entitled Guidelines for Landscape and Visual Impact Assessment – Third Addition (2013).
- NatureScot (2021) Guidance - Assessing the cumulative landscape and visual impact of onshore wind energy developments. [online]
- Department of the Environment, Heritage and Local Government Wind Energy Development Guidelines (2006).
- Department of the Environment, Heritage and Local Government Wind Energy Development Guidelines (2019 draft).
- NatureScot Visual representation of wind farms: Best Practice Guidelines (version 2.2 - 2017).

Use of the Term 'Effect' vs 'Impact' The GLVIA advises that the terms 'impact' and effect' should be clearly distinguished and consistently used in the preparation of an LVIA.

'Impact' is defined as the action being taken. In the case of the proposed works, the impact would include the construction of the proposed project.

'Effect' is defined as the change or changes resulting from those actions, e.g. a change in landscape character, or changes to the composition, character and quality of views in the receiving environment. This report focusses on these effects.

Assessment of Both 'Landscape' and 'Visual' Effects

Another key distinction to make in a LVIA is between landscape effects and the visual effects of development.

'Landscape' results from the interplay between the physical, natural and cultural components of our surroundings. Different combinations of these elements and their spatial distribution create distinctive character of landscape in different places. 'Landscape character assessment' is the method used in LVIA to describe landscape, and by which to understand the potential effects of a development on the landscape as 'a resource'. Character is not just about the physical elements and features that make up a landscape, but also embraces the aesthetic, perceptual and experiential aspects of landscape that make a place distinctive.

Views and 'visual amenity' refer to the interrelationship between people and the landscape. The GLVIA prescribes that effects on views and visual amenity should be assessed separately from landscape, although the two topics are inherently linked. Visual assessment is concerned with changes that arise in the composition of available views, the response of people to these changes and the overall effects on the area's visual amenity.

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

15.2.2 Desktop Study

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

15.2.3 Fieldwork

- Fieldwork investigations took place over 2018 and 2024, and capturing of baseline photography took place over the Spring months of 2024 and 2025.
- Recording of a description of the landscape elements and characteristics within the Study Area.
- Selection of a refined set of VRP's for assessment. This includes the capture of reference images and grid reference coordinates for each VRP location for the visualisation specialist to prepare photomontages.

15.2.4 Appraisal

- Consideration of the receiving landscape with regard to overall landscape character as well as the salient features of the study area including landform, drainage, vegetation, land use and landscape designations.
- Consideration of the visual environment including receptor locations such as centres of population and houses; transport routes; public amenities, facilities and heritage features and; designated and recognised views of scenic value.
- Consideration of design guidance and planning policies.
- Consideration of potentially significant effects and the mitigation measures that could be employed to reduce such effects.
- Assessment of the significance of residual landscape impacts.
- Assessment of the significance of residual visual impacts aided by photomontages prepared at all of the selected VRP locations.
- Assessment of cumulative landscape and visual effects in combination with other surrounding developments that are either existing, permitted or proposed.

15.2.5 Assessment Criteria for Landscape Impacts

This part of the LVIA provides an assessment of how the introduction of the Proposed Development will affect the physical features and fabric of the landscape, and then how the proposals influence landscape character with reference to published descriptions of character and an understanding of the contemporary character of the landscape as informed through desktop and site studies.

When assessing the potential landscape effects of the development, the value and sensitivity of the landscape receptor is weighed against the magnitude of impact to determine the significance of the landscape effect. Criteria outlined below are used to guide these judgements.

Table 15-1: Landscape Value and Sensitivity

Sensitivity	Description
Very High	Areas where the landscape character exhibits a very low capacity for change in the form of development. Examples of which are high value landscapes, protected at an international or national level (World Heritage Site/National Park), where the principal management objectives are likely to be protection of the existing character.
High	Areas where the landscape character exhibits a low capacity for change in the form of development. Examples of which are high value landscapes, protected at a national or regional level (Area of Outstanding Natural Beauty), where the principal management objectives are likely to be considered conservation of the existing character.
Medium	Areas where the landscape character exhibits some capacity and scope for development. Examples of which are landscapes, which have a designation of protection at a county level or at a 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.

15.2.6 Magnitude of Change – Landscape

The magnitude of a predicted landscape impact is a product of the scale, extent or degree of change that is likely to be experienced as a result of the proposed development. The magnitude takes into account whether there is a direct physical impact resulting from the loss of landscape components and/or a change that extends beyond the proposal site boundary that may have an effect on the landscape character of the area. Table 15-2 refers.

Table 15-2: Magnitude of Change – Landscape

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 extensive 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 a considerable 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 noticeable 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 that would lead to discernible changes in landscape character, and quality.
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 leading to no material change to landscape character, and quality.

15.2.7 Assessment Criteria for Visual Impacts

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

15.2.7.1 Visual Sensitivity

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

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

15.2.7.1.1 Susceptibility of receptor group to changes in view.

This is one of the most important criteria to consider in determining overall visual sensitivity because it is the single category dealing with viewer susceptibility. In accordance with the IEMA Guidelines for Landscape and Visual Assessment (3rd edition 2013) visual receptors most susceptible to changes in views and visual amenity are;

- Residents at home;
- People, whether residents or visitors, who are engaged in outdoor recreation, including use of public rights of way, whose attention or interest is likely to be focused on the landscape and on particular views;
- Visitors to heritage assets, or to other attractions, where views of the surroundings are an important contributor to the experience;
- Communities where views contribute to the landscape setting enjoyed by residents in the area; and
- Travellers on road rail or other transport routes where such travel involves recognised scenic routes and awareness of views is likely to be heightened.
- Visual receptors that are less susceptible to changes in views and visual amenity include;
    - People engaged in outdoor sport or recreation, which does not involve or depend upon appreciation of views of the landscape; and
    - People at their place of work whose attention may be focused on their work or activity, not their surroundings and where the setting is not important to the quality of working life.

15.2.7.1.2 Value Associated with the View

- **Recognised scenic value of the view** (County Development Plan designations, guidebooks, touring maps, postcards etc). These represent a consensus in terms of which scenic views and routes within an area are strongly valued by the population because in the case of County Development Plans, at least, a public consultation process is required;
- **Views from within highly sensitive landscape areas.** Again, highly sensitive landscape designations are usually part of a county's Landscape Character Assessment, which is then incorporated with the County Development Plan and is therefore subject to the public consultation process. Viewers within such areas are likely to be highly attuned to the landscape around them;
- **Intensity of use, popularity.** Whilst not reflective of the amenity value of a view, this criterion relates to the number of viewers likely to experience a view on a regular basis and whether this is significant at county or regional scale;
- **Provision of elevated panoramic views.** This relates to the extent of the view on offer and the tendency for receptors to become more attuned to the surrounding landscape at locations that afford broad vistas.
- **Sense of remoteness and/or tranquillity.** Remote and tranquil viewing locations are more likely to heighten the amenity value of a view and have a lower intensity of development in comparison to dynamic viewing locations such as a busy street scene, for example;
- **Degree of perceived naturalness.** Where a view is valued for the sense of naturalness of the surrounding landscape it is likely to be highly sensitive to visual intrusion by obvious human interventions;
- **Presence of striking or noteworthy features.** A view might be strongly valued because it contains a distinctive and memorable landscape feature such as a promontory headland, lough or castle;

- **Historical, cultural or spiritual value.** Such attributes may be evident or sensed at certain viewing locations that attract visitors for the purposes of contemplation or reflection heightening the sense of their surroundings;
- **Rarity or uniqueness of the view.** This might include the noteworthy representativeness of a certain landscape type and considers whether other similar views might be afforded in the local or the national context;
- **Integrity of the landscape character in view.** This criterion considers the condition and intactness of the landscape in view and whether the landscape pattern is a regular one of few strongly related components or an irregular one containing a variety of disparate components;
- **Sense of place.** This criterion considers whether there is special sense of wholeness and harmony at the viewing location; and
- **Sense of awe.** This criterion considers whether the view inspires an overwhelming sense of scale or the power of nature.

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

15.2.7.2 Magnitude of Visual Effects

The magnitude of change is again a product of the scale, extent, or degree of change that is likely to be experienced as a result of the proposed development. This is directly influenced by its 'visual presence / prominence', as experienced by visual receptors in the landscape. These terms are somewhat quantitative in nature, and essentially relate to how noticeable or 'dominant' the proposal is within a particular view. Aside from the obvious influence of scale and distance, a development's visual presence is influenced by the extent and complexity of the view, contextual movement in the landscape, the nature of its backdrop, and its relationship with other focal points or prominent features within the view. It is often, though not always, expressed using one of the following terms: Minimal; Sub-dominant; Co-dominant; Dominant; Highly dominant.

For wind energy developments, a strong visual presence is not necessarily synonymous with adverse impact, specifically being 'noticed' by viewers and contributing memorably to the experience of that view or location – positively or negatively. Instead, the 2018 Fáilte Ireland survey entitled 'Report on Visitor Awareness and Perceptions of the Irish Landscape' summarised results as below:

> *"The majority of visitors appear not to notice the majority of development – even very large and visually prominent structures such as wind turbines and powerlines*
>
> *It appears that there are significant divergences between the what can be seen and what is noticed*
>
> *The majority of visitors expressed very limited desire to change developments that they do notice*
>
> *The visibility of developments of all types give rise to significantly less adverse effects on the impression of landscape than may often be assumed in the decision-making process*
>
> *The majority of visible development does not appear to have any adverse effects on the impression of the quality of the landscape"*

With specific regard to wind farms, the following is mentioned within the main report:

> *"Visibility at Locations: Windfarms or Wind Turbines were visible from four locations, they were mentioned by visitors at one location – Cobh. At this site 11% of visitors mentioned noticing wind energy projects. Visibility en-route to locations: Wind Energy projects were mapped as being visible en-route to six sites, they were mentioned by less than 5% of all visitors."*

The purpose here is not to suggest that turbines are unlikely to be noticed, regardless of the visual presence, but rather to highlight that the assessment of visual impact magnitude for wind turbines is more complex than just the degree to which turbines occupy a view. Furthermore, a clear and comprehensive view of a wind farm might be preferable in many instances to a partial, cluttered view of turbine components that are not so noticeable within a view. On the basis of these reasons, the visual amenity aspect of assessing impact magnitude is qualitative and considers such factors as the spatial arrangement of turbines both within the scheme and in relation to surrounding terrain and land cover. It also examines whether the project contributes positively to the existing qualities of the vista or results in distracting visual effects and disharmony.

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

Table 15-3: Magnitude of Change - Visual

Criteria	Description
Very High	Complete or very substantial change in view, dominant, involving complete or very substantial obstruction of existing view or complete change in character and composition of baseline, e.g., through removal of key elements.
High	A major change in the view that is highly prominent and has a strong influence on the overall view. This may involve the substantial obstruction of existing views or a complete change in character and composition of baseline, e.g. through removal of key elements or the introduction of new features that would heavily influence key elements.
Medium	Moderate change in view: which may involve partial obstruction of existing view or partial change in character and composition of baseline, i.e., pre-development view through the introduction of new elements or removal of existing elements. Change may be prominent but would not substantially alter scale and character of the surroundings and the wider setting. View character may be partially changed through the introduction of features which, though uncharacteristic, may not necessarily be visually discordant.
Low	Minor change in baseline, i.e. pre-development view - change would be distinguishable from the surroundings whilst composition and character would be similar to the pre change circumstances.
Negligible	Very slight change in baseline, i.e. pre-development view - change would be barely discernible. Composition and character of view substantially unaltered.

15.2.7.3 Significance of Effect

The significance of a landscape or visual effect is based on a balance between the sensitivity of the receptor and the magnitude of change, and is categorised as Profound, Substantial, Moderate, Slight, or Imperceptible. The significance category judgement is arrived at using the Significance Matrix Table 15-4 This matrix employs slightly different terminology that avoids the potentially confusing use of the term 'significant' (as recommended by GLVIA3 Statement of Clarification 1/13 (Landscape institute, 10th June 2013)).

Table 15-4: Significance Matrix

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

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

Table 15-5: Indicative Significance of Effect Criteria Descriptions

Criteria	Landscape	Visual
Profound	There are notable changes in landscape characteristics over an extensive area or a very intensive change over a more limited area.	The view is entirely altered, obscured or affected.
Substantial	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the landscape. There are notable changes in landscape characteristics over a substantial area or an intensive change over a more limited area.	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the visual environment. The proposal affects a large proportion of the overall visual composition, or views are so affected that they form a new element in the physical landscape.
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends. There are minor changes over some of the area or moderate changes in a localised area.	An effect that alters the character of the visual environment in a manner that is consistent with existing and emerging trends. The proposal affects an appreciable segment of the overall visual composition, or there is an intrusion in the foreground of a view.

Criteria	Landscape	Visual
Slight	An effect which causes noticeable changes in the character of the landscape without affecting its sensitivities. There are minor changes over a small proportion of the area or moderate changes in a localised area or changes that are reparable over time.	An effect which causes noticeable changes in the character of the visual environment without affecting its sensitivities. The affected view forms only a small element in the overall visual composition or changes the view in a marginal manner.
Imperceptible	An effect capable of measurement but without noticeable consequences. There are no noticeable changes to landscape context, character or features.	An effect capable of measurement but without noticeable consequences. Although the development may be visible, it would be difficult to discern resulting in minimal change to views.

It is important that the likely effects of the proposals are transparently assessed and understood in order that the determining authority can bring a balanced, well-informed judgement to bear when making a planning decision.

As such, whilst the significance matrix and criteria provide a useful guide, the significance of an effect is ultimately determined by the landscape specialist using professional judgement, and also in the context of occasionally using hybrid judgements to account for nuance.

Effects assessed as 'Substantial' or greater (shaded cells) are considered to be the most notable in landscape and visual terms, and may be regarded as 'Significant', albeit it is important to note that this is not a reflection on their acceptability in planning terms.

15.2.7.4 Quality and Timescale in Effects

In addition to assessing the significance of landscape and visual effects, the quality of the effects is also determined. Within this LVIA, effects are described as negative/adverse, neutral, or positive/beneficial, and the following criteria has been used to guide these judgements.

- Positive/beneficial - A change which improves the quality of the environment, enhancing the existing view/landscape;
- Neutral - No effects or effects that are imperceptible, within normal bounds of variation e.g. will neither detract from nor enhance the existing view/landscape;
- Negative/adverse - A change which reduces the quality of the environment, detracting from the existing view/landscape.

In the case of new energy / infrastructure developments within rural and semi-rural settings, the landscape and visual change brought about by an increased scale and intensity of built form is seldom considered to be positive / beneficial. Effects in these contexts are generally considered to be adverse in nature, or neutral, where the effect has little influence on the landscape/views.

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

- Temporary – Lasting for one year or less;
- Short Term – Lasting one to seven years;

- Medium Term – Lasting seven to fifteen years;
- Long Term – Lasting fifteen years to sixty years; and
- Permanent – Lasting over sixty years.

15.3 Receiving Environment

15.3.1 Landscape Baseline

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

A description of the landscape context of the proposed wind farm site and wider study area is provided below under the headings of landform and drainage and vegetation and land use. Centres of population, transport routes and tourism, recreation and heritage features form part of the visual baseline and are dealt with in Section 15.3.3 below.

Figure 15-2: Immediate landscape context of the site

15.3.1.1 Landform and Drainage

The landscape of the study area is predominantly flat to mildly undulating with occasional isolated hills and crests of low hills such as those in the southern extents of the study area, which include the Hill of Allen, Red Hill and Dunmurray Hill. A subtle elevated area also emerges in the north eastern quarter of the study area and continues towards the perimeter of the study area.

Due to the flat and boggy nature of the central study area, watercourses are not distinctive, and drainage is more of a dendritic pattern of meandering small streams, drains and canal feeders. The River Liffey skirts the eastern periphery of the study area as it makes its way towards Dublin from the Wicklow Mountains, which lie to the south of the study area. The other major watercourse is the River Boyne, which has its headwaters in the eastern portion of the study area and thereafter makes its way north-easterly towards the east coast. The River Deel is located in the north-western extent of the study area, feeding into the River Boyne 13km north of the site. The River Blackwater is located 2.5km north of the site, oriented northwest/southeast, and intersecting the Royal Canal. To the south of the site, at Robertstown, there is a cluster of canal waterways, with the Grand Canal, Grand Canal (Barrow Line), Old Barrow Line, and Grand Canal Feeder Supply located in close proximity.

15.3.1.2 Vegetation and Land Use

The land cover of the central study area is a combination of cutaway peatland and associated marginal farmland, reverting scrubland and forestry around the peatland fringes. The peatland influence then gives way to more productive agricultural farmland found on better-drained ground, particularly to the north and west. Fields within such farmland vary from small to large size. The Proposed Development threads its way along peatland fringe farmland and forestry at the north-western edge of a substantial cutaway peatland area. Other notable land uses in the central study area include Drehid Landfill, which is around 2km south of the site, the Irish Industrial Explosives factory, which is approximately 2.5km to the east, and Timahoe Solar Farm, 300m to the east, within the adjacent area of open peatland.

The same general land cover pattern of the central study area is repeated in the south of the study area, albeit with a stronger emphasis on cutaway peatland, in particular to the southwest, but for most of the study area agriculture (i.e. pastoral and cropping), followed by commercial conifer plantations, are the main land uses. In addition, there is a palpable legacy of quarrying in the east of the study area, including the Hill of Allen, Drinnanstown, and Robertstown. In contrast, the north of the study area is almost exclusively pasture and cropping, with scatterings of higher intensity land uses such as quarrying, more than a dozen golf courses golf courses, and settlements.

The western outskirts of Dublin city are located beyond the eastern periphery of the study area, and its comprehensive urban land cover dissipates in a westerly direction (towards the study area) as a series of satellite commuter settlements, major transport routes and industrial/business parks interspersed with fragmented peri-urban farmland. Nonetheless, only modest sized settlements occur within the study area and these contribute a very low proportion of urban land cover in the context of the overall study area.

Figure 15-3: Typical flat lowland farmed landscape within the central study area

Figure 15-4: Typical flat Peatland landscape within the central study area

Figure 15-5: View from a crest of low hills rising out of the planar landscape to the northeast of the central study area

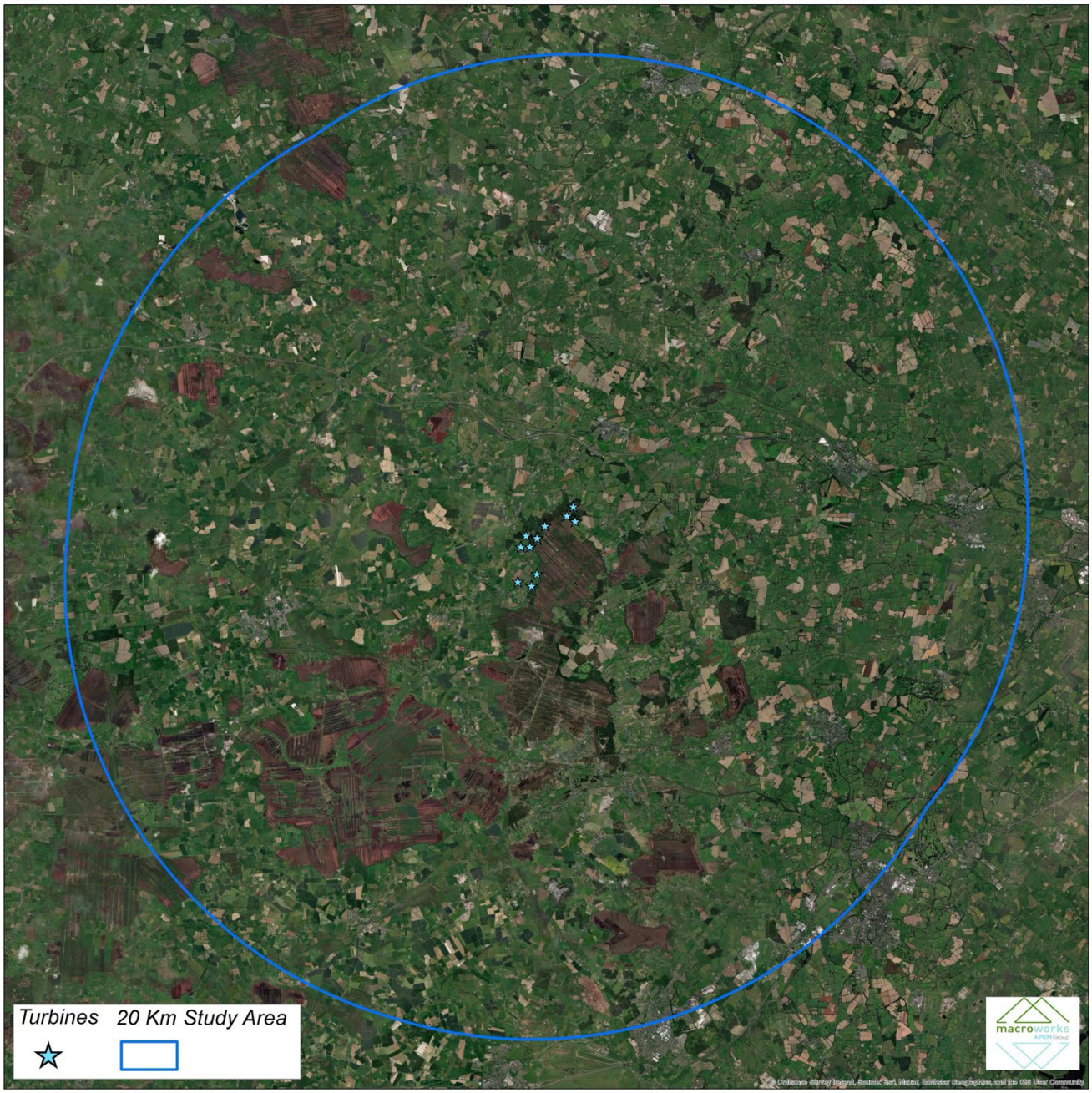


Figure 15-6 Full landscape context of the wider study

15.3.1.3 Landscape Policy Context and Designations

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

The Wind Energy Development Guidelines (2006) provide guidance on wind farm siting and design criteria for a number of different landscape types. The site of the Proposed Development is considered to be located within a landscape that is generally consistent with the 'Flat Peatland' landscape type in terms of flatness and broad-scale land use patterns, which consist of predominantly cutaway peatland and peatland fringe forestry in the central and south-central study area. However, there is also flat farmland and peatland fringe farmland in the north-central study area that shares some characteristics with the 'Hilly and Flat Farmland' landscape type from the Guidelines. In such instances, where two or more landscape types are applicable, the Guidelines recommend consideration of the advice for each landscape type rather than just that which is considered to be most applicable. The Guidance specifically states (p47);

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

Siting and design recommendations for the 'Flat Peatland' and 'Hilly and Flat Farmland' landscape types include the following:

Table 15-6: Guidance for Wind Farms in the 'Flat Peatland' landscape type (DoEHLG Wind Energy Development Guidelines – 2006

Criteria	Guidance
Location	Wind energy developments can be placed almost anywhere in these landscapes from an aesthetic point of view. They are probably best located away from roadsides allowing a reasonable sense of separation. However, the possibility of driving through a wind energy development closely straddling a road could prove an exciting experience.
Spatial Extent	The vast scale of this landscape type allows for a correspondingly large spatial extent for wind energy developments.
Spacing	Regular spacing is generally preferred, especially in areas of mechanically harvested peat ridges.
Layout	In open expanses, a wind energy development layout with depth, preferably comprising a grid, is more appropriate than a simple linear layout. However, where a wind energy development is located close to feature such as a river, road or escarpment, a linear or staggered linear layout would also be appropriate.
Height	Aesthetically, tall turbines would be most appropriate. In any case, in terms of viability they are likely to be necessary given the relatively low wind speeds available. An even profile would be preferred.
Cumulative	The openness of vista across these landscapes will result in a clear visibility of other wind energy developments in the area. Given that the wind energy developments are likely to be extensive and high, it is important that they are not perceived to crowd and dominate the flat landscape. More than one wind energy development might be

Criteria	Guidance
	acceptable in the distant background provided it was only faintly visible under normal atmospheric conditions."

