11 Landscape and Visual Amenity

11.1 Introduction

11.1.1 Background and Objectives

This chapter of the EIAR assesses the impacts of the Development on the landscape and visual amenity of the receiving environment. Although closely linked, landscape and visual impacts are assessed separately. Where negative effects are predicted, the chapter identifies appropriate mitigation strategies therein. The assessment will consider the potential effects during the following phases of the Development:

- Decommissioning of the Operational Barnesmore Windfarm (initial phase of the Development)
- Construction of the Development (likely to occur in tandem with the above phase)
- Operation of the Development
- Decommissioning of the Development (final phase)

The decommissioning of the Operational Barnesmore Windfarm and the construction of the Development are likely to occur partly in tandem and would have a greater effect than if the two processes were to arise at different times. This represents a worst-case scenario for assessment purposes. Any effects arising as a result of the future decommissioning of the Development, are considered to be no greater than the effects arising when these two phases are combined. As a result, the final decommissioning phase has not been considered further in this assessment.

The Development refers to all elements of the application for the repowering of the Operational Barnesmore Windfarm (**Chapter 2: Development Description**). The repower design layout has provision for the retention and re-use of existing footprint locations, in part, of the Operational Barnesmore Windfarm.

Common acronyms used throughout this EIAR can be found in **Technical Appendix 1.4**.

This chapter of the EIAR is supported a portfolio of photomontages and Figures provided in Volume III and the following Technical Appendix document provided in Volume IV of this EIAR:

- **Technical Appendix 11.1**: Visual Impact Assessments at VPs

The Operational Barnesmore Windfarm, which consists of 25 no. turbines with 61 m tip heights was one of the first wind energy developments to be constructed in Ireland in 1997. It has a perpetual planning permission allowing ScottishPower Renewables (SPR) to operate the windfarm in its existing form indefinitely. However, due to the technological age and small size of the existing turbines, their energy production capacity is limited, and it is proposed to repower the Site with fewer, larger and more efficient turbines. The main objective of this landscape and visual assessment is to determine whether the proposed larger turbines will generate significant effects on the physical landscape / landscape character, or significant visual impacts in respect of sensitive visual receptors around the Site.

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

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

Cumulative landscape and visual impact assessment is concerned with additional changes to the landscape or visual amenity caused by the 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.

11.1.2 Assessment Structure

In line with the revised EIA Directive and current (draft) EPA guidelines the structure of this chapter will consist of separate considerations of landscape effects and visual effects in the following order:

- Assessment of landscape value and sensitivity
- Assessment of the magnitude of landscape effects within the Study Area (**Figure 11.1**); comprised of the 'Central Study Area' (within c. five km of the Site) and 'Wider Study Area' (5-20 km from the Site)
- Assessment of the significance of landscape impacts
- Assessment of visual receptor sensitivity
- Assessment of visual impact magnitude at representative viewpoint locations (using photomontages)
- Assessment of visual impact significance
- Assessment of cumulative landscape and visual impacts

11.2 Assessment Methodology and Significance Criteria

11.2.1 Assessment Methodology

Production of this Landscape and Visual Impact Assessment (LVIA) involved baseline work in the form of desktop studies and fieldwork comprising professional evaluation by qualified and experienced Landscape Architects. This entailed the following:

Desktop Study

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

Fieldwork

- Recording of a description of the landscape elements and characteristics within the Study Area
- Selection of a refined set of VRP's for assessment. This includes the capture of reference images and grid reference coordinates for each VRP location for the visualisation specialist to prepare photomontages.

Appraisal

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

11.2.2 Relevant Legislation and Guidance

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

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

11.2.3 Definition of Study Area

The Wind Energy Development Guidelines published by the Department of the Environment, Heritage and Local Government (2006) specify different radii for examining the zone of theoretical visibility of proposed windfarm 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
- 25 km radius where landscapes of national and international importance exist.