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

Criteria	Guidance
Location	Location on ridges and plateaux is preferred, not only to maximise exposure, but also to ensure a reasonable distance from dwellings. Sufficient distance should be maintained from farmsteads, houses and centres of population in order to ensure that wind energy developments do not visually dominate them. Elevated locations are also more likely to achieve optimum aesthetic effect. Turbines perceived as being in close proximity to, or overlapping other landscape elements, such as buildings, roads and power or telegraph poles and lines may result in visual clutter and confusion. While in practice this can be tolerated, in highly sensitive landscapes every attempt should be made to avoid it.
Spatial Extent	This can be expected to be quite limited in response to the scale of fields and such topographic features as hills and knolls. Sufficient distance from buildings, most likely to be critical at lower elevations, must be established in order to avoid dominance by the wind energy development.
Spacing	The optimum spacing pattern is likely to be regular, responding to the underlying field pattern. The fields comprising the site might provide the structure for spacing of turbines. However, this may not always be the case and a balance will have to be struck between adequate spacing to achieve operability and a correspondence to field pattern.
Layout	The optimum layout is linear, and staggered linear on ridges (which are elongated) and hilltops (which are peaked), but a clustered layout would also be appropriate on a hilltop. Where a wind energy development is functionally possible on a flat landscape a grid layout would be aesthetically acceptable.
Height	Turbines should relate in terms of scale to landscape elements and will therefore tend not to be tall. However, an exception to this would be where they are on a high ridge or hilltop of relatively large scale. The more undulating the topography the greater the acceptability of an uneven profile, provided it does not result in significant visual confusion and conflict.
Cumulative	It is important that wind energy development is never perceived to visually dominate. However, given that these landscapes comprise hedgerows and often hills, and that views across the landscape will likely be intermittent and partially obscured, visibility of two or more wind energy developments is usually acceptable.

As can be seen in Table 15-6 and Table 15-7 above, the guidance regarding wind energy development in 'Hilly and Flat Farmland' is somewhat contradictory to that in 'Flat Peatland' areas, especially regarding spatial extent and height. This is a regular occurrence when interpreting the guidelines, as most wind farm sites traverse or contain elements of more than one landscape type. In such instances, it is necessary to understand the characteristics of the landscape types and how this has informed the particular guidance. For example, the degree of openness or enclosure from terrain and vegetation, as well as the scale of prevailing landscape patterns, are the main reasons for the disparate guidance in the two landscape types applicable to this site. The design approach for the proposed wind farm is most consistent with the guidance relating to 'flat peatland' landscapes, as this is the predominant character type. This is manifest in the proposed turbine height, whilst the extent of the eleven-turbine development remains modest as an acknowledgement of the shared peatland/farmland characteristics of the central study area.

15.3.2 County Development Plans

The Proposed Development is located in north-western County Kildare, approximately 3.5km from the southern border of County Meath, which overlays much of the northern study area. Portions of County Offaly (9km west) and County Westmeath (15km northwest) are also contained within the wider study area. It is not considered that the proposed wind farm will materially impact the landscape character of surrounding counties, even if turbines may be visible in the background from some elevated vantage points. For this reason, only the Landscape Character Assessment and associated Wind Energy policies for County Kildare will be considered with respect to potential landscape effects in this instance. The same approach does not apply to visual impacts, and where relevant, the visibility of turbines from neighbouring counties will be assessed, particularly where this relates to designated scenic routes and views within the relevant County Development Plans.

15.3.2.1 Kildare County Development Plan 2023-2029

A Landscape Character Assessment was prepared for Kildare in 2004 and is incorporated into the current Kildare County Development Plan. Landscape policy is dealt with in Chapter 13 of the main document (Volume 1) entitled 'Landscape, Recreation and Amenity'. Whilst the characterisation of the landscape has not changed since the original Landscape Character Assessment was prepared, the interpretation of sensitivity for some Landscape Character Areas (LCAs) has been altered. Matrices relating to compatibility of development types with LCAs and 'Principle Landscape Sensitivity Factors' (particular features) are also provided in current CDP.

The Proposed Development is wholly contained within the 'Western Boglands' LCA, albeit at the northern fringes of this LCA, where it coincides with the 'North-Western Lowlands' LCA. This is an important point, as LCAs seldom have abrupt or obvious boundaries between them. Instead, they tend to have core areas that contain the key defining features of the LCA, as well as peripheral areas that share some commonality with neighbouring LCAs in what can often be a broad transitional zone. In this instance, the Proposed Wind Farm hugs the marginal peatland fringes between cutaway peatland (the defining feature of the Western Boglands LCA) and flat farmland (the defining feature of the North-Western Lowlands LCA). It should be noted that because the site is located within the Western Boglands LCA, it is considered that the 'Flat Peatland' landscape type from the Wind Energy Development Guidelines is most applicable, but its close proximity to the North-western lowlands also means that the 'Hilly and Flat Farmland' landscape type for the Guidelines, as included above in Table 15-7, has some influence.

Figure 15-7: Excerpt from Map V1.13.1 of the Kildare CDP (Landscape Character Areas) with site location overlaid

15.3.2.2 LCA9 – Western Boglands

Key Characteristics derived directly from the LCA Description;

- Flat topography and smooth terrain.
- Unstable and unproductive land.
- Highly distinctive due to the existing large areas of bogland vegetation. The commonly large sized open lands are often bordered by unmaintained hedgerows, which contain scattered trees, and have the potential to partially screen adjacent lands.
- The generally low vegetation and the even ground provide extensive long-distance visibility.
- The skyline to the south of this unit is defined by the Chair of Kildare Hills and the Northern Uplands define the skyline to the northeast
- The major landuse in the area is peat extraction

- Significant areas of pastureland can also be found, together with patches of tillage
- A complementary significant landuse in the area is represented by the large coniferous forests planted in cutaway bogs and the natural revegetation occurring in set-aside cutaway areas
- The area is thinly populated.

Critical Landscape Factors:

- Smooth Terrain – Long distance vistas, inability to visually absorb development
- Low Vegetation - Long distance vistas, inability to visually absorb development
- Shelter Vegetation - Large coniferous plantations, natural visual barrier, visual complexity and containment

Landscape Sensitivity - High

15.3.2.3 LCA7 – North-western Lowlands

Key Characteristics derived directly from the LCA Description;

- Generally flat topography and smooth terrain, gently undulating around Carbury.
- Medium to large field patterns are bordered by well-maintained and low hedgerows, which contain scattered trees along some sections of the field boundaries.
- Distant views include the skylines of Newtown Hills to the east and Allen Hill to the south-east.
- The predominant land use in this area is pasture, with large areas of non-irrigated arable lands (mainly tillage). A relatively large area of mixed forest, combined with some coniferous plantations, can also be found.
- Extensive areas of bogland also occur, combined with peat extraction sites, as well as gravel extraction sites west of Cadamstown.
- Relatively low population density.

Critical Landscape Factors:

- Smooth Terrain – Long distance vistas, inability to visually absorb development
- Undulating Topography - Physical shielding and visual enclosure,
- Low Vegetation - Long distance vistas, inability to visually absorb development
- Shelter Vegetation - Large coniferous plantations, natural visual barrier, visual complexity and containment

Landscape Sensitivity - Low

The Western Boglands LCA has been attributed a 'Class 3- High' landscape sensitivity rating in the current CDP. 'Class 3 – High' is the median rating of five possible sensitivity classes, which also include 'Class 4 – Special' and 'Class 5 – Unique'. As a notable contrast, the adjoining 'North-Western Lowlands' LCA is attributed 'Class 1 – Low' landscape sensitivity. Areas of 'Class 1 – Low' sensitivity are considered to have capacity to

> *"… generally accommodate a wide range of uses without significant adverse effects on the appearance or character of the area".*

Areas of Class 3 – High Sensitivity are deemed to have

> *"… reduced capacity to accommodate uses without significant adverse effects on the appearance or character of the landscape having regard to prevalent sensitivity factors".*

Sensitivity of Principal Landscape Character Assessment (Dominant Sensitivity Outlined)	Class 1 Low Sensitivity	Class 2 Medium Sensitivity	Class 3 High Sensitivity	Class 4 Special Sensitivity	Class 5 Unique Sensitivity
North Western Lowlands	Class 1				
Northern Lowlands	Class 1				
Central Undulating Lands	Class 1				
Western Boglands			Class 3		
Southern Lowlands	Class 1				
Eastern Transition		Class 2			
Eastern Uplands			Class 3		
South-Eastern Uplands		Class 2			
Sub-ordinate Landscape Areas					
Northern Hills				Class 4	
Chair of Kildare				Class 4	
The Curragh					Class 5
Pollardstown Fen					Class 5
Dun Ailinne					Class 5
Allen Bog				Class 4	
River Liffey				Class 4	
River Barrow				Class 4	

Figure 15-8: Excerpt from Table 13.1 of the Kildare CDP (Landscape Sensitivity Classification to Landscape Character Areas) with relevant sensitivity classes highlighted

In terms of land use compatibility, Table 13.3 of the Kildare CDP indicates that Windfarms have 'Medium' compatibility (the median category) within the Western Boglands LCA and 'High' compatibility (the second highest category) within North-Western Lowlands LCA.

Compatibility Key		Sensitivity Class	Agriculture and Forestry		Housing	Urbanisation			Infrastructure	Extraction		Energy	
Most													
High													
Medium													
Low													
Least													
Principal Landscape Character Areas			Agriculture	Forestry	Rural Housing	Urban Expansion	Industrial Projects	Tourism Projects	Major Powerlines *	Sand & Gravel	Rock	Windfarm	Solar
North Western Lowlands		1											
Northern Lowlands		1											
Southern Lowlands		1											
Central Undulating Lands		1											
Western Boglands		3											
Eastern Transition		2											
Eastern Uplands		3											
South-Eastern Uplands		2											

Figure 15-9: Excerpt from Table 13.3 of the Kildare CDP (Likely compatibility between a range of land-uses and Principal Landscape Areas) with relevant landscape character areas highlighted

Table 13.4 of the Kildare CDP indicates that Windfarms have a Class 2 compatibility rating with 'Peat Bogs', which is one of two relevant 'Principal Landscape Sensitivity Factors' listed. Class 2 compatibility is defined as "Compatible only in certain circumstances" though it should be noted that this level of compatibility is the third of six categories and it would by no means preclude wind energy development in peatland areas. Indeed, the only land use with higher compatibility is 'Tourism Projects' land use for 'Peat Bogs' of those listed. Whilst one of the proposed wind turbines appears to be located within the area of 'Peat Bog' depicted on Map V1-13.2 (shown below in Figure 15-11: Excerpt from Map V1.13.2 of the Kildare CDP (Landscape Sensitivity Areas) with site location overlaid) this is a low resolution map and site walkovers have confirmed that it is actually in a commercial conifer plantation. Five other proposed wind turbines are located within 300m of the area of 'Peat Bog' depicted on Map V1-13.2.

Finally, there is a patchwork area of 'Mixed Forestry' along the north and west border of 'Peat Bogs' . 'Mixed Forestry' is deemed 'Class 1 - Compatible only in exceptional circumstances' with Wind Farm land use. Four of the northern turbines are located within the indicated areas of 'Mixed Forest', with two others within 300m. This can be seen below, in Figure 15-11: Excerpt from Map V1.13.2 of the Kildare CDP (Landscape Sensitivity Areas) with site location overlaid. It should also be noted that other than for 'Agri land with mixed vegetation', compatibility scores for wind farms in relation to all 'Landscape Sensitivity Factors' range between only 0 and 2 at the lower compatibility end of the spectrum. Thus, scores of 1 and 2 would not be prohibitive for wind energy development.

5 - Likely to be very compatible in most circumstances. 4 - Likely to be compatible with reasonable care. 3 - Likely to be compatible with great care. 2 - Compatible only in certain circumstances. 1 - Compatible only in exceptional circumstances. 0 - Very unlikely to be compatible.	Agriculture and Forestry		Housing	Urbanisation			infrastructure	Extraction		Energy	
Proximity within 300m of Principal Landscape Sensitivity Factors.	Agriculture	Forestry	Rural Housing	Urban Expansion	Industrial Projects	Tourism Projects	Major Powerlines	Sand and Gravel	Rock	Windfarm	Solar
Major Rivers and Water bodies	5	5	2	2	2	3	2	1	0	1	0
Canals	5	5	2	2	2	3	2	1	0	1	1
Ridgelines	5	5	1	1	1	1	1	0	0	2	0
Green Urban Areas	4	5	2	0	0	4	3	3	3	2	2
Broad-Leaved Forestry	3	5	2	2	2	4	3	2	3	1	2
Mixed Forestry	3	5	2	2	2	4	3	2	3	1	2
Natural Grasslands	5	2	2	1	1	4	2	1	1	2	2
Moors and Heathlands	2	2	1	0	0	1	2	1	0	2	1
Agricultural Land with Natural Vegetation	5	5	2	2	2	3	3	3	3	4	2
Peat Bogs	0	0	0	0	0	3	2	0	0	2	1
Scenic View	5	5	2	1	1	5	1	3	0	0	2
Scenic Route	5	5	2	1	1	5	1	3	0	0	2

Figure 15-10: Excerpt from Table 13.4 of the Kildare CDP (Likely compatibility between a range of land-uses and proximity to Principal Landscape Sensitivity Factors) with relevant principal sensitivity factors highlighted

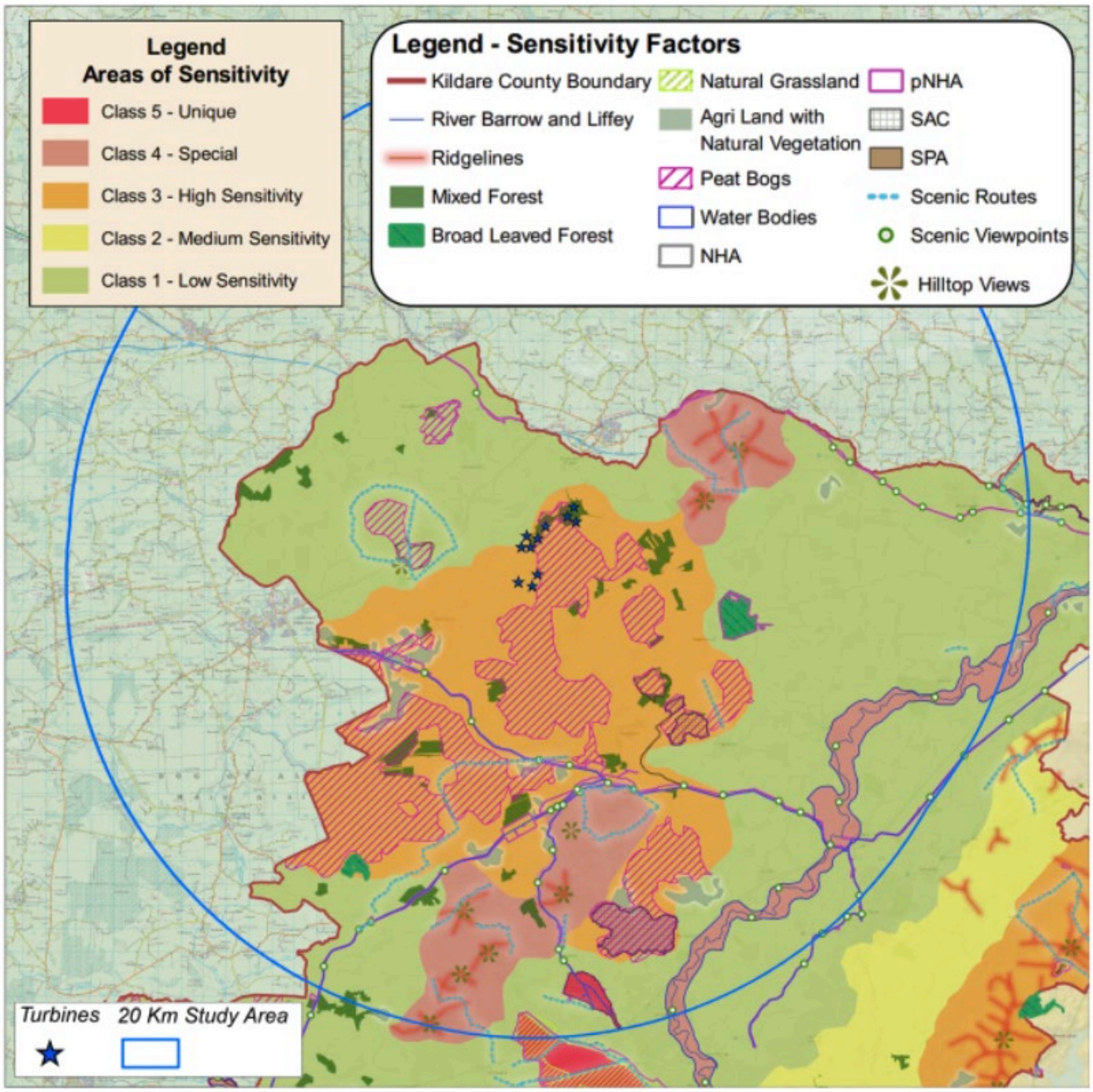


Figure 15-11: Excerpt from Map V1.13.2 of the Kildare CDP (Landscape Sensitivity Areas) with site location overlaid

In addition to the sensitivity ratings applied to each LCA, Section 13.4 of the CDP also identifies 'Areas of High Amenity' based on "outstanding natural beauty and/or unique interest value and are generally sensitive to the impacts of development". The Proposed Development site is not contained within an Area of High Amenity with the nearest such designation relating to the Grand and Royal Canal Corridors, which are 6km southwest and 3km north respectively at their nearest points. These are described in section 15.3.3.5.

Landscape Policies within the Kildare CDP are divided into General Landscape Policies (13.3.2) and then into a series of specific policies relating to landscape type and Areas of High Amenity (13.4). The relevant landscape type for this project is 'Lowland Plains and Bogland Character Areas' (13.8.2). Relevant Landscape Policies are:

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

Additional relevant objectives are LRO1, LRO2, LRO4, LRO10, LRO12, LRO13, and LRO16. LRO2 references Wind Farm development specifically, as below:

"LR O2 Require a Landscape/Visual Impact Assessment to accompany proposals that are likely to significantly affect:

a) A Class 4 or 5 Sensitivity Landscape (i.e. within 500m of the boundary);
b) A route or view identified in Map V1 - 13.3 (i.e. within 500m of the site boundary).
c) All Wind Farm development applications irrespective of location, shall be required to be accompanied by a detailed Landscape/Visual Impact Assessment including a series of photomontages at locations to be agreed with the Planning Authority, including from scenic routes and views identified in Chapter 13."

The policy relating to Areas of High Amenity is:

LR P2 Protect High Amenity areas from inappropriate development and reinforce their character, distinctiveness and sense of place.

While relevant objectives are: LRO17, LRO23, LR26, LRO27, LRO28, LRO29.

The following section, 13.5 Scenic Routes and Protected Views identifies there are generalised (Views to and from Hills, Views to and from Waterways), as well as specific, identified scenic routes and views, as identified on Map V1 - 13.3. These are addressed in below, in Table 13.5 under 'Views of Recognised Scenic Value - Kildare County Development Plan 2023 - 2029'.

15.3.2.3.1 Kildare Wind Energy Strategy

The Kildare Wind Energy Strategy identifies three strategic areas, which are defined in Section 4.1 of the document as follows:

Table 15-8: Strategic Wind Energy Areas - Appendix 2 Kildare Wind Energy Strategy of the 2023-2029 CDP.

Strategic Area	Description and Guidence
Acceptable in Principle	This is the preferred area for wind energy development characterised by a robust landscape, a low housing density, adequate windspeeds and proximity to the existing electricity transmission and distribution grid, while having no significant conflicts with natural heritage designations. Wind farm developments will be facilitated in this area subject to compliance with normal planning and environmental criteria outlined in Section 5 of this report and the development management standards in the County Development Plan.
Open for Consideration	This area is characterised by medium landscape sensitivity which is a less robust category of landscape sensitivity. It has the potential to accommodate wind farm development subject to a detailed assessment on the visual impact of the proposal on the landscape in particular, and cumulative visual impacts with existing and permitted wind farms. Wind farm developments will be facilitated in this area subject

Strategic Area	Description and Guidence
	to compliance with normal planning and environmental criteria outlined in Section 5 of this report and the development management standards in the County Development Plan. Wind farm proposals in this area will be required to demonstrate potential for cumulative visual impacts at application stage.
Not Normally Permissible	This area is considered to be generally unsuitable for wind farm development as it is defined by highly sensitive landscapes, settlements, designated sites, areas of aviation significance and/or low windspeeds . Individual small-scale turbines and community led initiatives may be considered on a case- by-case basis. Any development in this area will be subject to compliance with planning and environmental criteria outlined in Section 5 of this report and the development management standards in the County Development Plan.

As can be seen below, the site is located along the periphery of the Acceptable in Principle and within the Open to Consideration areas. Defined above, 'Open to Consideration' areas have 'the potential to accommodate wind farm development subject to a detailed assessment', while 'Acceptable in Principle' is the 'preferred area for wind energy development characterised by a robust landscape'.

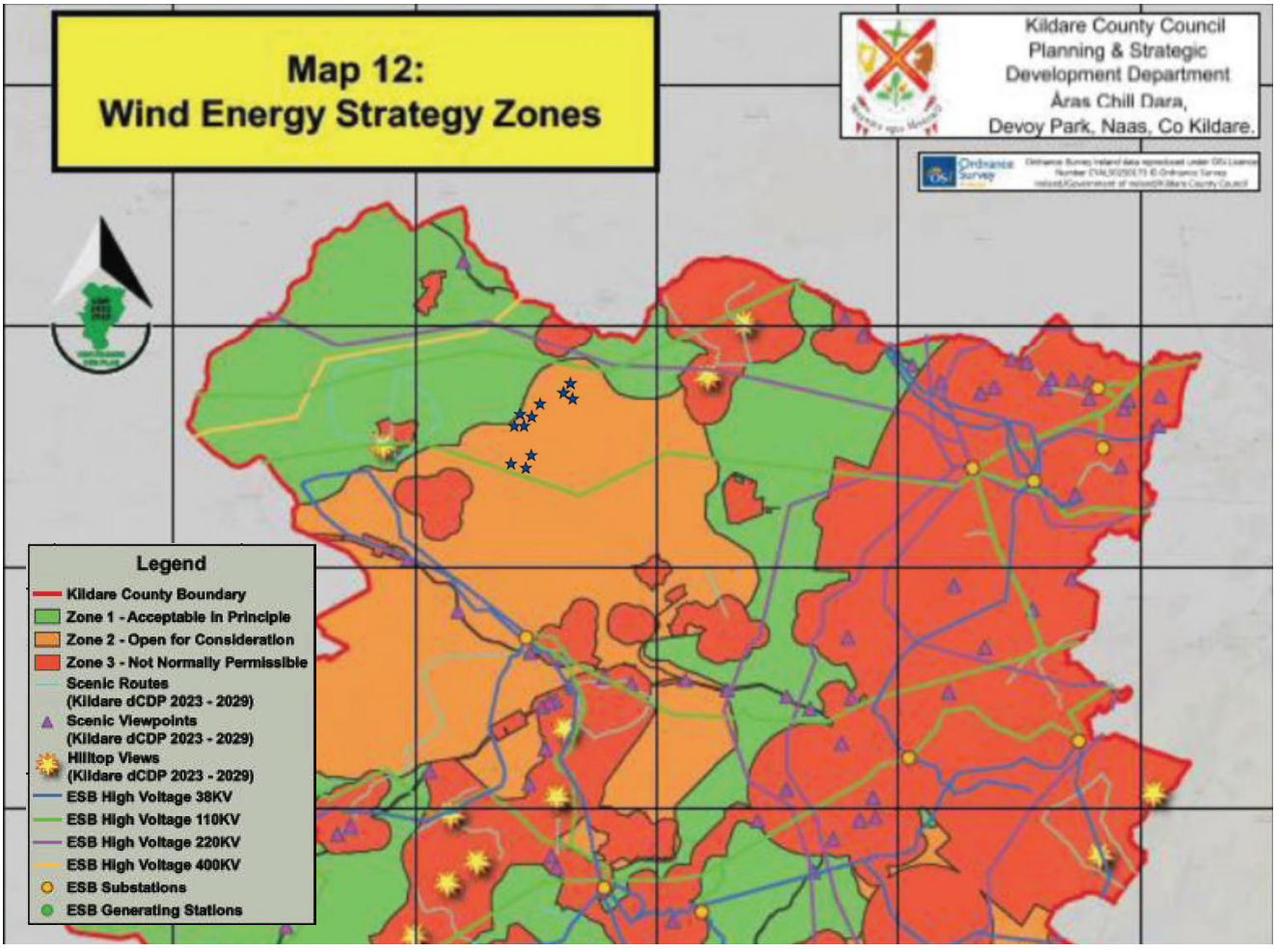


Figure 15-12: Excerpt from Map 12 of the Kildare CDP Wind Energy Strategy with site location overlaid

15.3.2.4 Ecological designations such as Special Areas of Conservation (SAC's), Special Protection Areas (SPA's) and Natural Heritage Areas (NHA's)

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

In this instance there are four cSACs in central County Kildare which include; Mouds Bog; Pollardstown Fen; Ballynafagh Bog and Ballynafagh Lake. None of these are within 5km of the nearest proposed turbines and they are all lowland sites. Consequently, the proposed wind farm will have very little potential to significantly influence the landscape setting of these naturalistic habitat areas.

15.3.3 Visual Baseline

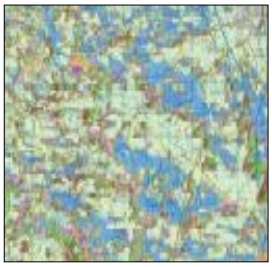
Only those parts of the study area that potentially afford views of the proposed project are of interest to this part of the assessment. Therefore, the first part of the visual baseline is establishing a 'Zone of Theoretical Visibility' (ZTV) and subsequently, identifying important visual receptors from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

ZTV analysis does not account for screening of views by the likes of vegetation and buildings, which can be a key factor in bogland and rural lowland landscapes. For this reason yet another layer of analysis is provided and this is termed Route Screening Analysis (RSA).

Route Screening Analysis, as its name suggests, considers actual visibility of the proposed wind farm from surrounding roads using current imagery captured in the field then subsequently reviewed in the context of a digital model of the development. Route Screening Analysis bridges the gap for the assessor between the computer-generated, theoretical visibility modelling (expressed on the earlier ZTVs) and the actual nature of visibility in the central study area.

The apparently complex relationship between the elements of the visual baseline study is expressed in-short in Table 15-9: Visual Baseline Study Analysis below.

Table 15-9: Visual Baseline Study Analysis

Baseline study element	Value	Limitations
Zone of Theoretical Visibility (ZTV) Map 	• Basic understanding of where the development could be seen from within the terrain of the study area • Can differentiate numbers of turbines visible • Can be generated from any point on the turbine (blade tip, hub etc.) • Can be run in reverse as a design tool to avoid visibility at highly sensitive receptors	• Does not differentiate beyond visible / not visible • Theoretical as it does not account for terrestrial screening by vegetation and buildings • Visual exposure can be heavily overestimated in certain landscape types causing confusion • Often misconstrued as part of the assessment rather than the baseline

Baseline study element	Value	Limitations
Route Screening Analysis (RSA) 	• Provides an actual, rather than theoretical, estimate of visibility • Can be compared with ZTV data to highlight if there is a strong discrepancy between actual and theoretical visibility • Can provide local residents with an understanding of visibility from close to their property • Collects a database of imagery and visibility that can used by other disciplines • Can highlight a distance threshold beyond which turbines become screened by prevailing vegetation	• Relies on a degree of human judgement • Will provide varying results across different seasons • Only undertaken for central study area • Could be misconstrued as part of the assessment rather than the baseline

15.3.3.1 Zone of Theoretic Visibility

A computer-generated ZTV map has been prepared to illustrate from where the proposed project is potentially visible. The ZTV below is based on a tip height of 167m and 147.9m(T1) for potential visibility within the study area. The ZTV map is based solely on terrain data (bare ground visibility), and ignores features such as trees, hedges or buildings, which may screen views. Given the complex vegetation patterns within this landscape, the main value of this form of ZTV mapping is to determine those parts of the landscape from which the proposed project will definitely not be visible, due to terrain screening within the 20km study area.

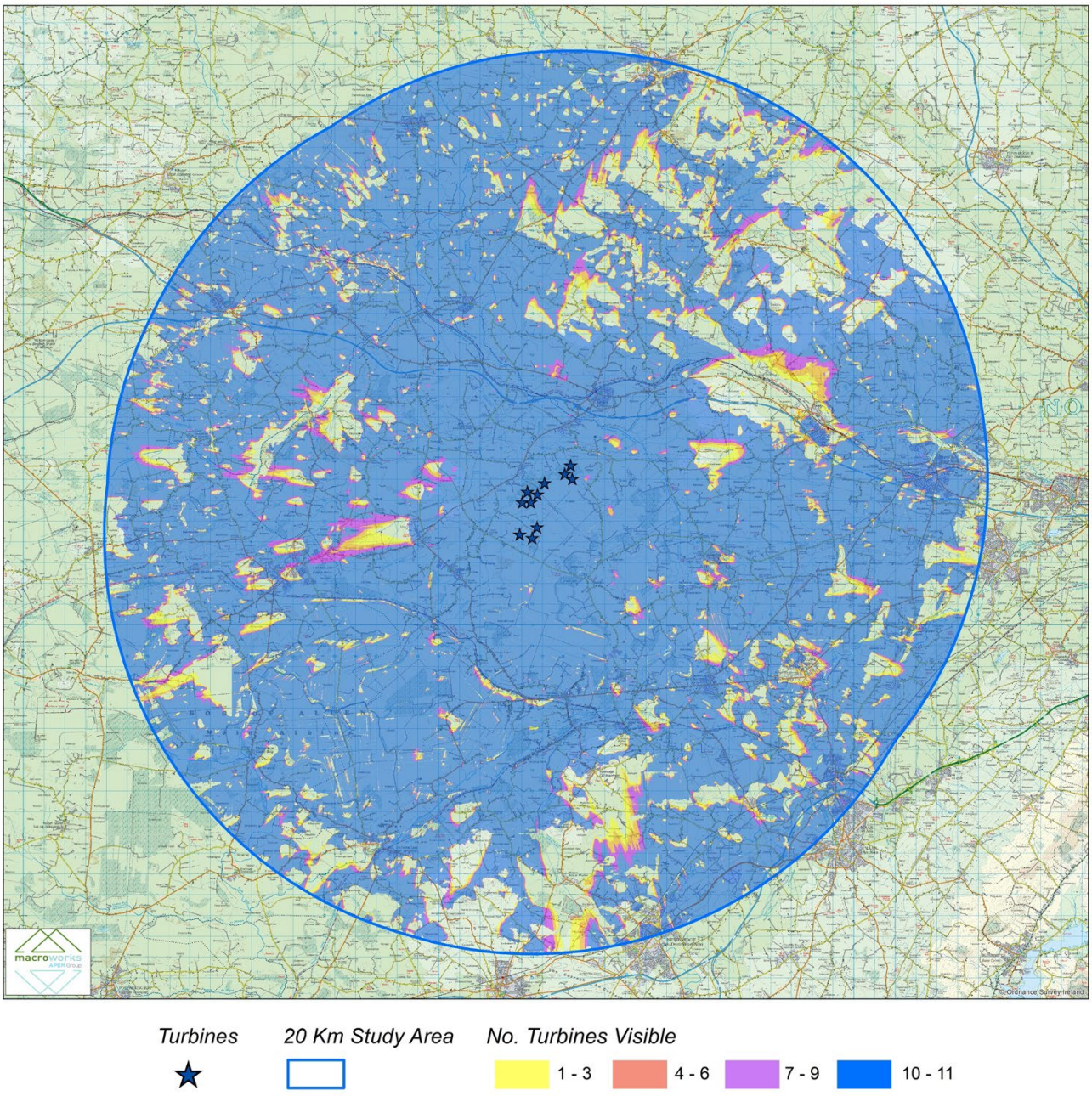


Figure 15-13: Bare-ground Zone of Theoretically Visibility (ZTV) Map based on a turbine tip height of 147.9 (T1) & 167m.

The following key points are illustrated by the 'bare-ground' ZTV map:

- There is relatively consistent ZTV coverage within 5 km of the site as would be expected (extensive) due to the flat nature of the central study area. Between 5-10km there is some reduced visibility to the northeast beyond the north Kildare uplands. To the west, Carbury Hill serves to restrict visibility beyond about 6km from the site.
- ZTV coverage becomes more sporadic beyond 10km in all directions, but particularly to the northeast and south. This relates to the relative height of the proposed turbines at increasing distances within this gently undulating landscape. The intermittent ZTV pattern indicates that turbine visibility is not afforded at all from low-lying ground and even from higher ground, it is likely to be restricted to blades sets on the horizon where intervening vegetation permits.

- The same trend of increasingly more sporadic visibility continues to the edge of the 20km radius study area with almost no visibility to the south and visibility restricted to higher ground to the northeast.
- Where potential visibility occurs it tends to relate to all of the proposed turbines. Only a small proportion of the ZTV pattern shows partial visibility of the development and this highlights the combination of a generally flat landscape and the consolidated cluster of turbines.
- The most important point when considering the ZTV map in a flat to mildly undulating area such as this is that it is not a true representation of visibility as it takes no account of the screening provided by vegetation. This can be considerable and may limit views of even tall turbines within very short distances. The main benefit of the ZTV map in this instance is to indicate where views of the turbines are definitely not available.

15.3.3.2 Route Screening Analysis (RSA)

In a flat landscape, such as that of the central study area, which incorporates a network of hedgerows, scrubby bog fringe woodlands and forest plantations, a standard ZTV map is of little value in understanding actual visibility. That is, it grossly overestimates visibility compared to an open peatland or mountain moorland landscape for example. In order to get a clearer understanding of visibility within the central study area, Route Screening Analysis (RSA) was undertaken for every road and canal within a 5km radius of proposed turbines (See Appendix 15.2 for detailed RSA methodology).

Since the completion of the 2018 application, the scope of the RSA analysis has been increased to include additional sections of minor roads and cul-de-sacs in the study area, as well as address the Royal Canal and Rail in the north of the study area. This is to ensure a thorough analysis of the route receptors. It should also be noted that the RSA methodology has changed since 2018 to a remote, computer-based analysis that utilises recently captured Digital Surface Model (DSM) data rather than manual analysis of imagery captured from the local road network.

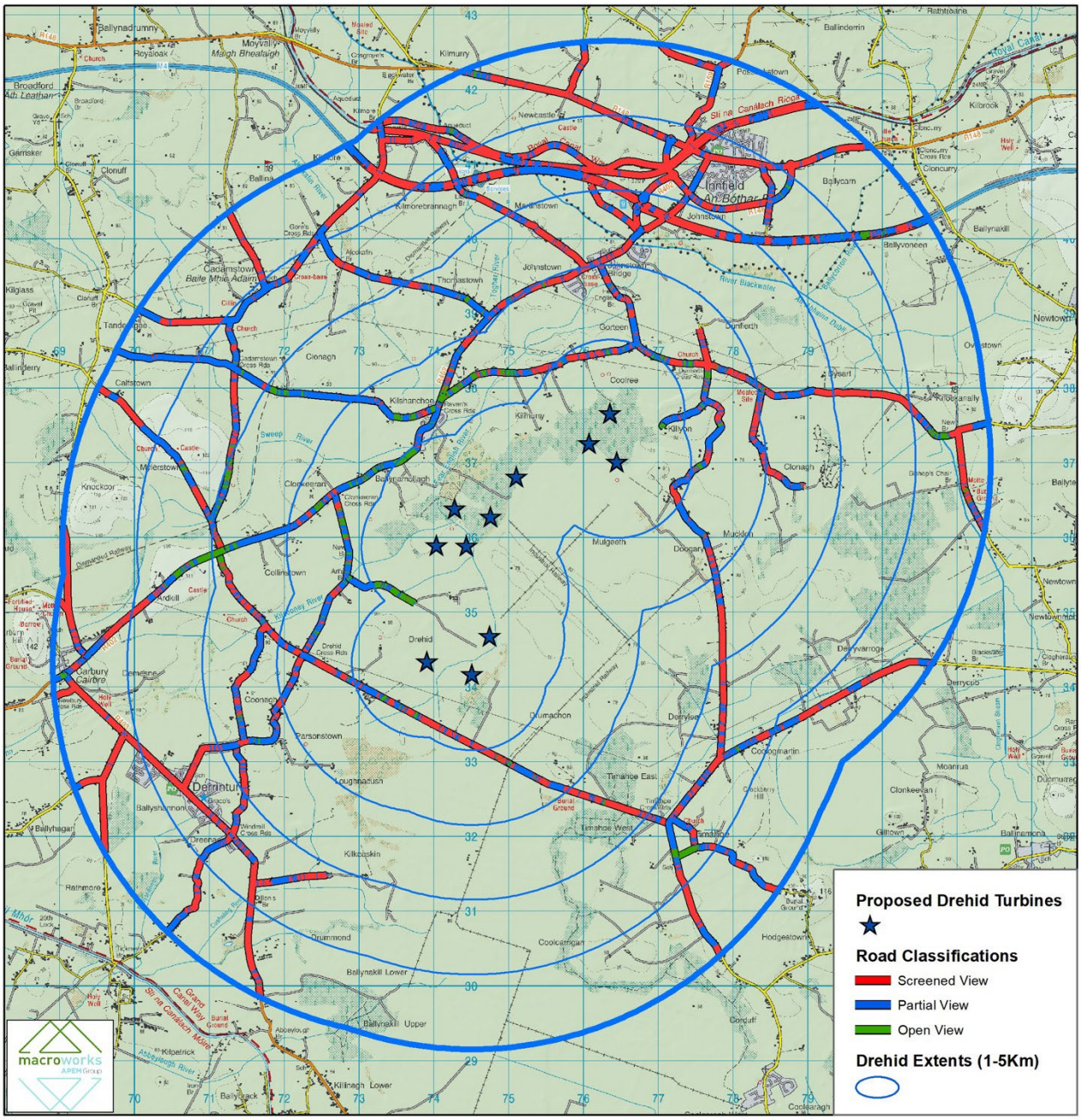


Figure 15-14: Map of Route Screening Analysis (See Volume 4 for larger scale map)

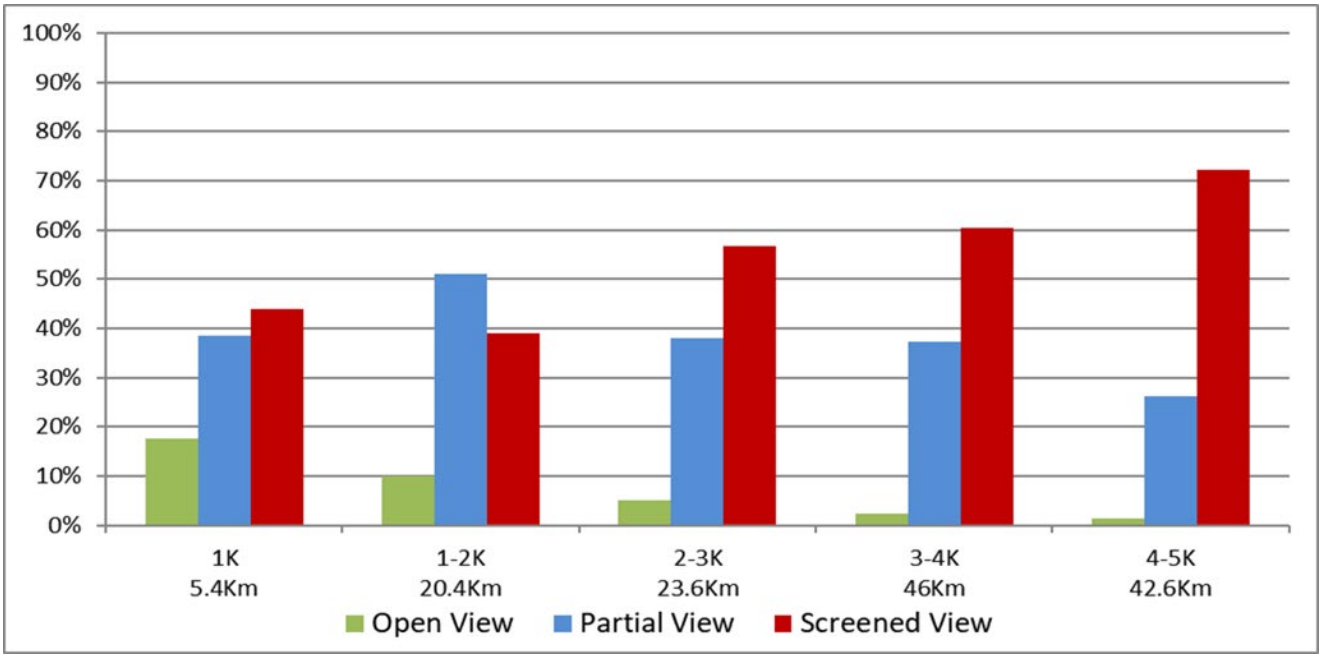


Figure 15-15: Graph illustrating results of Route Screening Analysis

15.3.3.2.1 Results of Route Screening Analysis

The RSA map (Figure 15-14) and associated graph (Figure 15-15) illustrates a high degree of wind farm screening from the local road network within 5km of the proposed development. Indeed, much higher screening than for similar studies that have been undertaken for lowland wind farm proposals in Counties Meath, Kildare and Longford to date. Even within the nearest 0-1km distance band full screening of the development occurs from 45% of the road network, while the nearly 40% features partial views and only 15-20% features an open view. It must be noted that there is only 5.4km worth of road within 1km of the scheme, but that alone highlights the robust siting of this development within a sparsely populated peatland / forestry / fringe farmland area.

Whilst the quantum of road network increases nearly fourfold within the 1-2km distance band the visibility trend remains similar to the nearest band, however with a reduction in the proportion of open visibility, which occurs from 10% of roads. The main difference between the two is that the 1-2km distance features a greater proportion (50%) of partial views, while full screening is limited to nearly 40% of the road network. Beyond 2km, full screening steps up further and remains between 50 - 70% for the remaining distance bands out to 5km. Open views are afforded from 5% or less of the road network between 2km and 4km before reducing with distance. Partial visibility remains relatively consistent between 2-4km at around 35-40% of the road network, before reducing to almost 25% at 4-5km.

Analysis of Figure 15-14 reveals that much of the open and partial visibility within the nearest 3km to the site occurs along the R402 regional road to the northwest, as it traces the Fear English River and slightly elevated areas to the southwest. Whilst these routes collectively transport a substantial number of vehicle-borne receptors, major routes are generally not considered to be sensitive visual receptors.

In comparison to the major routes that were surveyed, the local road network within the central study area has an even greater proportion of full screening. Most of the open and partial visibility occurs along one cul-de-sac local road to the southwest of the proposed development, and at the junction of the R402 at Ravens Cross Roads to the northwest. Whereas, the local roads that complete the circumnavigation of the site to the north, east, and south afford only small and sporadic open or partial views of turbines. The degree of screening from local roads, particularly within 2km of the site, is considered to be of more importance than from major routes as the RSA is also an indicator of visibility from the local residences, which closely align the road network, particularly in bogland and wet farmland areas.

Additionally, as can be seen in the map at Figure 15-15: Graph illustrating results of Route Screening Analysis and Figure 15-16: Open view classification by number of turbines visible (map), the number of visible turbines is limited to 1-4 turbines for 90-100% of the open views, with potential for views of all turbines (9-11 turbines) only indicated within 1km of the site, for less than 5% of the 0.9km with open views. Across the remainder of the road network with potential visibility, visibility of 5-8 turbines is modelled as being possible for less than 10% of the areas with 'Open Views'.