In the case of the Development, the blade tips are up to 180 m high and, thus, the minimum ZTV radius recommended is 20 km from the outermost turbines of the Development. There are not considered to be any landscapes of national or international importance between 20 – 25 km and thus, the radius of the Study Area will remain at 20 km. Notwithstanding the full 20 km extent of the LVIA Study Area, there will be a particular focus on receptors and effects within the Central Study Area where there is higher potential for significant impacts to occur. When referenced within this assessment, the 'Central Study Area' is the landscape within five km of the Site.

11.2.4 Computer Generated Images, Photomontages and Wireframes

This LVIA will be supported by a variety of computer generated maps and graphics as well as verifiable photomontages that depict the Development within the views from a range of represented visual receptor locations. These maps, graphics and visualisations consist of the following:

- Zone of Theoretical Visibility (ZTV) maps – hub height, tip height and cumulative.
- Theoretical Visual Intensity (TVI) maps, which are similar to ZTV maps but also account for proportional screening by terrain and scale in relation to distance.
- Route Screening Analysis - maps and graphs indicating the nature of visibility from roads within the Central Study Area (five km).
- Photomontages consisting of existing views, wireframe views, proposed views and cumulative views.

11.2.5 Assessment Criteria for Landscape Effect

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

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

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

Table 11.1: Landscape Value and Sensitivity

Sensitivity	Description
Very High	Areas where the landscape character exhibits a very low capacity for change in the form of development. Examples of which are high value landscapes, protected at an international or national level (World Heritage Site/National Park), where the principal management objectives are likely to be protection of the existing character.

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

The magnitude of a predicted landscape impact is a product of the scale, extent or degree of change that is likely to be experienced as a result of the 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 Site Boundary that may have an effect on the landscape character of the area.

Table 11.2: Magnitude of Landscape Impacts

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

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

Table 11.3: Landscape Impact Significance Matrix

	Sensitivity of Receptor				
Scale/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

**Categories with grey shading are considered to equate with 'significant' impacts in EIA terms*

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

11.2.6 Assessment Criteria for Visual Effect

As with the landscape impact, the visual impact of the Development 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.

11.2.6.1 Visual Sensitivity

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

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

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

    - *"Residents at home*
    - *People, whether residents or visitors, who are engaged in outdoor recreation, including use of public rights of way, whose attention or interest is likely to be focussed on the landscape and on particular views*
    - *Visitors to heritage assets, or to other attractions, where views of the surroundings are an important contributor to the experience*
    - *Communities where views contribute to the landscape setting enjoyed by residents in the area*
    - *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*
- *People at their place of work whose attention may be focussed on their work or activity, not their surroundings and where the setting is not important to the quality of working life".*

- **Recognised scenic value of the view** (County Development Plan designations, guidebooks, touring maps, postcards etc). These represent a consensus in terms of which scenic views and routes within an area are strongly valued by the population because in the case of County Development Plans, at least, a public consultation process is required.

- **Views from within highly sensitive landscape areas**. Again, highly sensitive landscape designations are usually part of a county's Landscape Character Assessment, which is then incorporated with the County Development Plan and is therefore subject to the public consultation process. Viewers within such areas are likely to be highly attuned to the landscape around them.

- **Intensity of use, popularity**. Whilst not reflective of the amenity value of a view, this criterion relates to the number of viewers likely to experience a view on a regular basis and whether this is significant at county or regional scale.

- **Connection with the landscape**. This considers whether or not receptors are likely to be highly attuned to views of the landscape i.e. commuters hurriedly driving on busy national route versus hill walkers directly engaged with the landscape enjoying changing sequential views over it.

- **Provision of elevated panoramic views**. This relates to the extent of the view on offer and the tendency for receptors to become more attuned to the surrounding landscape at locations that afford broad vistas.

- **Sense of remoteness and/or tranquillity**. Remote and tranquil viewing locations are more likely to heighten the amenity value of a view and have a lower intensity of development in comparison to dynamic viewing locations such as a busy street scene, for example:

  - **Degree of perceived naturalness**. Where a view is valued for the sense of naturalness of the surrounding landscape it is likely to be highly sensitive to visual intrusion by obvious human interventions.