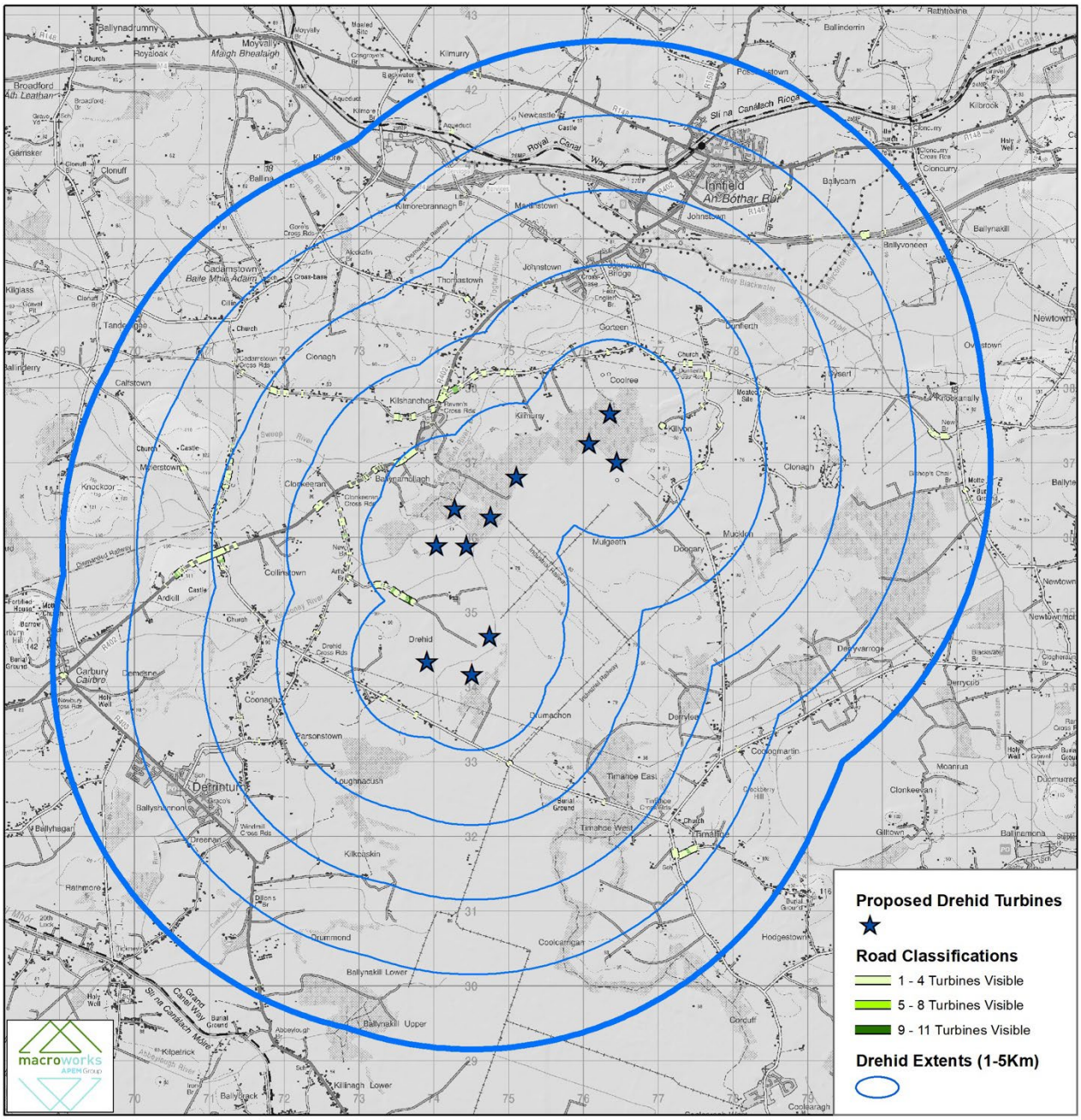


Figure 15-16: Open view classification by number of turbines visible (map)

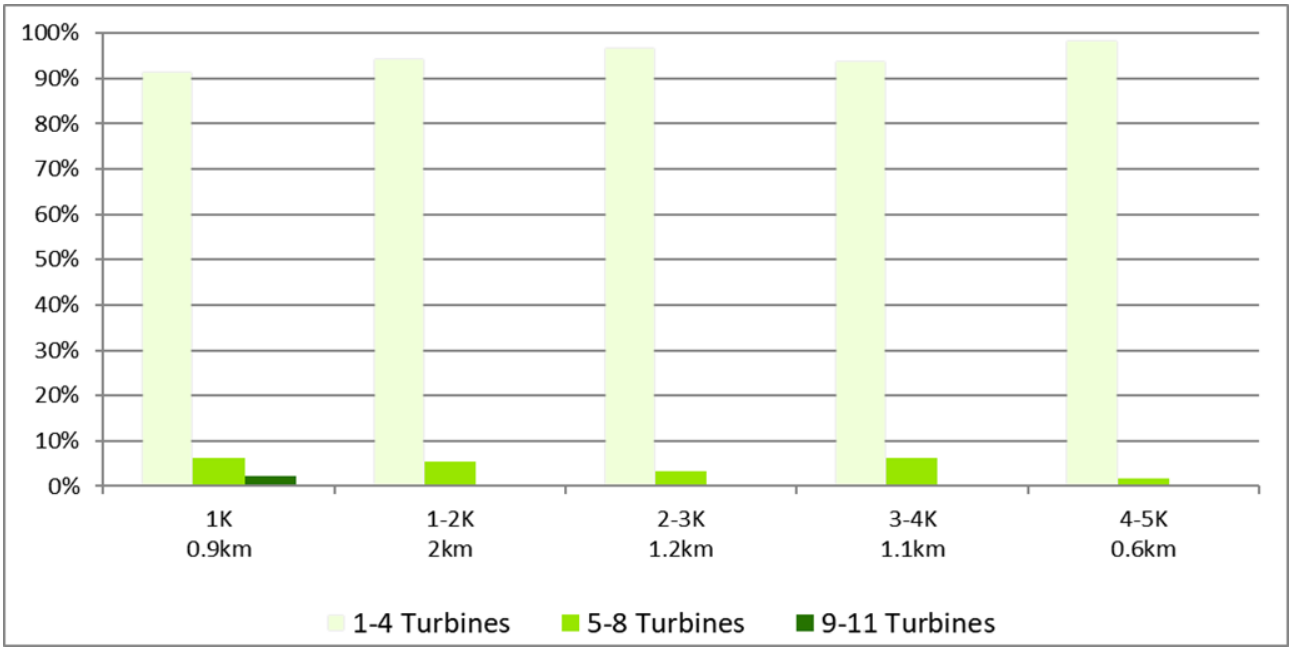


Figure 15-17: Open view classification by number of turbines visible (graph)

The section of the Royal Canal that runs through the central study area covered by the RSA was also included in the study. This shows that the vast majority (90%+) of that section of canal which runs to the east and west of Enfield, will not have any visibility of the proposed turbines. Of the residual areas that have some vsibility of the turbines, this will only be partial glimpse visibility. Given the viewing distances involved (3.3km to 5km) and the consistent nature of canal-side vegetation, this is likely to be blade tips of some of the turbines above intervening vegetation and oblique to the direction of travel along the canal.

15.3.3.3 Centres of Population

The western outskirts of Dublin City are located beyond the eastern periphery of the study area. However, several of the settlements that surround the city, within its western commuter belt, are also of a significant size. These include Maynooth and Kilcock, which are 16km and 12km to the east of the nearest turbines, respectively. In the southeastern quadrant of the study area are the significant settlements of Naas (20km to nearest turbines) and Newbridge (20km), while the periphery of Kildare is located marginally outside the study area (20km). In the northern study area, the largest settlement is Trim, 19km north of the nearest turbines, with the smaller settlements and villages of Summerhill (13km), Ballivor (18km), and Rathmolyon (12km).

Although there are a number of other reasonable sized settlements in the western half of the study area, by comparison to the eastern half it is much more sparsely populated. Only from nearest of the settlements listed above, Edenderry, is it deemed necessary to further consider visual impacts herein as views of the proposed turbines from the other settlements are likely to be very restricted and distant if they are afforded at all.

The closest settlements to the Proposed Wind Farm include Longwood, which is approximately 9km to the northwest. Allenwood, Robertstown and Kilmeage are all located to the south-southeast of the site at respective distances of 7km, 10km and 11km away. Enfield is a sizeable settlement that is approximately 3km to the north of the site just beyond the smaller rural settlement of Johnstown Bridge (2km north). The small villages of Derrinturn and Carbury lie 3.5km and 4.5km to the southwest and west respectively with a network of local roads between them which are populated with rural residential dwellings. Indeed there is a relatively dense concentration of rural dwellings and farmsteads lining the local roads that criss-cross the farmed landscape of the study area. By contrast, bog areas tend to be very sparsely populated and bog fringes are only lightly populated. It is these nearest settlements and the network of local roads within 5km of the proposed site that will form the focus of the visual impact assessment on the local population.

15.3.3.4 Transport Routes

The most notable transport corridor in the study area is the M4 motorway, which crosses in an east/west alignment, 2.5km north of the site. At the far western periphery of the M4 within the study area, it is joined by the M6 at Kinnegad. However, only 2.5km of the M6 is located within the study area. The other motorway in the study area is the M7, which remains beyond 18km from the nearest turbines as it weaves across the southeastern study area between the settlements of Naas and Newbridge. Because of these radial motorways, there are few national primary and secondary roads remaining within the study area. Instead, the motorways and settlements between them tend to be connected by a web of regional roads. The nearest of these to the site is the R402, which runs in a northeast–southwest direction within 1km of the site at its nearest point, between Johnstown Bridge/Enfield and Edenderry. The R403 runs in a perpendicular direction from the R402 at Carbury and passes some 3km to the southeast of the site at its nearest point.

The national rail network also diverges from Dublin. One branch follows the Royal Canal towards Mullingar before splitting northwest towards Sligo and westward towards Galway. It is at its nearest point to the site as it passes through Enfield (3km north). A more southerly branch of the rail network hugs the Grand Canal towards Portarlington before splitting northwest and southwest out of the study area. This is approximately 20km from the nearest turbines as it passes through Newbridge and Kildare.

Finally, the Canals and major rivers across the study area are also transport routes either through watercraft or along the towpaths and National Waymarked Trails. However, these are primarily recreational attractions and are addressed below.

15.3.3.5 Tourism, Recreational and Heritage Features

The key public recreational facilities within the central study area are the network of canals and towpath walks, as introduced above. These historic transport routes also link many of the towns and villages within the study area. The Grand Canal travels west from Dublin and passes through Robertstown, Allenwood and Edenderry on its way to the River Shannon. Its associated walking path is known as the ‘Grand Canal Way’, and it runs approximately 6km to the southwest of the site at its closest point. The Royal Canal passes through the central study area on its slightly more northerly journey from Dublin through Dunboyne, Enfield and Mullingar. It is around 3km to the north as it passes through Enfield at its nearest point to the site. The Royal Canal is closely aligned with the national railway line from Dublin to the northwest, which runs adjacent to its southern bank for much of its journey through this study area. The towpath on the northern bank is known as the Royal Canal Way, which also serves as a section of the National Famine Way and Royal Canal Greenway.

A second arm of the Grand Canal, ‘the Barrow Line,’ diverges southwest near Robertstown and passes through Rathangan in the south-central portion of the study area. Its associated walking path is known as the ‘Barrow Way.’

There are some local walking loops within the study area. However, most of these are contained within conifer plantations and woodlands, and none are within close proximity of the proposed turbines. The nearest example of such a woodland walk is Donadea Forest, which is 9km to the southeast of the site. Somewhat surprisingly, the isolated hilltops within the central study area, such as the hills associated with the 'Chair of Kildare', tend not to have publicly accessible walking tracks as they are contained in private ownership. This is despite being identified as important landscape features in the County Development Plans and being assigned designated hilltop views (to and from). In almost all other counties, designated scenic views are only contained within the public domain.

The Lullymore Heritage and Discovery Park, which is located in bogland around 12km to the southwest of the site. It is a tourist facility focussed on heritage, biodiversity and bog rejuvenation, with play areas for children and regular events organised.

A notable historic site is Trim Castle, within the urban centre of Trim, 19km from the site in the northern study area. The castle is a ticketed tourism and heritage attraction, while the grounds and surrounding smaller structures are publicly accessible along the shore of the River Boyne. These include 'Sheep Gate' and St Mary's Abbey, Trim, both partially intact ruins, as well as the Trim Castle River Walk and grounds, which host the Royal Meath Show and Trim Haymaking Festival.

There are a number of stately houses and demesne landscapes across the study area, as well as golf courses and associated facilities - often coinciding.

Visibility of the scheme has been investigated through desk studies and/or fieldwork from all of the amenity and heritage features outlined above and where relevant and available these views are included for assessment herein.

15.3.4 Views of Recognised Scenic Value

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

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

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

The Kildare County Development Plan contains a number of designated scenic views, shown on Map V1.13.3, within the County Development Plan. These consist of scenic routes, hilltop views and canal views from canal bridges. There are no scenic designations within the immediate vicinity of the site, but several occur within 10km and relate to either canal views or slightly elevated views from local hills. It should be noted that hilltop views relate to both views to and from relevant hilltops. However, in many instances public access is not available to the top of the hill. Relevant scenic designations within the study area are included in Table 15-10, below.

15.3.6 Views of Recognised Scenic Value – Offaly County Development Plan 2022-2028

There are no relevant designated views as shown on Wind Energy Strategy Map No. 8: Protected Views and Potential Wind Energy Areas of the Offaly County development plan or within Chapter 4 (Landscape and Biodiversity), located within the study area.

15.3.7 Views of Recognised Scenic Value – Meath County Development Plan 2021-2027

The Meath County Development are shown on Map 8.6 and accompanying table. The scenic designations within the study area are included in Table 15-10, below.

15.3.8 Views of Recognised Scenic Value – Westmeath County Development Plan 2021-2027

There are no views as shown on Map 67: Westmeath Protected Views of the Westmeath County Development Plan, or within Section 13.26 Views and Prospects located within the study area. Therefore, there are no Westmeath County Development Scenic Designations in the summary below. However, there are a number of generalised scenic routes. Those which are located within the study area are included within the Table 15-10, below.

All of the scenic routes and views in both Kildare, Meath, and Westmeath that fall inside the ZTV pattern (see Table 13.5 below) were investigated during fieldwork to determine whether actual views of the Proposed Wind Farm might be afforded. As above, Offaly was excluded due to not having any designations within the study area. Where visibility may occur, a viewpoint has been selected for use in the visual impact appraisal later in this chapter. In some instances, a single viewpoint is selected to represent a stretch of designated scenic route or a cluster of designated scenic views, particularly distant ones. Viewpoints which represent a cluster of, or are adjacent to but not located exactly upon a designation are identified below as 'Closest VPX' or 'Represented by VPX'.

Table 15-10 Rationale for selection of scenic designations within relevant County Development Plans

Scenic View ref:	Relevance to visual impact appraisal?	VP ref no. herein
Scenic Viewpoints - Kildare County Development Plan 2023-2029 (RL = River Liffey, GC = Grand Canal, RC = Royal Canal, RW = River Rye)		
RL4	Not relevant - located outside of ZTV pattern	N/A
RL5	Not relevant - located outside of ZTV pattern	N/A
RL6	Not relevant - located marginally outside of ZTV pattern	N/A
RL7	Not Relevant - ZTV identifies very limited potential for visibility of the proposed turbines	N/A
RL8	Not Relevant - ZTV identifies very limited potential for visibility of the proposed turbines	N/A
RL9	Not Relevant - ZTV identifies very limited potential for visibility of the proposed turbines	N/A
RW4	Not relevant - located outside of ZTV pattern	N/A
RW5	Not relevant - located outside of ZTV pattern	N/A
RW2	Not relevant - located outside of ZTV pattern	N/A

Scenic View ref:	Relevance to visual impact appraisal?	VP ref no. herein
RC1	Not relevant - located outside of ZTV pattern	N/A
RC5	Not Relevant - ZTV identifies very limited potential for visibility of the proposed turbines	N/A
RC6	Marginal - Proposed development not aligned with primary amenity & transitional visibility	N/A
RC7	Marginal - Proposed development not aligned with primary amenity & transitional visibility	N/A
RC8	Marginal - Proposed development not aligned with primary amenity & transitional visibility	N/A
RC9	Marginal - Proposed development not aligned with primary amenity & transitional visibility	N/A
RC10	Not relevant - located outside of ZTV pattern	N/A
RC11	Not relevant - located outside of ZTV pattern	N/A
RC13	Yes relevant - views afforded in the direction of the proposed development	VP2 & between VP1 & VP7
GC5	Marginal - Transitional ZTV, at periphery of study area	Represented by VP23
GC6	Marginal - Transitional ZTV, highly screened by vegetation	Represented by VP23
GC8	Marginal - Full ZTV, Proposed development not aligned with primary amenity	Represented by VP23
GC9	Marginal - Full ZTV, Proposed development not aligned with primary amenity	Represented by VP23
GC10	Yes relevant - views afforded in the direction of the proposed development	Represented by VP23
GC11	Yes relevant - views afforded in the direction of the proposed development	Represented by VP23
GC12	Marginal - Proposed development not aligned with primary amenity & transitional visibility	N/A
GC13	Yes relevant - views afforded in the direction of the proposed development	VP21
GC14	Marginal - Proposed development not aligned with primary amenity	Represented by VP21
GC15	Marginal - Proposed development not aligned with primary amenity	N/A
GC16	Marginal - Proposed development not aligned with primary amenity	N/A
GC17	Marginal - Proposed development not aligned with primary amenity	N/A
GC18	Marginal - Proposed development not aligned with primary amenity	N/A

Scenic View ref:	Relevance to visual impact appraisal?	VP ref no. herein
GC19	Marginal - transitional ZTV, proposed development aligned with canal	Represented by VP24
GC20	Marginal - transitional ZTV, proposed development aligned with canal	Represented by VP24
GC21	Not relevant - scenic designation located outside of ZTV pattern	N/A
GC22	Marginal - Proposed development not aligned with primary amenity	N/A
GC23	Marginal - Proposed development not aligned with primary amenity	Represented by VP27
GC24	Marginal - within ZTV, proposed development not aligned with canal	Represented by VP27
GC25	Not relevant - peripheral to study area, marginal ZTV	N/A
GC30	Not relevant - peripheral to study area, marginal ZTV	N/A
GC33	Not relevant - peripheral to study area, marginal ZTV	N/A
GC34	Not relevant - scenic designation located outside of ZTV pattern	N/A
GC36	Not relevant - peripheral to study area, marginal ZTV	N/A
GC37	Not relevant - peripheral to study area, marginal ZTV	N/A
GC39	Not relevant - no ZTV	N/A
Hilltop Views - Kildare County Development Plan 2023-2029		
Hill at Killickaweeny	Marginal - Theoretical visibility, within central study area, however not signposted.	Represented by VP4
Hill at Ovidstown	Marginal - Theoretical visibility, within central study area, however not signposted (point located along rolling, tree-lined section of local road).	Represented by VP6 & VP9
Carbury Hill	Marginal - Theoretical visibility, within central study area, however access restricted	VP13, VP13A
Crosspatrick Hill	Yes relevant - **P**artial visibility, located within publicly accessible cemetery.	Represented by VP24
Boston Hill	Marginal - Partial visibility, not signposted viewpoint	Represented by VP27
Allen Hill	Yes relevant - Publicly accessible, signposted, partial ZTV	VP24
Grange Hill	Marginal - Partial visibility, not signposted viewpoint	Represented by VP27 & VP24
Dunmurray Hill	Marginal - Partial visibility, public access	Represented by VP27 & VP24
Red Hill	Marginal - Periphery of study area, not a signposted viewpoint	Represented by VP27 & VP24
Scenic Routes - Kildare County Development Plan 2023-2029		
6	Yes - Partial visibility, connecting to Route 25.	VP23
8	Yes - High visibility	VP27

Scenic View ref:	Relevance to visual impact appraisal?	VP ref no. herein
14	Marginal - Partial to limited visibility, long distance	Between VP24 and VP27
15	Yes - proximity and visibility of the site	VP4 and VP6
16	Marginal - Partial visibility, long distance	Between VP24 and VP27
17	Not relevant - No visibility	N/A
25	Yes - Partial visibility, connecting to Route 06.	VP23
26	Yes - proximity and visibility of the site	VP13, VP13A, VP15
28	Marginal - Varied visibility, long distance.	N/A
31	Marginal - Partial visibility, proposal located outside described view	N/A
32	Marginal - partial visibility	Closest VP19
33	Marginal - Partial visibility, peripheral study area	N/A
34	Marginal - Long route, with varied visibility and proximity	VP22
Scenic Designations - Meath County Development Plan 2021-2027		
50	Not relevant - Outside of ZTV, directed away from the site	N/A
51	Not relevant - Partial ZTV at periphery of study area, directed away from the site	N/A
53	Not relevant - Partial ZTV at periphery of study area, peripheral views of the site	N/A
54	Not relevant - Partial ZTV at periphery of study area, directed away from the site	N/A
55	Not relevant - No ZTV and directed away from the site	N/A
56	Yes relevant - Full visibility, aligned with described view	Closest VP1
57	Not relevant - Limited to no theoretical visibility	Closest VP2
78	Marginal - Partial visibility, amenity directed away from the site (river corridor to the north and south)	N/A
79	Marginal - Partial visibility, amenity directed away from the site (river corridor to the north and south)	N/A
83	Yes relevant - directed towards the site	N/A
84	Not relevant - No ZTV and directed away from the site	N/A
Scenic Routes - Westmeath County Development Plan 2021-2027		
Royal Canal Way/Greenway	Marginal - Partially included at the periphery of the study area	Nearest to VP1

15.3.9 Identification of Viewshed Reference Points as a Basis for Assessment

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

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

- Key Views (from features of national or international importance);
- Designated Scenic Routes and Views;
- Local Community views;
- Centres of Population;
- Major Routes; and
- Amenity and heritage features;

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

Key Views (KV)

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

Designated Scenic Routes and Views (SR/SV)

Due to their identification in the County Development Plan this type of VRP location represents a general policy consensus on locations of high scenic value within the Study Area. These are commonly elevated, long distance, panoramic views and may or may not be mapped from precise locations. They are more likely to be experienced by static viewers who seek out or stop to take in such vistas. Where a viewpoint is located in close proximity to and/or representative of multiple scenic designations, an (R) will be added in the table below.

Local Community Views (LCV)

This type of VRP represents those people who live and/or work in the locality of the Proposed Development, usually within a 5 km radius of the site. Although the VRPs are generally located on local level roads, they also represent similar views that may be available from adjacent houses. The precise location of this VRP type is not critical; however, clear elevated views are preferred, particularly when closely associated with a cluster of houses and representing their primary views. Coverage of a range of viewing angles using several VRPs is necessary in order to sample the spectrum of views that would be available from within the local landscape. In this instance feedback from local residents informed the selection of a number of the selected VRP's via feedback from the developer's on-site representatives. It should be reiterated that in this instance that the open views represented in the local community category are not necessarily typical views from the central study area and have been selected as worst-case-scenario views in terms of visual exposure. Whilst this is appropriate for the visual assessment cognizance should also be taken of the Route Screening analysis in terms of understanding the typical visual scenario in the central study area.

Centres of Population (CP)

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

Major Routes (MR)

These include motorways national and regional level roads and are relevant VRP locations due to the number of viewers potentially impacted by the proposed d project. 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.

Tourism, Recreational and Heritage Features (AH)

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

The Viewshed Reference Points selected in this instance are set out in the Table 13.6 and Figure 15-18 below. It should be noted that the same viewpoints as used in the 2018 LVIA and subsequent response to the Request for Further Information (RFI) have been used wherever possible, however, in some instances these have changed (e.g. increased screening) to the degree that a location very nearby has been used. At VP24 from the top of the tower of Allen, a safety fence has since been put in place that substantially restricts visibility. VP25 and VP26 were used at RFI stage to assess the potential cumulative effects between the Proposed Wind Farm and Drehid Landfill extension.