  - **Presence of striking or noteworthy features**. A view might be strongly valued because it contains a distinctive and memorable landscape feature such as a promontory headland, lough or castle.

  - **Historical, cultural or spiritual value**. Such attributes may be evident or sensed at certain viewing locations that attract visitors for the purposes of contemplation or reflection heightening the sense of their surroundings.

  - **Rarity or uniqueness of the view**. This might include the noteworthy representativeness of a certain landscape type and considers whether other similar views might be afforded in the local or the national context.

  - **Integrity of the landscape character in view**. This criterion considers the condition and intactness of the landscape in view and whether the landscape pattern is a regular one of few strongly related components or an irregular one containing a variety of disparate components.

  - **Sense of place**. This criterion considers whether there is special sense of wholeness and harmony at the viewing location

  - **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.

11.2.6.2 Visual Impact Magnitude

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

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

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

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

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

Table 11.4: Magnitude of Visual Impacts

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

11.2.6.3 Visual Impact Significance

As stated above, the significance of visual impacts is a function of visual receptor sensitivity and visual impact magnitude. This relationship is expressed in the significance matrix in Table 11.5 below.

Table 11.5: Landscape Impact Significance Matrix

	Sensitivity of Receptor				
Scale/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: The significance matrices provided above at Table 11.3 and Table 11.5 provide an indicative framework from which the significance of impact is derived. The significance judgement is ultimately determined by the assessor using professional judgement. Due to nuances within the constituent sensitivity and magnitude judgements, this may be up to one category higher or lower than indicated by the matrix.*

11.3 Baseline Description

11.3.1 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 Development 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 Development and Study Area is provided below under the headings of landform and drainage, vegetation and land use, centres of population, transport routes and public amenities and facilities as well as the immediate site context. Additional descriptions of the landscape, as viewed from each of the selected viewpoints, are provided under the detailed assessments later using a similar structure. Although this description forms part of the landscape baseline, many of the landscape elements identified also relate to visual receptors i.e. places and transport routes from which viewers can potentially see the Development. The visual resource will be described in greater detail in Section 11.3.6.

11.3.2 Landform and Drainage

The Development is located in an upland area of terrain around two km south-east of Barnesmore Gap that rises to a maximum elevation of approximately 390 m AOD. The Site and its immediate landscape context comprise of rolling upland hills interspersed with numerous small lakes including Lough Golagh, Lough Nabrackboy, Lough Namaddy and Lough Slug (**Figure 11.2**). On the opposite side of the Barnesmore Gap to the Site is the Tawnawully Mountains which merge with the Bluestacks mountains around four km to the west of the Site. Lough Eske is one of the most notable waterbodies within the Central Study Area and is situated just over five km to west of the Site at its nearest point. Another notable waterbody is that of Lough Mourne which is situated on the eastern side of the N15 just under six km north of the Site.

At a broader scale, much of the north-western quadrant and the central portions of the Study Area comprises of rugged upland terrain that forms part of the Bluestack Mountain range. In the southern and south-western portions of the Study Area, much of the landform is characterised by rolling drumlin hills most notably around the settlement of Donegal town. In the northern half of the Study Area, the River Finn valley forms a distinctive meandering corridor that divides the

Bluestacks mountains from the southernmost extents of the Derryveagh mountains, which occur within the northern extents of the Study Area. Other notable watercourses within the Study Area include the River Derg, which flows north-eastwards through the eastern half of the Study Area from the sizeable Lough Derg that occurs in the south-eastern quadrant of the Study Area. The southern half of the Study Area also hosts an abundance of small lakes and streams, a typical feature of the Drumlin landscape, whilst the northern shores of the substantial Lower Lough Erne penetrates into the south-eastern boundary of the Study Area.