Table 15-11 Outline description of selected Viewshed Reference Points (VRPs)

VRP No.	Location	Distance to nearest turbine	Representative of	Direction of view
VP1	Longwood	9.6 km (T11)	SR/SV (R), LCV, CP, MR	SE
VP2	Enfield	3.4 km (T11)	SR/SV (R), CP, MR	SW
VP3	M4 motorway at Ballyvoneen	6.2 km (T11)	MR	SW
VP4	Local Road at Grange	7.5 km (T11)	SR/SV, LCV	SW
VP5	R402 at Johnstown Bridge	2.5 km (T11)	CP, MR	S
VP6	Local road at Newtown	6.1 km (T11)	SR/SV, LCV	SW
VP7	Local road at Cadamstown	3.9 km (T6)	SR/SV (R), LCV, CP	SE
VP8	Local road at Coolrea	0.8 km (T11)	LCV	S
VP9	Local road at Knockanally	4.1 km (T10)	SR/SV (R), LCV	SW
VP10	Kilshanroe	1.2 km (T6)	LCV, MR	SE
VP11	R402 at Ballnamullagh	1.2 km (T6)	LCV, MR	SE
VP12	Local road at Mucklon	2.2 km (T10)	LCV	W
VP13	Carbury Castle on Carbury Hill	5.3 km (T1)	SR/SV, LCV, AH	E
VP14	Local road at Collinstown	1.5 km (T1)	LCV	E
VP15	R402 at Carbury	4.4 km (T1)	SR/SV, LCV, MR, AH	E
VP16	Local road at Drehid	0.7 km (T1)	LCV	N
VP17	Carbury GAA Ground	2.5 km (T1)	LCV, AH (Recreation)	NE
VP18	Edenderry	10.6 km (T1)	CP	NE

VRP No.	Location	Distance to nearest turbine	Representative of	Direction of view
VP19	Timahoe Cross Roads	3.3 km (T2)	SR/SV (R), LCV	N
VP20	R403 at Derrinturn	3.5 km (T1)	LCV, MR	NE
VP21	Hamilton's Bridge on the Grand Canal	6.5 km (T1)	SR/SV, LCV, MR, AH (Canal)	N
VP22	R414 at Lullymore East	8.4 km (T1)	SR/SV, LCV, MR,	N
VP23	Robertstown	10.1 km (T2)	SR/SV, LCV, CP, AH (Canal)	NW
VP24	Tower on the Hill of Allen	13.7 km (T2)	SR/SV, AH	N
VP25	Local road at Timahoe East	1.3 km (T2)	LCV	N
VP26	Local road at Drehid	0.9 km (T2)	LCV	N
VP27	Local road at Drinnanstown North	14.1km (T2)	SR/SV, LCV	N

Viewpoint Locations

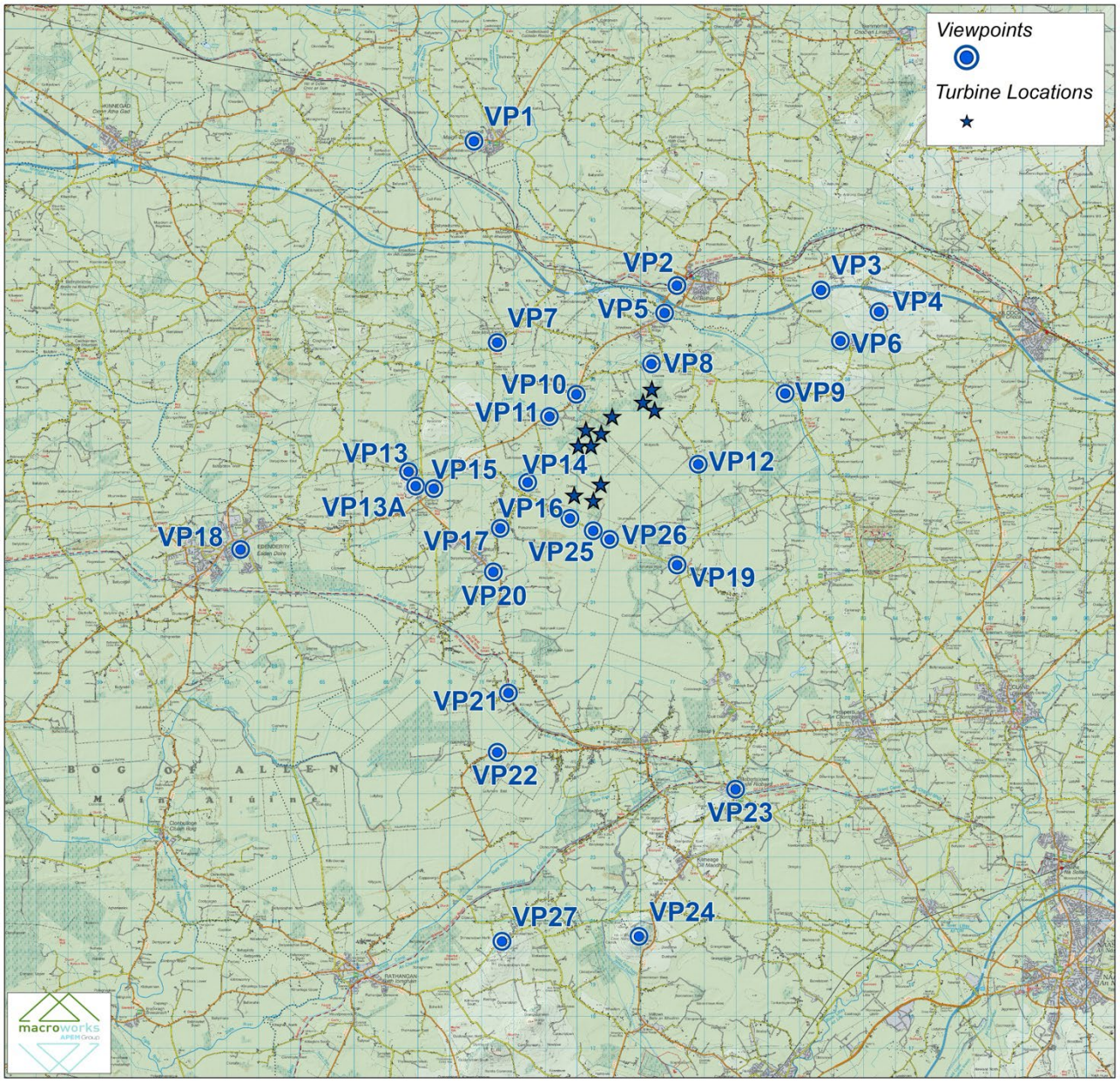


Figure 15-18: Map of Viewpoint Locations

15.4 Potential Effects

Based on the assessment criteria employed herein, potential significant effects are considered most likely to occur in instances where highly sensitive landscape and visual receptors coincide with high order landscape and visual effects (see descriptions Table 15-1, Table 15-2 and Table 15-3). From previous extensive experience of this type of project in a flat peatland landscape surrounded by a flat to low-rolling rural landscape context, it is considered that potentially significant landscape and visual effects have the potential to occur in the following ways:

Landscape Effects

- Irreversible physical effects on sensitive landscape features
- Disruption of sensitive land cover and/or land use patterns
- Incongruous change to areas of sensitive landscape character

Visual Effects

- A combination of visual and spatial dominance as seen from highly sensitive receptor locations. This is most likely to occur within 2-3km of the proposed wind farm (the first 3 zones shown on the – see Section 15.3.3.2).
- Visual clutter and ambiguity as seen from highly sensitive receptor locations. This can occur at any distance, but tends to occur beyond 2-3km as turbines can become stacked in perspective and a more two dimensional layout is perceived.
- A combination of both of the above effects.

From baseline studies and early-stage assessments specific to the Proposed Development, the most highly sensitive physical landscape receptors are considered to be those designated as High Amenity Areas in the Kildare CDP, Chair of Kildare Hills, Pollardstown Fen, the Curragh and the Royal and Grand Canals. Other important heritage locations listed in 15.3.3.5 are also sensitive in terms of landscape setting. In a more general sense, the Landscape Character Areas identified as being of High, Special or Unique Landscape Character Areas need to be considered closely.

The most sensitive visual receptors are likely to be the designated scenic routes and views identified in the County Kildare and surrounding County Development Plans, which are sensitive receptor locations on the basis that they represent a consensus on scenic amenity. Other highly sensitive visual receptors are those associated with heritage and tourism, such as Trim Castle.

15.5 Mitigation Measures

15.5.1 Construction

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.

15.5.2 Operation

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

In this instance the main forms of landscape and visual mitigation employed are:

- The use of fewer taller turbines rather than a greater number of shorter turbines (height versus density relationship)
- Consolidation of the turbine layout
- The buffering of residential receptors

15.5.2.1 Consolidation of the Turbine Layout

As a modest scale development of 11 turbines, a consolidated single cluster of turbines may seem to be overemphasising the natural configuration of the development; however, it is important to note that the Proposed Wind Farm was born out of the much larger Maighne Wind Farm proposal where it formed part of the more extensive and divided Drehid-Hortland cluster (one of five clusters). One of the reasons for refusing planning permission for the proposed Maighne Wind Farm was the dissemination of turbine clusters over a wide area of north County Kildare. Taking heed of that reason for refusal, the design of the proposed Drehid Wind Farm considered consolidation at both a macro level and a more localised receptor level. At the macro level, the design response was to reduce the proposed number of turbines from 46 down to 12, and again to 11 in the latest project and the number of clusters from five down to one, whilst focussing the newly Proposed Development in the most robust landscape setting of its predecessor – the peatland fringe farmland and forestry at Drehid. At the local level, the design response was to consolidate the turbine cluster within a single landscape and visual setting contained wholly within the network of local roads. In doing so, the potential for local residents to be exposed to views of turbines on both sides of local roads or from more than one or two aspects of their property/dwelling is almost eliminated. The potentially confusing visual scenario of turbines popping up in different aspects of a view, particularly for those moving through the landscape, is also reduced.

15.5.2.2 Buffering of Residential Receptors

For the Proposed Wind Farm the minimum setback distance from local residences is at least 640 m, which is well in excess of the 500 m requirement under the current DoEHLG Wind Energy Guidelines (2006). By default, this has resulted in the proposed turbines being placed into a robust receiving landscape of bogs, bog fringes and open farmland. This degree of buffering from residential dwellings is of benefit to several aspects of residential amenity including noise, shadow flicker and visual impact. In relation to visual impact, it is worth noting that, according to the laws of perspective, the doubling of viewing distance equates to a halving of perceived height. Increasing set back distances has exponential benefit in terms of reducing the potential for overbearing within the first few kilometres as illustrated in Figure 15-19 below

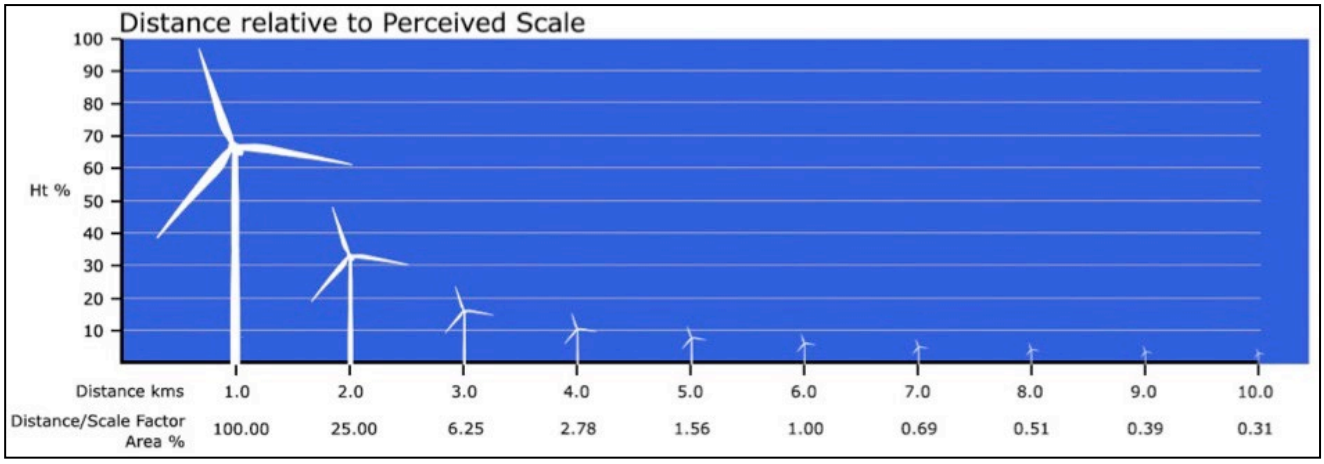


Figure 15-19: Turbine 'scale in relation to distance' relationship

15.6 Residual Effects - Landscape Effects

15.6.1 Landscape Character, Value and Sensitivity

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

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

The proposed turbines will be placed along the marginal northwestern fringes of an extensive area of cutaway bog. This is a transitional area to more productive farmland that contains reverting scrub, marginal farmland, and forestry. The cutaway bogs themselves have an almost post-industrial character, evidenced by the linear furrows of the harvesting pattern. Whereas the bog fringes have a slightly more naturalistic character of unharvested peatland with a covering of bog grasses and acid-tolerant shrub and woodland species that have been left largely unmanaged. The bog fringes also contain substantial geometric conifer plantations, which contrast against the unmanaged scrubland character, but this is, nonetheless, a low-intensity land use. The exception to this is the areas of bog occupied by Drehid Land fill to the south of the site, and Timahoe Solar Farm to the immediate east of the site.

Given the peatland nature of the proposed development site, the landscape of the central study area is particularly flat, and there is almost no enclosure from terrain features such as the Northern Hills (c. 6km east) and Carbury Hill (c. 6km west). Instead, a strong sense of enclosure comes from the network of hedgerows and treelines within the farmed landscape and from forestry and reverting scrub around peatland areas. Other than at the edge of cutaway peatland areas, views tend to be contained within a few hundred metres by low vegetated skylines.

Whilst the cutaway peatland areas and their marginal fringes host a very low population density, mainly consisting of occasional farmsteads, some of the local rural roads within the central study area are heavily populated by roadside rural/ residential dwellings. This is most apparent in the Carbury area between the site and Derrinturn.

Natural watercourses within the central study area tend to be relatively small in volume and corridor width as this is something of a watershed within the midlands with rivers like the Boyne and Blackwater emanating in this region. In this respect, the natural watercourses are similar to the field drains, canals, and canal feeders but are not particularly remarkable. The Royal Canal skirts the northern portion of the central study area as it passes through the substantial settlement of Enfield. This is identified as an 'Area of High Amenity' in the Kildare County Development Plan, and this is the only such designation within the central study area. It should be noted that the character and values associated with the canal corridor are strongly confined to the canal and its associated towpaths, which are generally bordered by canal-side vegetation. Thus, the Royal Canal is a notable landscape feature within the central study area but not one that is strongly influential in terms of landscape character, particularly as the relevant section passes through an urban and peri-urban landscape setting.

There is not a high concentration of built heritage features or demesne landscapes within the central study area, and where these do occur, they do not strongly contribute to the prevailing landscape character. One exception is in the vicinity of Carbury, where the character of the landscape is influenced by the prominently located Carbury Castle and, in a more subtle way, by Williamstown House and Demesne and Newbury Hall and Demesne nearby (see Chapter 14 - Heritage for greater detail on heritage assets).

The general character of the central study area is that of a working rural landscape contained in both productive and extractive land uses, including an existing degree of renewable energy influence, with Hortland Solar Farm located 4km to the northeast of the development in addition to Timahoe Solar immediately east of the site, however this does not notably intensify land uses beyond the immediate surrounds of the Solar Farm. Consequently, landscape value tends to relate more to sustaining the rural economy and rural lifestyle than to scenic or naturalistic value. Indeed, there are no scenic designations within the central study relating to views across this rural landscape and there are few elements of the naturalistic other than scrubby woodland surrounding the bogs.

In terms of the landscape designations within the Kildare County Development Plan, it is felt that the relevant Landscape Character Areas (Western Boglands and Northern Lowlands) are appropriately defined and described. However, there appears to be some inconsistency with the sensitivity judgements, particularly where sensitivity has been increased for the Western Boglands LCA since the 2011-2017 iteration of the Kildare CDP. This was formerly considered to be of 'Medium' sensitivity but is now deemed to be of 'High' sensitivity and yet the character and components of this LCA have remained relatively unchanged except for a higher density of rural dwellings since it was first described in 2004. It is important to distinguish that development pressure does not translate to landscape vulnerability/sensitivity to change. Instead, sensitivity is inherent in the current baseline condition of the landscape. This was highlighted in the An Bord Pleanála direction for the previous Maighne Wind Farm application, which included the Drehid site. The direction stated; "the Board considered that notwithstanding the various landscape designations set out in Chapter 14 and Appendix 3 of the Kildare County Development Plan the local landscape is one of considerable robustness…"

As part of a project-specific landscape character assessment such as this, the GLVIA 2013 suggests that existing Landscape Character Assessments be considered as a "first step in establishing the landscape baseline" (p77), but not that they are applied directly in determining landscape sensitivity for the specific site context. As is standard practice for LVIA in the UK and Ireland, universal criteria are used by assessors to determine the landscape sensitivity! of the development site and its surrounding context (refer to Table 15-1). When this criteria is applied to the central study area, it is the Medium / Low criteria that is most applicable.

In relation to Wind Energy compatibility in the most relevant Landscape Character Areas, the Western Boglands has been assigned Medium compatibility, and the Northwestern Lowlands LCA has been assigned High compatibility. Whilst the High compatibility of wind energy development in the North western lowlands has an obvious correlation to its Low sensitivity rating, the Medium wind energy compatibility rating within the High sensitivity Western Boglands LCA implies that this is one form of development that is not unduly sensitive.

Overall, it is considered that the central study area is a robust and productive rural area without a high degree of distinction or uniqueness. The land use pattern is broad and only marginally productive in some areas and yet there is little sense of the naturalistic. Landscape value tends to relate to supporting the local rural economy rather than scenic, recreational or naturalistic values. Other than rural housing to the west of the site, and the Solar developments to the east and north, land uses also tend to be of a relatively low level of intensity, and this is complemented by a similarly low level of large-scale built development.

For these reasons the sensitivity of the central study area is generally considered to be **Medium-low**.

Wider Study Area (c.5-20km)

Like the central study area, the wider study area is also relatively homogenous in terms of landscape character. That is, it is predominantly a productive rural area contained in pastoral farmland and interspersed by peat bogs with peripheral forest plantations. It is generally flat with occasional low hills rising from the plains.

There are also some more distinctive landscape areas and features, which have been highlighted as 'Areas of High Amenity' (AHA) and/or assigned 'Special' or 'Unique' Sensitivity in the Kildare County Development Plan. The Areas of High Amenity that are also attributed 'Unique' sensitivity include 'the Curragh and Environs' as well as 'Pollardstown Fen'. Both of these features lie a considerable distance to the south (c. 20km) and are geographically separated from the site context by the Chair of Kildare Hills. The 'River Liffey and River Barrow Valleys' are also identified as AHA and are also assigned 'Special' sensitivity. Again, these river corridors are located a considerable distance to the south of the site with little influence on the receiving landscape character.

The most relevant AHA designations are the 'Grand Canal and Royal Canal Corridors', as these skirt the central study area and traverse across the wider study area in a general east-west direction to both the north and south of the site. However, the influence of the canals on their wider landscape setting is limited by the confined nature of their corridors. They are also man-made features constructed for the purposes of goods movement between rural and urban areas through varied and productive lowland landscapes. Although tranquil and with some degree of natural character, they are not particularly sensitive landscape features beyond their immediate setting.

The other Landscape Character Areas that have been identified as having 'Special' landscape sensitivity include the 'Chair of Kildare Hills' (c. 14km south of the site) and the 'Northern Hills' (c. 6km east of the site). In both instances, views of the proposed development will be afforded from these elevated landscape features, but it is considered that they are most sensitive to development within the respective LCAs and not within the vast plains beyond.

A distinctive but undesignated landscape feature just outside of the central study area is Carbury Hill, which hosts the ruins of Carbury Castle. It is surrounded by bog and farmland to the north and east, and the demesne landscape and stately house of Newbury Hall are a short distance to the south. Together, these landscape heritage features represent an enclave of more sensitive landscape within the wider context of the Northern Lowlands LCA, which is attributed a Low landscape sensitivity in the Kildare CDP.

A distinctive aspect of the eastern perimeter of the study area is the densely populated urban area of Dublin City's Western satellite towns. From this area, a number of major transport corridors diverge, including motorways, rail lines and the canal network. Thus, it is considered that the eastern half of the outer study area is distinctly different to all of the other quarters, which are comparatively lowly populated rural areas. The zone of transition from peri-urban to rural is relatively abrupt. It could be defined by the R407 regional Road, which runs north-south from the settlements of Kilcock, Clane, and Naas. Although there is a considerable amount of farmland to the east of this road, this is interspersed with closely associated settlements and suburbs, the major transport corridors described above as well as the industrial and business park facilities that gravitate towards these conduits. To the west of the R407 are boglands and low hills, which also serve to reinforce the abrupt transition from a major urban hinterland into the purely rural landscape of the central study area.

In terms of large-scale industry and infrastructural developments, there is the prominent form of the Lagan Cement plant near Kinnegad, an electricity peaking plants at Rhode and Ballykilleen, and a variety of quarries across the study area as described in the land use baseline section. The 15-turbine Cloncreen Wind Farm also occurs at the western periphery of the study area along with the recently constructed Yellow River Wind Farm near Rhode, and the Cushaling Wind Farm which is currently under construction near the border with Offaly. Thus, the character of this landscape is strongly influenced by human intervention and modification, particularly in relation to energy production. The distinctive linear commercial harvesting patterns within most of the larger peat bogs is also physical testimony to a legacy of energy production in this wider area.

In summary, it is considered that aside from some isolated landscape features, which are considered to be in the higher ranges of sensitivity, the vast majority of the outer study area has a landscape sensitivity that is no greater than that of the central study area – **Medium low**.

15.6.2 Magnitude of Landscape Effects - Do-Nothing Scenario

In a Do-Nothing scenario, the pasture will be utilised as is typical for the wider study area, the conifer plantations surrounding the site would continue to be managed through rotations of commercial conifer planting and harvesting, whilst the areas of transitional woodland and scrub would continue to evolve naturally. Existing peatlands would likely be protected and preserved in line with current bog restoration best practices. The intensification of wind farm development would also likely continue, with consented developments being constructed and other applications for wind farm developments arising throughout the study area.

15.6.3 Magnitude of Landscape Effects

The physical landscape as well as the character of the proposed project and its central study area (<5km) is affected by the proposed wind turbines as well as ancillary development such as access and circulation roads, areas of hard standing for the turbines, grid connection, works along the TDR route and the substation compound. By contrast, for the wider landscape of the study area, landscape impacts relate exclusively to the influence of the proposed turbines only on landscape character.

15.6.3.1 Magnitude of Landscape Effects - Construction Stage

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

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

There will be one 110kV on-site substation compound constructed to collect the generated power from the proposed project. The 110kV on-site substation will be located in an area of peripheral peat bog and forestry and is offset from the nearest local roads to limit its potential presence at the nearest surrounding receptors.

The hardstanding area for the substation compound measures approximately 1.32 hectares. Within the compound, there will be an Eirgrid substation building and an IPP switchgear room. The Eirgrid substation building will cover a footprint of approximately 450 sq.m with a pitched roof and an overall height of 8.55 m. The IPP switchgear room will consist of a building of approximately 160 sq.m with a pitched roof and an overall height of 5.85 m. Both buildings will have a concrete render finish and electrical components necessary to export generated power from the wind to the transmission system. The compound of the proposed substation will be surrounded by steel palisade fencing which will be 2.6 m in height. The most notable construction stage landscape impacts resulting from the proposed on-site substation relate to the construction of concrete foundations to facilitate that substation building. Overall, these construction stage effects are relatively minor and compare to the construction of an industrial farm shed.

As part of the proposed project, there will be a requirement to fell some of this forestry in the areas immediately around the footprint of the wind farm infrastructure. Whilst the removal of small areas of forestry will generate some landscape impacts, these are not considered to be significant. All forestry that is removed will be subject to forestry replanting provisions. Details of the removal and reinstatement of vegetation can be found in the complete development description.