11.3.3 Vegetation and Land use

The Study Area comprises of a wide mix of land uses, the two most prevalent of which are naturalistic mountain moorland / blanket bog in upland areas and agricultural farmland in lowland areas. Marginal upland grazing and forest plantations tend to cloak the transitional slopes between. The Site itself is situated on rolling upland terrain cloaked in sizable areas of mountain moorland and rocky terrain that also accommodates the 25 turbines of the Operational Barnesmore Windfarm and the associated substation, and Site tracks (**Plate 11.2**). Immediately east and south-east of the Site the terrain is carpeted in vast blocks of coniferous forests that cloak the Killeter uplands and Croaghnameal uplands (**Plate 11.1**). The 42 turbines from the Meenadreen Windfarm are also contained within Croaghnameal uplands along with a series of meteorological and communications masts. Large coniferous forest plantations are a notable land use within the Wider Study Area, especially in the environs of Lough Derg to the south-east of the Site and on the northern face of the broad River Finn valley in the northern half of the Study Area. As the terrain descends towards the rolling lowlands, the most prominent land use is that of agricultural farmland that is generally contained in geometric networks of hedgerow vegetation and mature tree lines with field sizes generally determined by the quality of grazing. A number of modest sized urban settlements occur within the Wider Study Area and include Donegal Town situated in the south-west quadrant of the Study Area and the settlement of Ballybofey situated along the River Finn in the north-east quadrant of the Study Area. However, in the context of the overall Study Area, there is a relatively small proportion of urban land cover.

Plate 11.1: View across plateau upland of Central Study Area from the east

Plate 11.2: View of rugged mountain moorland and forestry of the Site and Central Study Area from the west (Barnesmore Windfarm on ridge)

11.3.4 Landscape Policy Context and Designations

11.3.4.1 The Department of Environment, Heritage and Local Government Wind Energy Development Guidelines (2006)

The Wind Energy Development Guidelines (2006) provide guidance on windfarm siting and design criteria for a number of different landscapes types. The Site of the Development is considered to be located within a landscape that is consistent with the 'Mountain Moorland' landscape type. Siting and design recommendations for this landscape type includes the following:

Mountain Moorland:

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

Spatial extent - *"Given the typical extensive areas of continuous unenclosed ground, larger wind energy developments can generally be accommodated because they correspond in terms of scale..."*

Spacing - *"All spacing options are usually acceptable. Where a wind energy development is clearly visible on a crest or ridge there is considerable scope to vary the rhythm, though on simple ridges, regular spacing may be more appropriate."*

Layout - *"All layout options are usually acceptable. However, the best solutions would either be a random layout, and clustered where located on hills and ridges … or a grid layout on sweeping and continuously even areas of moorland or plateaux…"*

Height - *"There would generally be no height restrictions on mountain moorlands as the scale of landscape is so great…"*

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

It is considered that the Development is consistent with the guidance noted above for the 'Mountain Moorland' landscape type.

11.3.4.2 Donegal County Development Plan 2018-2024

Chapter 7 – 'The Natural and built Heritage' of the current Donegal County Development Plan incorporates landscape and visual policies and objectives. The main aim of this chapter is *"to conserve, protect and enhance the County's natural, built and cultural heritage for future generations and encourage appreciation, access and enjoyment of these resources."* In relation to the landscape this chapter also states that "*the landscape of County Donegal is distinctive, unique and synonymous with the identity of County Donegal, and the extensive coastline and seascape is an integral and constituent element. The nature of the landscape is such that it is a contributory factor in the economic draw owing to its quality as a place to live and work, attracting Foreign Direct Investment and associated population growth, of note is the growing tourism market, evidenced by its recent accolades as a set location for the next 'Star Wars' movie and being voted 'The Coolest Place on the Planet' by National Geographic Traveller Magazine (Jan/Feb 2017)".*

Within the current County Development Plan the landscape of County Donegal is categorised into '3 layers of value' shown on map 7.1.1 of the current plan (**Figure 11.4**). The 3 layers of value include:

> ***Areas of Especially High Scenic Amenity (EHSA)*** *- Areas of Especially High Scenic Amenity are sublime natural landscapes of the highest quality that are synonymous with the identity of County Donegal. These areas have extremely limited capacity to assimilate additional development.*

Areas of High Scenic Amenity (HSA) *- Areas of High Scenic Amenity are landscapes of significant aesthetic, cultural, heritage and environmental quality that are unique to their locality and are a fundamental element of the landscape and identity of County Donegal. These areas have the capacity to absorb sensitively located development of scale, design and use that will enable assimilation into the receiving landscape and which does not detract from the quality of the landscape, subject to compliance with all other objectives and policies of the plan.*

Areas of Moderate Scenic Amenity (MSA) *- Areas of Moderate Scenic Amenity are primarily landscapes outside Local Area Plan Boundaries and Settlement framework boundaries, that have a unique, rural and generally agricultural quality. These areas have the capacity to absorb additional development that is suitably located, sited and designed subject to compliance with all other objectives and policies of the Plan.*

Whilst the footprint of the Operational Barnesmore Windfarm is wholly located within an 'Area of Moderate Scenic Amenity' it is predominantly bound by 'Areas of High Scenic Amenity' which are most prevalent throughout much of the southern half of the Study Area. It is also important to note immediately north of the Site is the southern fringe of a large and contiguous 'Area of Especially High Scenic Amenity' associated with Barnesmore Gap and the Bluestack Mountains.

Chapter 7 of the County Development Plan also lists a number of objectives and policies some of which are relevant to the Development and are included below.

Relevant objectives:

NH-O-4: *To ensure the protection and management of the landscape in accordance with current legislation, ministerial and regional guidelines and having regard to the European Landscape Convention 2000.*

NH-O-5: *To protect, manage and conserve the character, quality and value of the landscape having regard to the proper planning and development of the area, including consideration of the scenic amenity designations of this plan, the preservation of views and prospects and the amenities of places and features of natural, cultural, social or historic interest.*

NH-O-7: *To protect the areas of Especially High Scenic Amenity from intrusive and/or unsympathetic developments.*

NH-O-8: *To ensure where appropriate the protection and conservation of hedgerows, stone walls and traditional field boundaries as natural heritage corridors and migration routes for wildlife where they are shown to play a significant heritage role.*

Relevant policies:

NH-P-1: *It is a policy of the Council to ensure that development proposals do not damage or destroy any sites of international or national importance, designated for their wildlife/habitat significance in accordance with European and National legislation including: SACs, Special SPAs, NHAs, Ramsar Sites and Statutory Nature Reserves.*

NH-P-5: *It is a policy of the Council to require consideration of the impact of potential development on habitats of natural value that are key features of the County's ecological network and to incorporate appropriate mitigating biodiversity measures into development proposals.*

NH-P-6: *It is a policy of the Council to protect areas identified as Especially High Scenic Amenity on Map 7.1.1: 'Scenic Amenity'. Within these areas, only developments assessed to be of strategic importance or developments that are provided for by policy elsewhere in this Plan shall be considered.*

NH-P-7: *Within areas of 'High Scenic Amenity' (HSC) and 'Moderate Scenic Amenity' (MSC) as identified on Map 7.1.1: 'Scenic Amenity', and subject to the other objectives and policies of this Plan, it is the policy of the Council to facilitate development of a nature, location and scale that allows the development to integrate within and reflect the character and amenity designation of the landscape.*

NH-P-8: *It is the policy of the Council to safeguard the scenic context, cultural landscape significance, and recreational and environmental amenities of the County's coastline from inappropriate development.*

NH-P-9: *It is the policy of the Council to manage the local landscape and natural environment, including the seascape, by ensuring any new developments do not detrimentally impact on the character, integrity, distinctiveness or scenic value of the area.*

NH-P-10: *It is a policy of the Council to retain and protect significant stands of existing trees/hedgerows/woodlands and seek increased planting of native trees where appropriate in new developments.*

NH-P-13: *It is a policy of the Council to protect, conserve and manage landscapes having regard to the nature of the proposed development and the degree to which it can be accommodated into the receiving landscape. In this regard the proposal must be considered in the context of the landscape classifications, and views and prospects contained within this Plan and as illustrated on Map 7.1.1: 'Scenic Amenity'.*

NH-P-15: *It is a policy of the Council to safeguard prominent skylines and ridgelines from inappropriate development.*