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

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

Overall, the magnitude of construction stage landscape effects within the site and its immediately surrounding context is deemed to be **High-medium** and of a **Negative** quality, but of a **Short-term** duration. Beyond 5km from the site, the magnitude of landscape impact is deemed to reduce to **Low** and **Negligible** at increasing distances as the construction activities relating to the proposed project becomes a proportionately smaller component of the overall landscape fabric.

15.6.3.2 Grid Connection and Turbine Delivery Route

During the construction stage, there will also be some areas of land and vegetation disturbance along the grid connection route and turbine delivery route (TDR). All internal site cabling will be underground and will be run in cable ducts below the ground surface within the proposed internal roads and/or their verges. This will result in the loss of some localised areas of vegetation and localised areas of ground disturbance to facilitate the excavation works related to the laying of the grid connection cabling . Indeed, the land cover of the site will only be interrupted as necessary to build the structures of the proposed wind farm and to provide access. Impacts from land disturbance and vegetation loss at the site are considered to be modest in the context of this broad landscape setting, which has already been highly modified through years of extraction of peat for fuel.

The most concentrated impacts relating to grid connection (i.e. not covered by the substation and wind turbine impacts discussed above) will occur at the two pylons to the north of the substation which connect into the existing overhead lines. There will be excavation works for the foundations and the addition of vertical structures - including the cranes? and machinery used in the installation of these pylons. Overall, in the scale of context which this development is located, both the grid connection and TDR will result in very minor and localised landscape effects. It is also important to note, with regard to both the grid connection and TDR, that any areas of disturbed ground or removed / trimmed vegetation will be reinstated or allowed to grow back post-construction completion.

Overall, the magnitude of construction stage landscape effects in relation to the grid connection and turbine delivery route is deemed to be **Medium-low** and of a **Negative** quality, but of a **Short-term** duration. Beyond the immediate context of these linear features the magnitude of landscape impact is deemed to reduce to **Low-Negligible** and **Negligible** at increasing distances as the construction activities relating to these aspects of the proposed project becomes a proportionately smaller component of the overall landscape fabric.

15.6.4 Magnitude of Landscape Effects - Operational Stage

15.6.4.1 Wind Farm Site

The physical landscape as well as the character of the site and its immediate surrounds will be affected by the proposed turbines (and related ancillary development, such as the substation, access and circulation roads and areas of hard standing for the turbines). By contrast, for the wider landscape of the study area, landscape impacts relate exclusively to the influence of the proposed turbines on landscape character.

There will be physical impacts on the land cover of the site as a result of newly formed access tracks and areas of hard standing around each turbine, as well as from clearance required for the substation. Some of the access track network currently exists as farm, forest, and bog tracks, which will need only minor upgrades to facilitate the construction and maintenance of the turbines.

Furthermore, on flat sites such as these, there is little requirement for modifying the terrain through cut and fill slopes to construct access roads and flat areas of hard standing. Thus, there will be a relatively minor loss of arable land to construction works for the turbines in the context of the greater site. This is on the basis that none of the proposal features has a significant 'footprint', and most of the turbines are contained in peatland fringes and marginal grazing land. Any temporary excavations or stockpiles of material will be re-graded to marry into existing site levels and reseeded appropriately.

Localised areas of the existing commercial conifer forest will be harvested in order to accommodate the operation of the proposed turbines. Although this represents a modification to the planned felling regime, it is only the timing of such operations that is altered and this has very little effect on landscape character. There will be a loss of small sections of existing hedgerows as a result of delivering long turbine components to the construction sites as identified above. There will not be any notable sections of hedgerow felled to facilitate this development, however, there will be some hedgerow trimming required at the 'S' bend on the L5025 local road to facilitate turbine delivery. Prevailing land use activities will also be able to continue almost unabated around the turbines.

The principal landscape impact will be the change in character of the immediate area due to the introduction of large scale structures with moving components. These will be a prominent and defining landscape feature within the local landscape as would be the case for a commercial scale wind farm placed into almost any landscape context. Nonetheless, this is a broad landscape context of large cutaway bogs, conifer plantations and marginal peatland fringes where field sizes tend to be large. In this respect, the proposed wind farm will be well assimilated in terms of scale within the flat terrain and broad land cover patterns of the central study area. There will be a slightly stronger contrast of scales between the proposed turbines and the rural dwellings and associated farm structures in the near vicinity of the site but these are relatively few and they are setback from turbines by more than 640m. The scale and extent of the proposed turbine structures will add an intensity of built development to a landscape in the central study area that is currently characterised by low levels of such development. Similarly, the movement of the turbine blades will introduce a slightly higher degree of movement to a landscape that is currently relatively static. The degree of perceived development intensity will also increase as a result of the proposed wind farm.

Whilst the scale and extent of the proposed wind farm might be considered modest for an open peatland area and its layout divergent from the suggested grid (Wind Energy Development Guidelines 2006), the smaller scale and more sinuous layout reflects a compromise dictated by its location along the farmed and forested fringe of an elongated peatland area. The height of turbines is consistent with current trends of constructed and permitted wind farms in the midlands and generous setback distances from houses (640m +) are provided, which reduces the potential for scale conflict.

There are no other existing wind energy developments within the central study area, so this proposal represents a relatively new form of development in the immediate local area. The other existing renewable energy land uses within the central study area are Solar. Timahoe Solar is located immediately to the east, and Hortland Solar Farm located 4km to the northeast of the development. Although thematically linked, Timahoe and Hortland Solar are different in nature, context, scale and location to that of this proposed wind energy development. Within the wider study area, there is a higher proportion of both wind and solar energy production. These are discussed below.

The fact that wind energy developments represent additional land use rather than a change of land use is one of the more positive aspects of this form of renewable energy in rural areas. Within the rural landscape of the central study area, which has considerable landscape value associated with its productive capacity, the addition of another layer of productivity is not incongruous with the existing character. Furthermore, this particular landscape has a legacy of energy production through peat harvesting, and consequently, there is a thematic link to this successive form of renewable energy production. While wind turbines are built structures and have a commercial function, in Ireland, they are structures that are more synonymous with rural areas than urban or industrial areas. Though they are sometimes referred to as industrial, this is something of a misnomer as it evokes connotations of traditional industrial developments with an intense cluster of bulky structures on the outskirts of significant settlements. By contrast, wind farms are a relatively dispersed arrangement of slender structures overlaid on, rather than disrupting, the existing land use pattern.

In relation to demesne landscapes and notable heritage features, such as those around Carbury, there is potential for turbines to conflict with the sense of 'past times' or historic landscape character (this is addressed in detail in Chapter 14 – Cultural Heritage). In the case of the stately houses and demesnes, this sense of landscape character is relatively insular in that it is substantially contained within the walls and mature field boundaries of these sites. These boundary features also tend to limit the degree of intervisibility between the heritage assets and the proposed turbines and, therefore, the degree to which the demesne landscape character is affected by the proposal. Whilst there is a higher degree of intervisibility between the elevated Carbury Castle and the proposed Drehid Wind Farm, the castle ruins command over a fairly typical rural landscape of lowland pastoral farming and bogs that is considered to be of low sensitivity generally (in the Kildare CDP). Given the physical separation distance of over 5km to the site as well as the perceptual separation to the surrounding lowland context, there is little sense that they will impose on the historic character of Carbury Hill and its associated heritage features (see Chapter 14 – Archaeology, Architectural and Cultural Heritage for greater detail regarding the 'setting' of Carbury Castle). There are also few opportunities where the proposed turbines and Carbury Castle may be viewed in combination within the same viewshed, which tends to reinforce the sense of separation between these potentially conflicting entities (see visual impact section for further discussion).

In summary, there will be physical impacts on the land cover of the site as a result of this development, but these will be relatively minor in the context of the already modified context of cutaway peatland, conifer plantations and pastoral farmland. Furthermore, a high proportion of the existing track network from these land uses will be utilised in the construction and operational phases of the development. Effects on landscape character will be most noticeable within the central study area (<5km) due to the perceived scale, intensity and extent of the proposed development in this immediate context. The proposed wind farm will be a new and defining feature of the landscape character in the central study area, but it is not considered to be an incongruous feature within this robust and anthropogenic landscape setting. On balance, the magnitude of landscape effect in the central study area is deemed to be **Medium-low** in the nearest 2-3km. This is likely to reduce to a **Low** magnitude beyond this threshold.

Wider Study Area (c.5-20km)

Within the wider study area, beyond 5km, the effects on landscape character are considerably lower and will reduce further as separation distance increases. The Proposed Wind Farm will be perceived as one form of development within a pattern of other broad-scale anthropogenic land uses. Even if visible from landscape areas/features beyond 5km, the proposed wind farm will be perceived as a discrete background feature of another landscape area.

Whilst there is a higher degree of intervisibility between the elevated Carbury Castle and the Proposed Wind Farm, the castle ruins command over a fairly typical rural landscape of lowland pastoral farming and bogs that is considered to be of low sensitivity generally (in the Kildare CDP). Given the physical separation distance of over 5km to the site as well as the perceptual separation to the surrounding lowland context, there is little sense that they will impose on the historic character of Carbury Hill and its associated heritage features (see Chapter 14 – Archaeology, Architectural and Cultural Heritage for greater detail regarding the 'setting' of Carbury Castle). There are also few opportunities where the proposed turbines and Carbury Castle may be viewed in combination within the same viewshed, which tends to reinforce the sense of separation between these potentially conflicting entities (see visual impact section for further discussion).

There are a number of existing wind energy developments within the wider study area, with the Cloncreen and Yellow River and Cushaling Wind Farm constructed in cutaway bog / bog fringe settings in County Offaly. There is a perception that this is an emerging form of development in the lowland and bog landscape of the midlands. Thus, wind farms could not be described as an unfamiliar or uncharacteristic form of development in the midlands region. It is also considered that there is a strong thematic relationship and natural synergy between the generation of energy from peat extraction and the harnessing of wind energy on the same and adjacent sites. Despite the modal shift, these areas can continue a considerable legacy as 'energy landscapes' in the public perception.

Beyond distances of approximately 2-3km, even tall wind turbines begin to become part of the overall landscape matrix rather than a defining feature of landscape character. Therefore, beyond the central study area, the proposed wind farm is less likely to influence landscape character to a significant degree and this potential continues to decrease with distance. The degree to which aspects of the wider study area could be influenced by the proposed turbines is also affected by intervisibility. The Route Screening Analysis shows that within lowland areas there is likely to be little or no intervisibility between the immediate landscape context and the proposed turbines beyond about 3km. Where this does occur, it is likely to be across an open foreground of cutaway bog, a context within which the turbines are considered to be comfortably assimilated in terms of scale and function.

Another factor to consider in terms of effects on landscape character is the perceptual transition between landscape types. Even where a comparatively high degree of intervisibility might occur between the proposed site and elevated areas of terrain such as the 'Northern Hills', there is a sense of separation in the landscape character units. In this example, the crest of hills is perceived as an island in a lowland 'sea' of bogs and pastoral farmland. The fact that the turbines are clearly perceived to be anchored within the lowland context results in them having less of a sense of imposition on the discrete upland landscape character unit.

Consequently, the magnitude of landscape effect for the wider study area is judged to be no greater than **Low-negligible**, reducing to **Negligible** beyond 10km of the proposed development.

15.6.4.2 Grid Connection and Turbine Delivery Route

There will be limited operational stage landscape effects relating to the grid connection and turbine delivery route. There is the potential for a slight increase of built development where the proposed grid connection links back to the grid at the 110kV substation. The addition of built structures resembling sheds located within the substation compound, while the most concentrated impacts will occur at the two pylons to the north of the substation which connect into the existing overhead lines. Notwithstanding, any operational stage landscape impacts relating to the grid connection are deemed to be Low-negligible, heavily localised and are not considered to generate significant landscape effects. Landscape effects along the Turbine Delivery Route will be Imperceptible during the operational phase.

15.6.5 Decommissioning

15.6.5.1 Wind Farm Site

The decommissioning phase will have similar temporary impacts as the construction phase with the movement of large turbine components away from the site. There may be a minor loss of roadside and trackside vegetation that has grown during the operation phase of the project, but this can be reinstated upon completion of decommissioning.

Works in this phase will primarily involve disassembling the turbines and removing off-site. It is not envisioned that site roads or turbine foundations will be removed. Instead, the all the internal site access tracks and the the turbine foundations and hardstands will be left in place, covered in topsoil and revegetated. The substation infrastructure will form part of the permanent national grid network and will remain in-situ. The decommissioning works will take no longer than 6 months to complete. A decommissioning plan is contained within the CEMP (Appendix 3.2).

Overall, the magnitude of decommissioning stage landscape effects within the site and its immediately surrounding context is deemed to be **High-medium** and of a **Negative** quality, but of a **Temporary** duration. Beyond 5km from the site, the magnitude of landscape impact is deemed to reduce to **Low** and **Negligible** at increasing distances as the decommissioning related activities become a proportionately smaller component of the overall landscape fabric.

15.6.5.2 Grid Connection and Turbine Delivery Route

There will be no decommissioning works related to grid connection and turbine delivery route. The grid connection will remain in situ as part of the national grid infrastructure. With regard to the turbine delivery route, the accommodation works that will be required as part of the construction stage will not be required during the decommissioning stage as the turbine components can be dismantled on-site and removed using standard HGVs. Thus, there will be no decommissioning stage effects generated by the proposed project.

15.6.6 Significance of Potential Landscape Effects (Construction, Operation and Decommissioning Phases)

The significance of landscape effects is a function of landscape sensitivity weighed against the magnitude of landscape impact. This is derived from the significance matrix in Table 15-3 used in combination with professional judgement.

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

Based on a **Medium-low** sensitivity judgement and a **Medium-Low** magnitude of operational stage landscape impact, the significance of effect is considered to be **Moderate-slight / Negative / Long-term** within and immediately around the site. Thereafter, significance will reduce to between **Moderate-slight** and **Imperceptible** at increasing distances as the development becomes a progressively smaller component of the wider landscape fabric even where higher sensitivity landscape units / features occur such as the Northern Hills LCA, Carbury Hill and the Royal and Grand Canal Corridors.

With regards to the Grid Connection and Turbine Delivery Route, based on a **Medium-low** sensitivity judgement and a **Medium-Low** magnitude of construction and decommissioning stage landscape impact in the immediate surrounds, the significance of effect is considered to be **Moderate-slight / Negative / Short-term** within and immediately around the cable route and grid connection during construction, but reducing quickly with distance and influence on the broader landscape context to **Slight-imperceptible/Negative/Short term**. The decommissioning stage is likely to be similar but reduced as the main activities will be the breakdown and removal of components by road, while the cable route and infrastructure remain in place.

The operational stage significance of effect of the grid connection and turbine delivery route is deemed to be no more than **Slight-imperceptible /Negative /Long term** in the immediate surrounds and **Negligible/Neutral /Long term** in the wider study area.

15.7 Residual Effects - Visual Effects

15.7.1 Construction Stage Visual Effects

During construction, the main visual impacts will arise from frequent heavy vehicle movements and worker vehicles travelling to and from the site and using the site entrance. There will be construction machinery on site, which may rise above intervening vegetation and buildings. Some of the most notable construction stage visual impacts will result from the erection of the proposed turbines using tower cranes. There will also be stockpiles of stripped topsoil as well as construction materials awaiting use. However, a large part of this short-term activity within the site will remain screened from view by the hedgerows and mature conifer plantations that surround the site and its immediate landscape context. Furthermore, construction-related activity is short-term in nature and will cease once the development becomes fully operational.

For these reasons, the magnitude of visual impact at the construction stage is deemed to be no greater than High/High-medium at the nearest surrounding receptors, however, this reduces swiftly at greater distances from the site, especially within the wider study area, where the magnitude of visual impact is considered to be no greater than Low/Low-negligible. Combined with a Medium-low sensitivity for receptors within the central study area, the significance of visual effect will be Substantial-moderate for those within approximately 1km of the site. Thereafter, the significance of effect will reduce to Moderate/Moderate-Slight throughout the central study area and Slight and Imperceptible at increasing distances within the wider study area as the development becomes a progressively smaller component in the afforded view. Thus, it is not considered that the proposed project will generate significant visual effects at the construction stage.

15.7.2 Operational Stage Visual Effects

Table 13.7 below summarises the full textual assessment of visual effects for each Viewshed Reference Point (VRP) contained in Appendix 15.1 and Volume 4 (Photomontage Booklet). Whilst the 'receptor sensitivity analysis table' and full textual assessment for each VRP is normally contained within the landscape and visual chapter, in this instance, given the considerable number of VRPs, it is considered more prudent to place this material in a separate appendix and focus herein on the significance of the findings. The left hand side of the table incorporates statistical data associated with the view of turbines, whilst the right hand side contains professional judgements in respect of the view. It is important to note that the professional judgements are based on the effects experienced in relation to the view and are not directly influenced by the statistical data. These aspects are only combined within Table 15-12 in order to identify patterns of effect to better inform the conclusions of this assessment.

Table 15-12: Summary of Operational Stage Visual Effects at Viewshed Reference Points (VRP's)

VRP No.	Distance to nearest turbine km	No. of turbine nacelles visible	Visual receptor Sensitivity (see appendix 13.1)	Visual Impact Magnitude	Significance of Visual effect
VP1	9.6 km (T11)	7	Medium-low	Negligible	Imperceptible
VP2	3.4 km (T11)	0	Low	Negligible	Imperceptible

VRP No.	Distance to nearest turbine km	No. of turbine nacelles visible	Visual receptor Sensitivity (see appendix 13.1)	Visual Impact Magnitude	Significance of Visual effect
VP3	6.2 km (T11)	11	Low	Medium-low	Slight
VP4	7.5 km (T11)	11	High medium	Medium-low	Moderate-slight
VP5	2.5 km (T11)	4	Medium low	Medium low	Moderate slight
VP6	6.1 km (T11)	7	High medium	Medium-low	Moderate-slight
VP7	3.9 km (T6)	9	Medium low	Low	Slight
VP8	0.8 km (T11)	3	Medium low	High medium	Moderate
VP9	4.1 km (T10)	11	Medium low	Medium low	Moderate slight
VP10	1.2 km (T6)	4	Medium low	Medium	Moderate
VP11	1.2 km (T6)	11	Medium low	Medium low	Moderate-slight
VP12	2.2 km (T10)	3	Medium low	Low	Slight
VP13	5.3 km (T1)	11	High medium	Low	Moderate-slight
VP14	1.5 km (T1)	9	Medium low	Medium	Moderate
VP15	4.4 km (T1)	3	Medium low	Low-negligible	Slight-imperceptible
VP16	0.7 km (T1)	11	Medium low	High-medium	Moderate
VP17	2.5 km (T1)	8	Medium low	Low	Slight

VRP No.	Distance to nearest turbine km	No. of turbine nacelles visible	Visual receptor Sensitivity (see appendix 13.1)	Visual Impact Magnitude	Significance of Visual effect
VP18	10.6 km (T1)	2	Medium low	Low-negligible	Slight-imperceptible
VP19	3.3 km (T2)	2	Medium low	Low	Slight-imperceptible
VP20	3.5 km (T1)	8	Medium low	Low	Slight
VP21	6.5 km (T1)	0	Medium	Low	Slight
VP22	8.4 km (T1)	4	Medium	Low-negligible	Slight imperceptible
VP23	10.1 km (T2)	8	High-medium	Low	Slight
VP24	13.7 km (T2)	11	Medium	Low-negligible	Slight-imperceptible
VP25	1.3 km (T2)	1	Medium low	Medium low	Moderate-slight
VP26	0.9 km (T2)	1	Medium low	Medium low	Moderate-slight
VP27	14.1km (T2)	11	Medium	Low	Slight

15.7.3 Impacts on Designated Views

Designated scenic views tend to be attributed for two principal reasons within this study area. They are either elevated panoramic vistas over the plains from elevated uplands and isolated hilltops or, alternatively, they are canal or river views from hump-backed bridges. In this flat landscape even the small degree of elevation (2-3m) achieved by crossing a canal bridge can open up a broad vista and there will always be channelled views along the canal or river corridor that extend further than prevailing views within the lowland context. This is due to the high degree of vegetative screening within the lowland context of field hedgerows, conifer plantations and scrubby bog fringes. The other type of designated view relates to the view of prominent hills or landscape features from the surrounding lowland context. The VP set that has been assessed herein represents each of these types of designated view, but only where considered relevant. Designated scenic views that are clearly oriented in a different direction from the Proposed Development or will have no view of it have been omitted from the assessment set following an initial consideration. This is in the interests of focussing on potential significant impacts rather than highlighting the absence of effects at designated receptors and with this in mind it should be noted that there are not considered to be any relevant scenic designations within the central study area (<5km).

In terms of elevated scenic designations, the most relevant to this project are those from the 'Chair of Kildare hills' in the southern extents of the study area and the 'Northern (Newtown) Hills' around 6km to the east of the site. Whilst there are scenic routes circulating Carbury Hill / Castle, for which views towards the hill are the principal focus, the view from Carbury Hill itself is not identified as a designated view in the Kildare County Development Plan. It is, however, addressed as a heritage feature hereunder (15.7.7).

The most notable of the Chair of Kildare scenic designations is the Hill of Allen, which has heritage associations relating to Fionn mac Cumhaill and the Fianna. Although this is contained in private ownership, there is an informal path around the Roadstone quarry to a viewing tower folly on its summit. The northerly view from this tower (VP24) epitomises the nature of the study area as it reveals the distant turbines within the context of a range of broad-scale productive and extractive land uses. This includes quarrying, conifer plantations, cutaway bogs and pastoral farmland. The proposed turbines are well accommodated, both spatially and thematically, within this vast productive landscape scene, and consequently, the significance of the visual impact is deemed to be Slight-imperceptible.

Also within the Chair of Kildare, VP27 is located at the Boston Hill Scenic Route and Hill top view in the Kildare County Development Plan and experiences a final significance of Slight, with similar characteristics to VP24, albeit viewed over a more open foreground.

Slightly further north, VP22 is representative of the Kildare Scenic Route 34, in the bogland to the north of the River Slate, which experiences a Slight-imperceptible final significance, with wide views screened by intervening vegetation.

VP4 and VP6 represent a designated hilltop view and scenic route, respectively, within the Newtown Hills and have similar visual contexts - elevated westward views across the north Kildare Plains. At viewing distances of around 6-8km, the turbines represent distinctive features within both of these views, but as additional built features within the background setting rather than as a visual obstruction or distracting visual intrusion. Indeed, the proposed turbines have a strong degree of visual legibility in terms of their layout within the farmed and forested fringe of the bogland at Drehid and the scale and extent of the development are not considered to be at odds with this underlying landform or landscape pattern. On balance of the mid to high range sensitivity of these views and the mid to low range magnitude of impact, the significance of visual impact is considered to be 'Moderate slight' in both instances.

It is considered that the value of canal views lies in the slight elevation they provide, their present-day associations with recreational amenity and their latter-day sense of industrial heritage. None of these attributes makes them particularly sensitive to changes in views resulting from appropriate forms of development within the surrounding landscape.

There are also a considerable number of such designated views within the central study area, given the concentration of the canal network within this landscape, and only a small proportion of these will be potentially affected by the Proposed Development. This is mainly due to the degree of screening provided by mature canal-side vegetation. VP1 at the fringes of Longwood includes the Royal Canal within the foreground context, and it is clear that there will be no visual effects for canal users given the viewing distance (c. 10km) and degree of canal-side screening. VP21 is from Hamilton's Bridge over the Grand Canal near Allenwood. From this location, the partial blade sets of just over half of the turbines will be seen rising in the distance (c. 7km) beyond a series of foreground dwellings and a near-vegetated skyline. The limited view of turbines is oblique to the canal corridor and is not considered to generate more than a Slight significance of impact. A distinctly different visual context is experienced from the Grand Canal bridge in Robertstown (VP23). Although the turbines are further away (c. 10km), they are almost all fully revealed, rising out of the distant lowland landscape. This is considered to be a highly legible view of the proposed turbines that is not without some picturesque qualities within this peri-urban scene. For a different balance of reasons, the significance of visual impact is also deemed to be Slight at VP23.

15.7.4 Impacts on local community views

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

In this instance, the viewpoint selection set is heavily weighted towards representing views from local roads and residences as well as the small and sometimes dispersed rural settlements that occur within the near vicinity of the Proposed Development. The concentration of the selected viewpoints within the local area is not a reflection of a high population density in this rural area or the relative proximity of the population to the proposed turbines, as both are fairly typical scenarios in the Irish context. Instead, it reflects a desire to focus the assessment on those receptors with most potential to be impacted by the Proposed Development. Around 13 out of the 24 VPs were specifically selected as Local Community views. Of these, the highest level of visual impact significance is considered to be 'Moderate', and this occurs at four of the VP locations (VP8, VP10, VP14 and VP16). These VPs are predominantly located within 1.5km of the nearest turbines along the public road network that encapsulates the site to the north, the west and the south. Due to viewing distances and high levels of screening, receptors to the east are less impacted.

The baseline viewing context for the most impacted local community VPs is similar and almost always involves a foreground of farmed fields that quickly gives way to layers of hedgerow vegetation and bogland fringe woodland or forestry that become stacked by perspective to form a near-middle-ground skyline. The main variance to these typical rural views occurs at VP9 and VP10. From VP9, the landscape is much more open as it consists of rushy farmland that is less defined by field boundaries, whereas VP10 is a more rural/residential foreground context at Kilshanroe.

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

The nature of turbine visibility is also very similar for each of the Moderately impacted local community views due to the comparative viewing distances to nearest turbines, which tend to reveal only blades sets or partial blades sets above intervening vegetation. The main variance is the lateral extent of the development, which is less for those VPs with a northerly or southerly viewing direction along the sinuous turbine array (VP8 and VP16) than those with an easterly view across it (VP10, VP11 and VP14). Notwithstanding the variant lateral extent of the scheme, there is a balance at play between the clustered turbines within a tighter lateral extent and the more relaxed and permeable view of turbines spread across a wider array. In any event, the 'Moderate' significance of impact at these local receptor locations principally relates to the introduction of new tall structures into peatland fringe farmland and forestry where there are currently low levels of built development within view. It is not related to any sense of overbearing or scale conflict from the wind turbines, which are comfortably assimilated into this broad-scale landform and land cover pattern.

Nor is it related to any sense that the proposed turbines appear out of place in this productive rural setting where landscape values and rural visual amenity relates more to sustaining the local rural economy than scenic or naturalistic value.

For the remaining, less impacted Local Community VPs (VP7, VP9, VP12, VP15, VP17, VP19, VP20, VP25, VP26), the viewing distances are generally in the range of 2-5km. At these locations, the significance of visual impact ranges between 'Moderate-slight' and 'Slight-imperceptible', and this largely depends on the degree of screening/exposure of the proposed turbines. The viewing scenario typically involves the partial blade sets of one or two of the nearer turbines rising above vegetated skylines with the remaining turbines fully or substantially screened by the same vegetation. Whilst this is not always an ideal scenario in an aesthetic sense, it is balanced by the limited visibility of the scheme in the overall context of the views.

The local community VP locations are all selected on the basis of the most open views available in order to represent a worst-case scenario. It is important to note that these are not necessarily typical views of the scheme from within the local landscape. This is another benefit of undertaking Route Screening Analysis (RSA) on every public road within 5km of the turbines, which in this instance highlighted that considerably more than half of the public road network and particularly the local road network will not be afforded views of any turbines (See Figure 13.9).

15.7.5 Impacts on Centres of Population

Of the viewpoints that were principally selected to represent a 'Centre of Population', the highest level of impact is deemed to be Moderate-slight at VP5 - Johnstown Bridge, some 2.5km to the north of the site. In this instance, three of the nearest turbines will rise to a noticeable degree beyond trees and houses on the southern side of the village, but without a sense of imposing on the immediate visual context of the settlement. At each of the other three locations, Longwood –VP1; Enfield - VP2; Edenderry – VP18, and Robertstown – VP23, the highest level of visual impact significance is deemed to be Slight. This occurs at Robertstown because the receptor location on a bridge over the Grand Canal is considered to be more sensitive than the other locations and because a clear, albeit distant, view of the turbines is afforded. At the remaining locations, the significance of impact is judged to be Slight-imperceptible or Imperceptible.

Overall, the low-order impacts at surrounding settlements are testimony to substantial degrees of screening encountered from these centres of population as well as the fact that there are few sizeable settlements within the study area. Those that do occur, such as Newbridge, Naas, Maynooth, and Trim, are all at the 20km periphery of the study area, where even the bare-ground ZTV pattern indicates very limited potential for distant visibility of the proposed turbines.

15.7.6 Impacts on major routes

Of the major routes that pass through the study area, the most affected by this proposal is likely to be the M4 motorway as it exits a section of cut just beyond the toll plaza for westbound motorists. This is represented by viewpoint VP3. The first point of consideration for this view is that motorists on a busy motorway are amongst the least susceptible of visual receptors to changes in views.

Furthermore, although there are relatively clear views of some turbines in close alignment with the road in the middle distance, from this elevated location, they are well accommodated in terms of scale and function within the underlying landscape context. Thus, the significance of impact is only considered to be Slight in this instance.

The railway network tends to hug the ground plain with roads passing over it rather than the other way around. It also has a reasonable degree of trackside screening for most sections, and for these reasons, it is generally considered to be unaffected by the proposal.

The remaining regional road network is well represented within this assessment, but generally in the context of other more relevant and/or sensitive receptor types such as centres of population and local community views.

15.7.7 Impacts on Heritage and Amenity features

The main amenity and heritage asset contained within the study area is considered to be the canal network. Canal views from road bridges are designated scenic views in the Kildare County Development Plan, and these have been assessed and discussed earlier in this section under the heading 'Impacts on Designated Views'.. In addition to these point receptor locations a visibility analysis was also undertaken from the section of the Royal Canal that falls within the central study area (5km). This followed a similar, but more rudimentary methodology to the Route Screening Analysis (RSA), but only in that the analysis was done on foot. The canal screening analysis shows that visibility is precluded from the vast majority of the Canal with almost no visibility within and around the section of canal that passes through Enfield. Open and partial visibility occurs from around 20% respectively of the analysed canal network, which all falls between 3-5km from the site. It is also worth reiterating that, for the purposes of the RSA studies, 'open visibility' accounts for the view of just one full blade set and partial visibility anything between that and full screening.

There are two notable hilltop heritage sites/ areas within the study area: Carbury Hill, around 5km to the west of the site, and the Chair of Kildare Hills - a series of abrupt hills that rise around 13km south of the site. Whilst Carbury Hill hosts the ruins of Carbury Castle, the Hill of Allen, which is the most prominent and historically important summit within the Chair of Kildare Hills, contains a folly tower from the 19th Century above a large quarry on its northern side. Whilst clear views of the proposed turbines are afforded from both of these locations particularly the nearer Carbury Hill, they are seen as a legible component within a varied and productive lowland context of farmland forestry and peatland. At VP13, Carbury Castle, and VP13A, at Carbury Parish Church Carpark, the magnitude of visual impact is deemed Moderate-slight in both views. The turbines are a distinctive feature within the plains but have a modest visual envelope in the context of the vast views on offer, and it is not considered that the visual amenity of viewers at these hilltop heritage sites is unduly impacted by turbines in the distant background context. It should be noted that there are some highly sensitive hilltop heritage sites beyond the study area, which include the Hill of Tara, the Hill of Ward, Croghan Hill and Dun Ailinne. These are all located approximately 27km away from the nearest of the proposed turbines to the northeast, north, west and south, respectively. At such distances, the proposed turbines may be visible only in the clearest of viewing conditions as very distant features within the Plains of Kildare. Whilst the sensitivity of these heritage hilltops may be greater than for the much nearer Carbury Hill and the Chair of Kildare Hills, this is more than balanced by the reduction in the visual presence of the proposed turbines given the vast viewing distances involved.

In the vicinity of Carbury Hill, there are several stately houses and associated demesne landscapes, including Williamstown house and Newbury Hall. These are relatively well contained within mature vegetation at the boundaries, affording little intervisibility with the nearest of the proposed turbines. VP15 provides a visual context for the proposed turbines in relation to Newbury Hall, as both are visible from this location, albeit at disparate viewing angles. Only partial views of some of the turbine blade sets are afforded above a vegetated skyline to the east, and the significance of impact is deemed to be Slight-imperceptible at this location.

15.7.8 Summary of visual impacts

Whilst local residents are acknowledged to be among the most susceptible viewer groups, this is balanced by the slightly lower value of the views that are afforded from within the lowland landscape of the central study area. These views tend to be limited in extent and are of a typical rural nature, which is reinforced by the fact that there are no scenic designations within the central study area aside from unaffected canal bridge views around Enfield.

It must be noted that the values associated with a view are not a direct reflection of the quality of the landscape in view but whether such views would be held up as rare or remarkable by the general population. In this instance, it is a fairly typical productive landscape of peatland fringe farmland and forestry that typifies local views. The 'Medium-low' sensitivity that has been commonly attributed to the representative viewpoints herein reflects that the visual setting of the central study area can accommodate some degree of visual change without critically affecting its salient qualities/values.

The value of designated views within the study area tends to relate more to the extent of the view on offer rather than remote or naturalistic character, which is often associated with designated scenic views in other parts of the country. In this instance, the landscape in view is generally an anthropogenic rural one, within which the view of new development will not necessarily conflict with scenic values.

The nature of visibility within the study area has been exhaustively analysed using a sequential combination of tools that began with computer generated Zone of theoretical Visibility (ZTV) This was followed by Route Screening Analysis (RSA) from the local road and canal network, then finally the assessment of photomontages generated from an extensive range of representative visual receptor locations and associated contextual views. This sequence of analysis represents an orderly transition from objective baseline studies to professional appraisal that incorporates a high degree of rigour. One of the most important points to note from this sequence of analysis is that a traditional ZTV map is of little value in understanding visibility within lowland settings. This was subsequently proved by the findings of the RSA, which showed a substantially lower degree of actual visibility occurs in the central study area than is implied by the ZTV map. The RSA also indicated that the intensity of visibility falls away exponentially over the first 2-3km. In this instance the same 2-3km distance is shown by the RSA to coincide with the threshold that intervening vegetation begins to fully screen turbines from view within the lowland landscape. That is, screened views become more commonplace than open views beyond this distance band. By implication, this key threshold also limits the number of turbines that are potentially in view from within the lowland setting of the central study area and certainly beyond.

Two of the key sensitivities identified in the Kildare County Development Plan for the 'Western Boglands' and 'North-western Lowlands' LCA's, which contain the Proposed Wind Farm, are 'smooth terrain' and 'low vegetation' as these attributes result in long-distance vistas and an inability to visually absorb development. Whilst this is true in some instances within these LCA's and is certainly true within the heart of the peatland areas, this is by no means the typical viewing scenario as there are few locations that afford views of the bogland, around which the site is focussed. The main reason is that the population and the road network (visual receptors) are concentrated outside of the bogs within more productive zones where vegetation patterns are tighter and taller. The more typical viewing scenario sees dwellings lining the local road network within a band of pastoral farmland that quickly gives way to marginal farmland, scrubland and/or conifer plantations that tend to hide the substantial peatlands beyond. Indeed, driving around the local road network gives a viewer little impression of how extensive the peatlands actually are in the central and southwestern portions of the study area.

In the process of assessing the visual impacts of this proposal, it has become clear that there are two distinct ways in which it tends to be viewed from within the study area. Either it is fully visible in a clear and cohesive manner from a very limited number of elevated vantage points, or it is partially visible with only the nearest of the proposed turbines rising above and between sections of foreground vegetation in a more ambiguous manner. The first scenario is typically from a designated scenic view, which all occurs beyond the central study area (5km) in this instance, whilst the second scenario is more typical of the other receptor types contained within the lowland setting of the central study area. On the balance of the inverse nature of the 'screening' versus 'legibility' relationship, it is not considered that the Proposed Wind Farm will give rise to any significant visual impacts. The highest significance of visual impact attributed in this instance is 'Moderate', and this level of effect is very localised, being within 1.5km of the nearest turbines in all instances – a peatland fringe farmland zone in which the local population is sparse.

15.7.9 Decommissioning Stage Visual Effects

Visual impacts at the decommissioning stage will be very similar to the construction stage and will arise from frequent heavy vehicle movements and worker vehicles travelling to and from the site and using the site entrance, removing built features that formed part of the proposed Project. Whilst the most notable visual impacts will still arise from the erection of large tower cranes to remove the turbine structures, there will be slightly less intensity in construction-related activities as the substation will not be removed at the end of the useful life of the wind farm project, as it will form part of the national grid network. Therefore, the substation will be retained as a permanent structure and will not be decommissioned.

For these reasons, the magnitude of visual impact at the decommissioning stage is deemed to be no greater than **High-medium** at the nearest surrounding receptors, however, this reduces swiftly at greater distances from the site, especially within the wider study area, where the magnitude of visual impact is considered to be no greater than **Low/Low-negligible**. Combined with a **Medium** sensitivity for receptors within the immediate study area (<1-2km from the site), the significance of visual effect will be not greater than **Substantial-moderate/Moderate** and of a **Negative** quality. Thereafter, the significance of effect will reduce to **Moderate/Moderate-Slight** throughout the central study area and **Slight** and **Imperceptible** at increasing distances within the wider study area as the development becomes a progressively smaller component in the afforded view. Thus, it is not considered that the proposed project will generate significant visual effects at the decommissioning stage.

15.8 Cumulative Impacts

The NatureScot publication entitled: 'Assessing the cumulative landscape and visual impact of onshore wind energy developments' (2021)identify that cumulative impacts on visual amenity consist of combined visibility and sequential effects. The same categories have also been subsequently adopted in the Landscape Institute's 2013 revision of the Landscape and Visual Impact Assessment Guidelines. The principal focus of wind energy cumulative impact assessment guidance relates to other wind farms - as opposed to other forms of development. This will also be the main focus herein, albeit with a subsequent consideration of cumulative impacts with other forms of notable development (existing or permitted), particularly within the Central Study Area.

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

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

Cumulative impacts of wind farms tend to be adverse rather than positive as they relate to the addition of moving manmade structures into a landscape and viewing context that already contains such development. Based on guidance contained within the SNH Guidelines relating to the Cumulative Effects of Wind Farms (2005) and the DoEHLG Wind Energy Guidelines (2006), cumulative impacts can be experienced in a variety of ways. In terms of landscape character, additional wind energy developments might contribute to an increasing sense of proliferation. A new wind farm might also contribute to a sense of being surrounded by turbines with little relief from the view of them.

In terms of visual amenity, there is a range of ways in which an additional wind farm might generate visual conflict and disharmony in relation to other wind energy developments. Some of the most common include visual tension caused by disparate extent, scale or layout of neighbouring developments. A sense of visual ambivalence might also be caused by adjacent developments traversing different landscape types. Turbines from a proposed development that are seen stacked in perspective against the turbines of nearer or further developments tend to cause visual clutter and confusion.

Table 15-13 below provides Macro Works' criteria for assessing the magnitude of cumulative impacts, which are based on the SNH Guidelines (2012).

Table 15-13: Magnitude of Cumulative Impacts

Magnitude of Impact	Description
Very High	• The proposed wind farm will strongly contribute to wind energy development being the defining element of the surrounding landscape. • It will strongly contribute to a sense of wind farm proliferation and being surrounded by wind energy development. • Strongly adverse visual effects will be generated by the proposed turbines in relation to other turbines.

Magnitude of Impact	Description
High	• The proposed wind farm will contribute significantly to wind energy development being a defining element of the surrounding landscape. • It will significantly contribute to a sense of wind farm proliferation and being surrounded by wind energy development. • Significant adverse visual effects will be generated by the proposed turbines in relation to other turbines.
Medium	• The proposed wind farm will contribute to wind energy development being a characteristic element of the surrounding landscape. • It will contribute to a sense of wind farm accumulation and dissemination within the surrounding landscape. • Adverse visual effects might be generated by the proposed turbines in relation to other turbines.
Low	• The proposed wind farm will be one of only a few wind farms in the surrounding area and will be viewed in isolation from most receptors. • It might contribute to wind farm development becoming a familiar feature within the surrounding landscape. • The design characteristics of the proposed wind farm accord with other schemes within the surrounding landscape and adverse visual effects are not likely to occur in relation to these.
Negligible	• The proposed wind farm will most often be viewed in isolation or occasionally in conjunction with other distant wind energy developments. • Wind energy development will remain an uncommon landscape feature in the surrounding landscape. • No adverse visual effects will be generated by the proposed turbines in relation to other turbines.

There are two operational wind farms, one permitted wind farm, and two proposed wind farms (with ABP or pre-planning) contained within the study area. These are set out in Table 15-14 below

Table 15-14: Cumulative Wind Farms within the Study Area

Wind Farm Name	Number of turbines	Distance and Direction from Proposed Development Site (to nearest turbine)	Status
5-10km			
Ballydermot Wind Farm	50 turbines	6.8km southwest	Pre-Planning (Pre-Application Consultation with ABP Ref 310143)
10-15km			

Wind Farm Name	Number of turbines	Distance and Direction from Proposed Development Site (to nearest turbine)	Status
Cushaling Wind Farm	9 turbines	10.2km southwest	In construction
15-20km			
Cloncreen Wind Farm	15 turbines	15.2km southwest	Existing
Ballivor	26 (12 within study area, 14 outside of study area)	17.3km northwest	Permitted
Yellow River	29 turbines (7 within study area, 22 outside of study area)	17.4km west	In construction

As stated earlier with respect to the landscape baseline (15.3.1.3.1) the proposal is sited in an area that is most consistent with the 'Flat Peatland' landscape type identified within the Guidelines, but also with some characteristics of the 'Hilly and Flat Farmland' Landscape Type. It is considered that the above guidance gives a good balance of the characteristics of the study area in terms of open visibility and potential for cumulative impacts to occur. The central study area has the flat terrain, broad landscape pattern of the flat peatland landscape type, but with a much higher degree of containment by vegetation structures than is anticipated by the guidelines. In this respect, it is more similar to the hilly and flat farmland landscape type. The other aspect to bear in mind is that the vast majority of receptors including settlements, rural dwellings and the road network are contained within the productive farmland zone rather than in open bog areas. Thus, open visibility for vast distances is rarely afforded. For these reasons, the Proposed Wind Farm is considered to be consistent with the guidelines for both the 'flat peatland' and 'hilly and flat farmland' landscape types from the guidelines in regard to cumulative impacts.

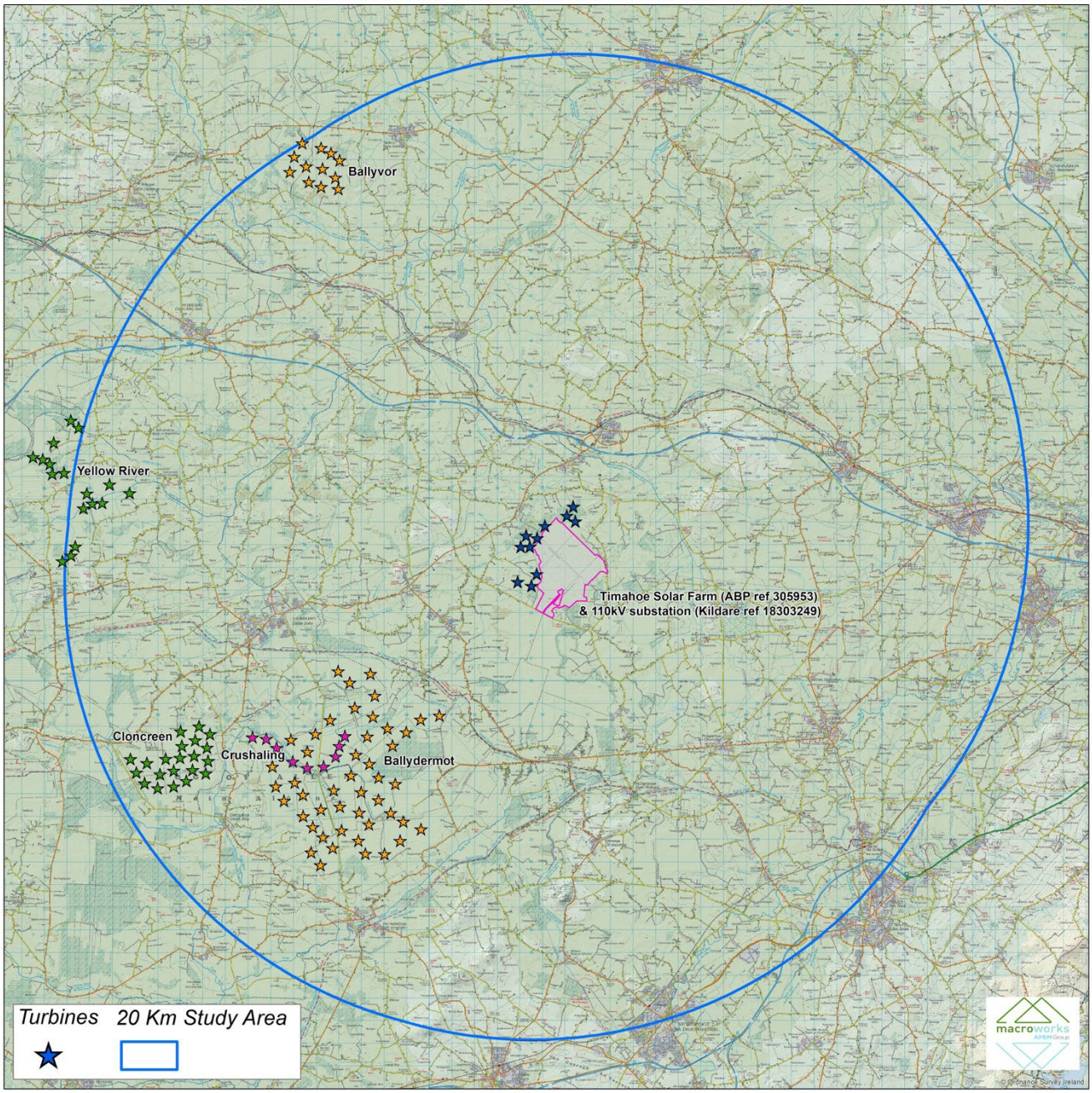


Figure 15-20: Cumulative Considerations

15.9 Cumulative Effects

The nature of cumulative visibility within the study area is analysed below using the cumulative wireframe views contained in the photomontage booklet (refer Volume 4) and the cumulative ZTVs (refer to Appendix 15.2), and included below.

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

In this instance, the study area comprises existing wind farms, consented wind farms, in planning wind farms and wind farm developments at the pre-planning stage. As a result, the cumulative assessment of wind farm developments within the study area will be broken into two categories: the current cumulative scenario and the potential future cumulative scenario.