NH-P-17: *It is a policy of the Council to seek to preserve the views and prospects of special amenity value and interest, in particular, views between public roads and the sea, lakes and rivers. In this regard, development proposals situated on lands between the road and the sea, lakes or rivers shall be considered on the basis of the following criteria:*

- *Importance value of the view in question*
- *Whether the integrity of the view has been affected to date by existing development*
- *Whether the development would intrude significantly on the view*
- *Whether the development would materially alter the view*

11.3.4.3 Donegal County Council Landscape Character Assessment

A landscape character assessment was prepared in May 2016 and is included as part of the current Donegal County Development Plan 2018-2024. The assessment identified landscape types and landscape character areas throughout the county. The landscape types in Donegal (**Figure 11.5**) are described as *"the foundations of its rich and unique character; in both the variety of types and in their juxtaposition, giving a strong and vibrant contrast in many areas, with mountains and uplands overlooking beaches, estuaries, farmland and lakes, resulting in a dynamic and striking landscape of discernible scenic quality".* The 'Landscape Types' contained within the Site consist of a combination of 'Upland Heath and Moorland', '300 m Highland Blanket Bog' and 'Lakes'.

Within County Donegal, 44 individual landscape character areas were identified with the Development situated in LCA 41 – 'Croaghnameal Border & Uplands' (**Figure 11.6** refers) which is described as *"a remote area of primarily upland mountainous blanket bog and mountain lakes with significant areas of commercial forestry, particularly along the eastern boundary with Northern Ireland. The northern part of the LCA forms half of the iconic 'Barnesmore Gap', a steep sided and wide river valley through which the N15 and the old Donegal Railway line runs, and one of the main vehicular routes into Donegal from the south."* Other landscape character areas within the Study Area include:

- LCA 35 – 'Adara Bogland'
- LCA 38 – 'Bluestack'
- LCA 16 – 'Cark Mountain Uplands'
- LCA 40 – 'Cashelnaven Uplands'
- LCA 14 – 'Finn Valley'
- LCA 42 – 'Lough Derg Uplands & Lakelands'
- LCA 39 – 'Lough Eske'
- LCA 43 – 'Pettigo Drumlins'
- LCA 37 – 'Donegal Bay Drumlins'

11.3.4.4 Northern Ireland Landscape Character Assessment 2000

The Northern Ireland Landscape Character Assessment (NILCA 2000) divides the counties of Northern Ireland into 130 no. geographically distinct Landscape Character Areas (LCAs). The nearest and most relevant LCA to the Site is 'LCA 19 – Killeter Uplands' (**Figure 11.7**). While this LCA has not been attributed a general sensitivity designation, the NILCA 2000 states *"ridges cover large areas of the Killeter Uplands and many of the valleys are not visible from public roads or settlements. They are therefore not highly sensitive to change".* Regarding potential development in the area, the landscape character assessment notes some principles for accommodating new development that are relevant to the Development:

- *"development could be accommodated within the uplands, provided it is carefully screened by existing conifer plantations or new planting which links to the large-scale landscape pattern.*
- *Site tracks and the provision of utilities could have as much impact as the development itself and it would be important to retain the characteristic sense of remoteness."*

A consultation draft of the Northern Ireland Regional Landscape Character Assessment (NIRLCA) 2015 is currently available online, however, this has not yet been adopted. This draft document is prepared at a broader scale than the 2000 Landscape Character Assessment and divides Northern Ireland's landscape into 26 no. Regional LCAs compared to the 130 no. localised LCAs from the earlier document. The nearest of the broader LCAs to the Development is that of 'LCA 5 – West Tyrone Hills and Valleys' (**Figure 11.8**) and this is described as *"a distinct upland ridge extends into Northern Ireland from Donegal, from Killeter Forest to Pollnalaght. The broad pastoral valleys of the Derg and Fairy Water are closely associated with these hills, forming a strongly rural and relatively remote landscape".* Renewable energy is listed as one of the *'past, present and future forces for change'* and it is noted that "*this landscape has been a focus for wind energy development in recent years, including windfarms on uplands and single turbines in the valleys. Landscape sensitivity studies may be required to determine the potential for the landscape to absorb further development of windfarms or single turbines without adverse impacts on local character."*

As with the Landscape Character Assessment 2000, there are no general sensitivity levels provided for each LCA. Although the draft Regional Landscape Character Assessment provides a more up-to-date analysis of the landscape incorporating development that has taken place in the last 15 years, it is understood that it will not supersede the finer scale assessment from 2000.