The current cumulative scenario will assess the cumulative effect of the Proposed Development with respect to existing wind farm developments and consented wind farm developments. The potential future cumulative scenario will assess the proposed Drehid Wind Farm with respect to existing wind farms, permitted wind farms, proposed (in planning) wind farms and wind farm developments at the pre-planning stage (only where information is publicly accessible).

15.9.1 Cumulative Impacts – Current Cumulative Scenario

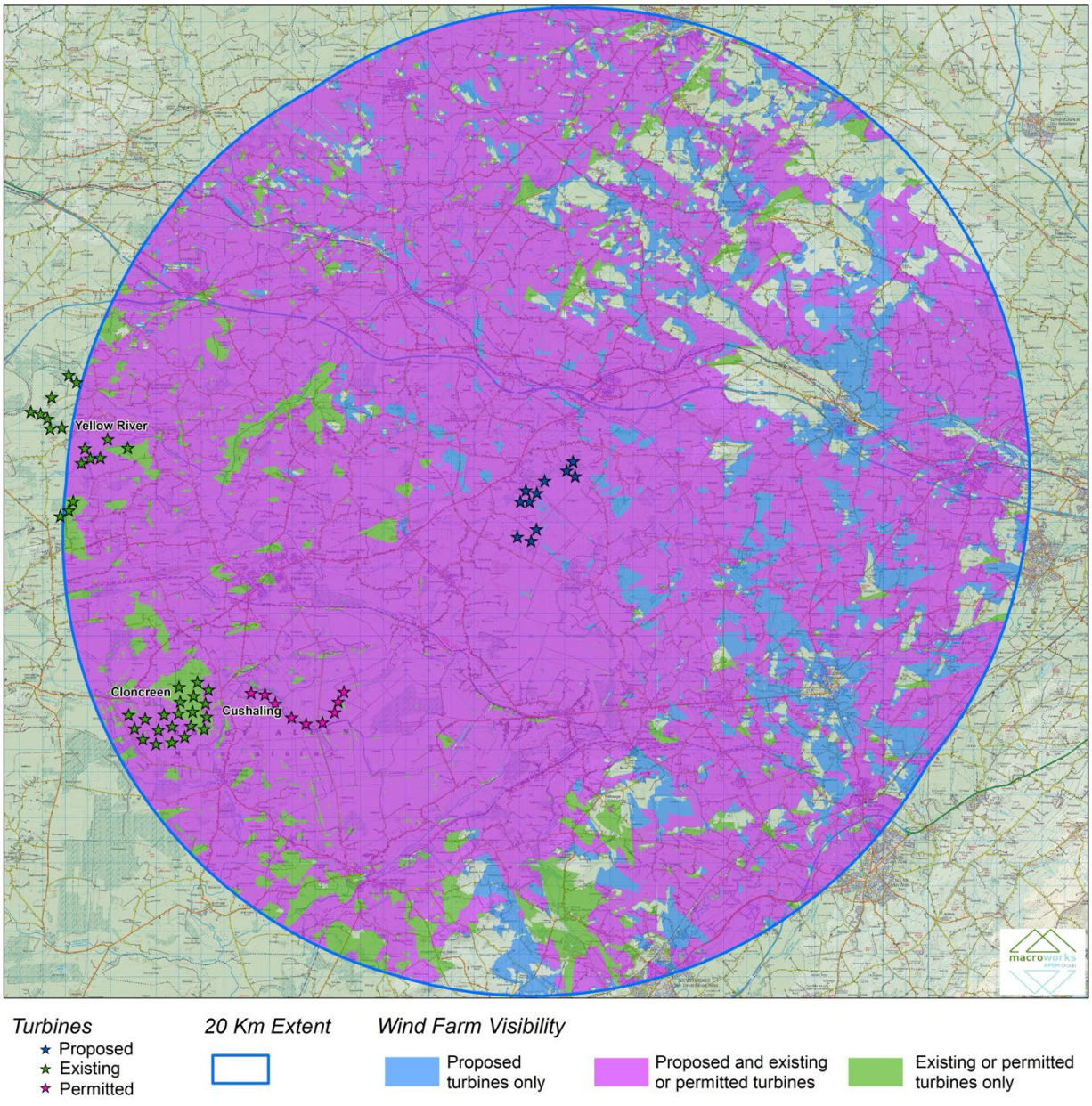


Figure 15-21: Current Cumulative Scenario

The cumulative map above (refer to Figure 15-21) shows the potential for cumulative visibility between the Proposed Development and all other existing and consented development within the study area. A discussion in relation to the current cumulative scenario effects follows below.

The vast majority of the study area (>90%) will have theoretical views of some of the existing permitted or proposed turbines. This is nearly 100% in the western half of the study area and as low as 70% in the eastern half. The main areas without any theoretical view of turbines are within the north-eastern periphery and the south-eastern quarter of the study area beyond subtly raised terrain.

There are relatively clear patterns with regard to the cumulative ZTV within the study area due to the flat and gently undulating nature of the terrain as well as the clustering of cumulative developments within its western periphery. Exclusive visibility of the Proposed Wind Farm generally occurs within small patches of the central study area and sporadically through the eastern half of the study area. This equates to 10.2% of the overall study area. Conversely, exclusive visibility of the cumulative developments occurs predominantly within the western half of the study area and with a notable patch to the south. This equates to 6.6% of the overall study area.

Combined theoretical visibility of the Proposed Wind Farm in-combination with the other cumulative wind farms is by far the most common scenario accounting for 74.5% of the study area. This scenario occurs throughout the central and western quarters of the study area. Combined visibility is more sporadic within the eastern half of the study area and is more prevalent towards the perimeter of the study area than within the 10-20km zone.

The most important consideration with regard to the 'bare-ground' cumulative ZTV map (as with the standard ZTV map) is that it is a computer generated theoretical output that bears little correspondence to actual visibility within the study area due to the effects of vegetative screening in this flat terrain. As indicated by the results of the Route Screening Analysis (RSA), intervisibility of turbines that are separated by more than 2-3km is only likely to occur from open and elevated ground or from tall structures.

The following table identifies the characteristics of the cumulative view of wind farms from each of the VRP's used earlier in the assessment of the visual impacts of the proposed scheme in its own right.

Table 15-15: Nature of Cumulative Impacts

VRP Ref.	No. of other wind farms in view	Nearer or further than proposal	Combined view (within a single viewing arc)	Succession view (within a series of viewing arcs from the same location)	Sequential view (view of different developments moving along a linear receptor)
VP1	1	Further	No	Yes	No
VP2	2	Further	No	Yes	No
VP3	3	Much further	Yes	Yes	Yes
VP4	3	Much further	Yes	No	No
VP5	1	Further	Yes	No	No
VP6	2	Much further	Yes	No	No

VRP Ref.	No. of other wind farms in view	Nearer or further than proposal	Combined view (within a single viewing arc)	Succession view (within a series of viewing arcs from the same location)	Sequential view (view of different developments moving along a linear receptor)
VP7	0	-	-	-	-
VP8	1	Further	Yes	Yes	No
VP9	2	Further	Yes	No	No
VP10	1	Further	Yes	Yes	No
VP11	1	Further	Yes	Yes	No
VP12	2	Further	Yes	Yes	No
VP13	2	Further	No	Yes	No
VP13A	2	Further	No	Yes	No
VP14	0	-	-	-	-
VP15	0	-	-	-	-
VP16	0	-	-	-	-
VP17	0	-	-	-	-
VP18	1	Similar distance	No	Yes	No
VP19	0	-	-	-	-
VP20	0	-	-	-	-
VP21	0	-	-	-	-
VP22	0	-	-	-	-
VP23	0	-	-	-	-
VP24	3	Similar and further	No	Yes	No
VP25	0	-	-	-	-
VP26	0	-	-	-	-
VP27	3	Similar and further	No	Yes	No

15.9.2 Cumulative Impact Assessment

Using the cumulative baseline information outlined above, a summary assessment of cumulative impact is provided below.

Table 15-15 above, emphasises the nature of cumulative visibility within the study area and shows a clear pattern. The majority of views which have 'combined' cumulative views (within a single viewing arc) of the proposal in conjunction with other wind energy developments are elevated and expansive views to the west and south from the Northern Hills LCA. These are VP3, VP4, VP6, and VP9. Whilst the Proposed Development is on a similar western alignment when viewed from this elevated area, the nearest of these viewpoints to the Proposed Wind Farm site is 6km. Thus the viewing distance to the Cloncreen, Cushaling and Yellow River Wind Farms, which lie beyond, is well over 20km in both cases. In the wider northern study area, the distances are as great, however the landform is more level, resulting in a high degree of screening by vegetation, however the wireframe views of VP5, VP8, VP10, VP11, and VP12 show a theoretical visibility of distant turbines.

There are few opportunities for cumulative visibility within the landscape that lies between the Proposed Wind Farm and the permitted wind farms i.e. the west central study area as this is a predominantly flat lowland landscape without extensive views on offer. However, two exceptions where 'successional' cumulative views may occur are from elevated hills at Carbury and Edenderry (VP13 and VP18). From some locations on top of Carbury Hill (in private ownership) it may be possible to see the Proposed Development in conjunction with the Yellow River Wind farm around 12km to the west and the Cloncreen and Cushaling turbines at a similar distance to the southwest. From different elevated parts of Edenderry it may also be possible to see all of these permitted schemes at distances of around 6-8km – Yellow River to the northwest, Cushaling and Cloncreen to the southwest. However, there is likely to be few, if any, opportunities to view all three developments (existing and permitted) all at once. From those few locations that cumulative visibility is afforded, the permitted developments will be seen in different directions to the proposal.

The only other area of elevated ground within the study area likely to afford cumulative visibility of the Proposed Development in conjunction with the other permitted wind farms within the study area is the Chair of Kildare Hills some 13km to the south of the site. Commanding northward views are afforded from the top of the Hill of Allen (VP24), Boston Hill (VP27) as well as other elevated receptors within this locality and these will take in a view of Cushaling and Cloncreen Wind Farms at a distance of around 12-14km to the northwest. The existing Mount Lucas Wind farm lies to the west of Cloncreen at a distance of around 23km from VP24. Yellow River Wind farm lies over 25km away beyond Cloncreen to the northwest. Whilst vast views are afforded from the Chair of Kildare Hills and there is potential to view a series of other existing and permitted wind farms in conjunction with the Proposed Development in clear viewing conditions, these developments are also seen to be widely dispersed across the productive lowland landscape of North Kildare and Offaly.

In terms of 'sequential' visual impacts that can occur from encountering a series of wind energy developments intermittently along a transport route or walking route there are few opportunities for this to occur within the study area and even beyond it. The M4 motorway, as represented by VP3 is one such transport route that will afford brief views of the proposed development as well as brief views towards Yellow River Wind Farm (M6 motorway) around 25km away, which equates to around 15 mins travelling time). Those travelling past the site on the R402 and also passing through Edenderry are also likely to encounter the Cushaling and Cloncreen Wind farm around 15 minutes travelling time to the southwest and in both instances the views of the respective wind farms will be relatively fleeting.

Wind energy development is becoming a more familiar feature of the midlands (following the construction of the Mount Lucas, Meenwaun and Cloncreen Wind Farms in County Offaly). In conjunction with the other existing and permitted wind farms, the proposal will contribute to a sense that wind energy development is becoming a characteristic feature of the midlands landscape. However, this is not considered to be to the extent that wind energy development is the defining feature of this predominantly agricultural and peatland landscape, which will retain the current variety of productive land uses at the ground plain. Any minor sense of wind farm accumulation will be experienced from the relatively few prominent viewing locations rather than from within the lowland context where the vast majority of the midlands population live, work and move around.

The design of the Proposed Wind Farm is considered to be in line with the siting, design and extent of the other existing and permitted wind energy developments within the study area. That is, it consists of a single clusters turbines, with three-dimensional layout pattern adjacent to peatland areas. Thus, the proposal will continue an established design approach within this midlands context, which aids cohesion and assimilation and will reduce the potential for adverse cumulative impacts arising from conflicting design approaches.

In terms of cumulative aesthetic considerations, the proposed turbines will almost never be seen stacked together with other existing or permitted turbines in perspective, which could otherwise give rise to issues of scale confusion and visual clutter. This will remain the case even where the developments may be contained within direct alignment with each other. This is due to the considerable separation distances between them, which ensures that one wind energy development will always be seen as a very distant background feature in relation to the other. Although the turbines of the proposed wind farm and other existing and permitted schemes may on occasion be visible at similar scales from viewpoints that lie between them, where this occurs the developments will be seen in opposite directions or at widely disparate viewing angles.

Overall, it is considered that the Proposed Wind Farm will contribute an additional cumulative effect that is in the order of Low in terms of the classifications defined in Table 15-15 above.

15.9.3 Cumulative Impacts – Potential Cumulative Scenario

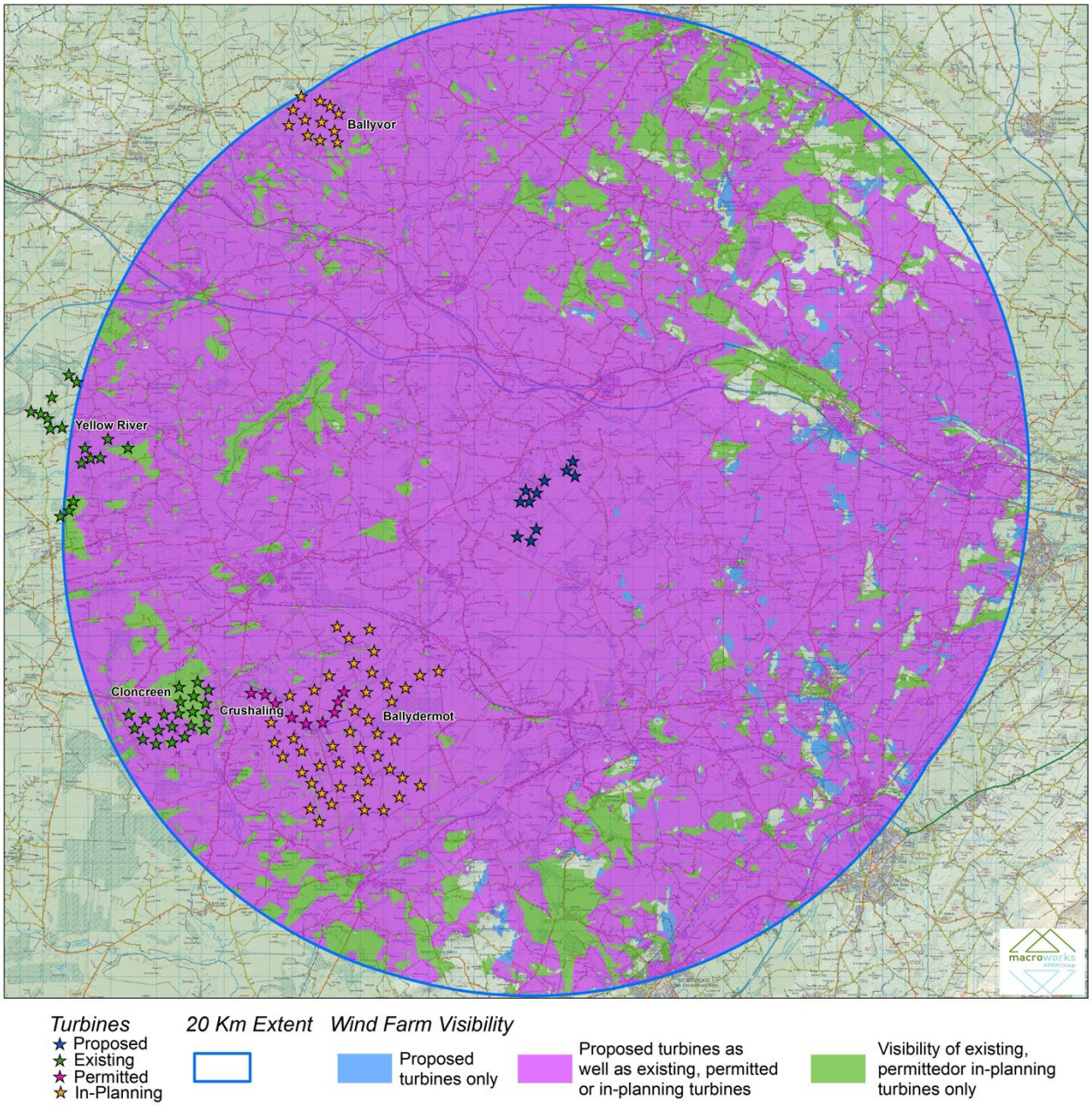


Figure 15-22: Potential Cumulative Scenario

The potential cumulative map above shows the potential for cumulative visibility between the Proposed Development and all other existing, consented, proposed (in-planning) and pre-planning developments within the study area. A discussion in relation to the potential future cumulative scenario effects follows below.

There is only a very small proportion of the study area (1.8%) that will have a theoretical 'bare-ground' view of the proposed Drehid turbines in isolation. These areas are small sections scattered almost exclusively over the eastern half of the study area, with the majority within the northeast to southeast of the wider study area across the east and south of the wider study area.

The majority of the study area (82.2%) experiences combined visibility of the Project in conjunction with other developments contained within the study area (purple ZTV pattern). In comparison to the existing/current cumulative scenario, the area of combined proposed, existing, permitted and in planning turbines expands to cover much of the western and central study area

The Proposed Development will represent the addition of a characteristic feature in the context of the broader study area where wind energy development is becoming an established part of the rural landscape to the southwest and northwest. Yet, it is a relatively new form of development for the local landscape context and is discrete from the main concentrations of wind energy development, which are generally more than 10km away within the western quarters of the study area. This remains the case for both the current cumulative scenario (existing and permitted developments) and the potential future scenario including in-planning turbines. There will be very little intervisibility of the Proposed Development in conjunction with other wind energy developments due to the degree of inherent vegetative screening within this midlands context which tends to screen turbines within 3km of their location. Only from open and elevated vantage points within the wider study area is there potential to view the Proposed Development in-combination with other cumulative wind farms. In such instances the distance between developments and the vast extent of the midlands landscape in which they sit will be clearly apparent.

Within the context of the wider study area, the proposed turbines will make less of a proportional contribution to the volume of turbines that already exist there or are currently permitted or in-planning. Wind farms are already a characteristic, but not a defining component of this midlands context and they will not become the defining feature with the addition of the Project.

15.9.4 Cumulative impacts with other forms of development

As part of the EIA process a planning search has been undertaken to identify other forms of existing and permitted development within both the immediate vicinity of the Proposed Wind Farm and the wider context (out to 20km). Of most relevance to this landscape and visual impact assessment are those developments contained within the central study area (<5km), with which there may be some correlation in respect of landscape character or intervisibility that might generate in-combination effects on visual amenity. These are indicated in Table 15-16.

Table 15-16: Other forms of notable development within the Central Study Area

Development	Distance and direction from proposal site	Status
Timahoe Solar Farm (ABP ref 305953) & 110kV substation (Kildare ref 18303249)	Adjoining eastern boundary	Existing
81ha Solar Farm at Mulgeeth	Adjoining eastern boundary	Refused (may be appealed)
121ha Solar Farm at Oldcourt	6km W	Permitted
35ha Solar Farm at Dysert	2.5km NE	Permitted
71 ha Solar Farm at Coolcarrigan	3.7km SE	Permitted
13.6ha Solar Farm at Ovidstown	4km NE	Proposed

Development	Distance and direction from proposal site	Status
16ha Solar Farm at Hortland	3.9km E	Existing
Drehid Waste Management Facility	2km S	Proposed

As with standalone landscape and visual impacts, cumulative impacts may occur as predominantly landscape effects, predominantly visual effects or a combination of both. Whereas a wind farm has relatively modest physical effects on the landscape fabric, it has a more notable impact on landscape character and visual amenity. The opposite is true of the proposed Drehid Landfill development which will have comparatively greater impacts on the landscape fabric (land cover) than it will on landscape character and visual amenity as it is a substantially enclosed and ground hugging form of development. These opposing characteristics heavily restrict the potential for in-combination landscape and visual effects to occur in respect of the Proposed Wind Farm and the proposed landfill development 2km south as there is very little potential for intervisibility other than from the Landfill site itself. VP25 and VP26 were introduced at the RFI stage (viewpoints RFI1 and RFI2) of the last Drehid Wind Farm application in 2018 to illustrate the lack of intervisibility between the Proposed Development and the Drehid Landfill extension site and the Timahoe Solar Development. This is substantially due to the degree of screening of the Proposed Development and adjacent Timahoe Solar Development and therefore the visibility of the landfill extension is of little consequence in cumulative terms. Given that they formed part of the previous application at RFI stage, both viewpoints were incorporated into this latest assessment.

Whilst solar farms have a fairly light footprint on the physical landform of a site and any effects are readily reversible once decommissioned (similar to wind energy), they noticeable alter the land cover pattern of the site. However, as another ground-hugging form of development they tend not to be visible beyond a few fields in rural landscapes such as this due to vegetative screening, or within the expanse of bog to the east of the site, where Timahoe Solar farm is located and bordered by scrub. Thus, there is very little potential for intervisibility and therefore, for cumulative visual impacts to occur with the proposed Drehid turbines, other than in the immediate vicinity of each solar farm. There is also a substantial band of woodland and mature treeline vegetation separating the Old Court, Dysert and Ovidstown solar sites from the proposed wind farm, which further limits the potential for any intervisibility at distances in excess of 3km. For the reasons outlined above, it is considered that any cumulative impacts between the proposed landfill and permitted and proposed solar farms in the central study area will relate more to changes in the physical landscape fabric rather than changes to perceived landscape character or visual amenity.

In terms of cumulative impacts on the landscape fabric of the central study area, it is necessary to consider the baseline context and particularly the relevant Landscape Character Areas (LCAs) in the Kildare County Development Plan. This is a combination of the Western Boglands (High sensitivity) and North-western Lowlands (Low sensitivity), which the proposed wind farm site straddles. As discussed in section 15.7.1' strong levels of compatibility (Medium & High Compatibility in the Kildare CDP) are identified for all forms of development including wind and solar. Whilst the combination of the proposed wind farm, the proposed landfill and the permitted and proposed solar farms will lead to intensification of built development within this landscape, these rural forms of development will not lead to a sense of urbanisation. Furthermore, the proposed wind farm and landfill are located within transitional areas that are not utilised as high quality farmland, therefore the diversification of land uses is readily absorbed.

15.10 Summary of Significant Effects

It is not considered that there will be any significant effects on landscape and visual amenity arising from the Proposed Wind Farm development or the Proposed Substation development.

15.11 Statement of Significance

Based on the landscape, visual and cumulative assessment contained herein, it is considered that there will not be any significant effects arising from the Proposed Wind Farm development or Proposed Substation development.

15.12 References

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

Landscape Institute and the Institute of Environmental Management and Assessment publication entitled Guidelines for Landscape and Visual Impact Assessment – Third Edition (2013);

NatureScot: Assessing the cumulative landscape and visual impact of onshore wind energy developments (2021);

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

Scottish Natural Heritage (SNH) Visual representation of wind farms: Best Practice Guidelines (version 2.2 - 2017); and

Landscape Institute Technical Guidance Note (TGN) 06/19 Visual Representation of development proposals (2019)

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