11.3.4.5 Donegal County Council Wind Energy Strategy 2018 – 2024

Chapter 8: Natural Resource Development of the current County Development Plan includes sub-section '8.2: Energy' which identifies three zoning areas within County Donegal relating to wind energy:

1) **'*Open to Consideration*'***: Within these locations, windfarm developments are open to consideration, subject to compliance with other objectives and policies of the Plan. These areas are open to consideration for appropriate wind energy proposals. They have been identified having regard to a range of factors, including wind energy potential (through the wind speed atlas www.seai.ie), existing grid connections, proposed grid connections, natural heritage designations and landscape sensitivity, road infrastructure and where potential conflict with natural heritage designations may be managed effectively.*

2) ***'Acceptable for augmentation of/improvements to existing windfarms'****: Within these locations, windfarm development would be unacceptable save as augmentation of, or improvements to, existing windfarm development subject to compliance with all other objectives and policies of the Plan. The Council recognises the opportunities arising from the use of more efficient turbines on established windfarms, as they generate much higher energy yields per turbine, thereby reducing the need for additional turbines. In most cases the infrastructure, roads, hardstand, turbines, sub-station and fences have already been established, so there should be limited additional impact. Wind energy developments within these areas will be considered subject to compliance with all other objectives and policies of the Plan.*

3) ***'Not acceptable'****: Locations where Windfarm Development would be unacceptable. Areas where wind energy proposals would be unacceptable have been identified having regard to their significant environmental, heritage and landscape constraints. These include; Special Areas of Conservation (SAC's) and Special Protection Areas (Natura 2000) sites, Natural Heritage Areas, areas identified as high and medium landscape sensitivity, areas of Fresh Water Pearl Mussel including the catchments identified in the Sub-Basin Management Plans for Clady, Eske, Glaskeelin, Leannan, Owencarrow and Owenea (as listed in S.I. 296 of 2009), important views and prospects, among others. It is considered that these areas have no capacity for wind energy development.*

The Operational Barnesmore Windfarm and the Development are both shown on the previously adopted, but subsequently removed mapping, to be situated within the zoning area *'acceptable for augmentation of/improvements to existing windfarms'.* Whilst this small zoning area is surrounded by areas of *'Not acceptable'* with some small areas of *'open to consideration'* situated further to the south-east of the area of *'acceptable for augmentation'* (**Figure 11.9**), it is evident that the 'augmentation' zoning has been specifically attributed to the Site. This is a clear demonstration of Donegal County Council's intention to zone the Operational Barnesmore Windfarm for redevelopment which should remain a consideration, despite the subsequent removal of this mapping from the Donegal County Council Wind Energy Strategy.

A number of policies and objectives are also outlined within Chapter 8 of the CDP, some of which relate to wind energy and the Development and are included below.

Objectives:

> ***E-O-1:*** *To develop sustainably a diverse renewable energy portfolio to meet demands and capitalize on the County's competitive locational advantage.*
>
> ***E-O-4:*** *To facilitate a sustainable and diverse mix of developments which limit the net adverse impacts associated with global warming such as promoting renewable energy, the growth of local farm produce and the promotion of sustainable modes of public transport.*
>
> ***E-O-5:*** *To ensure that wind energy developments meet the requirements and standards set out in the DEHLG Wind Energy Development Guidelines 2006, or any subsequent related Guidelines (or as may be amended).*
>
> ***E-O-6:*** *To ensure that wind energy developments do not adversely impact upon the existing residential amenities of residential properties, and other centres of human habitation (as defined at Para. 6.6, 'Wind Energy', Appendix 3, Development Guidelines and Technical Standards, Part B, Objectives and Policies of the Plan).*

Policies:

> ***E-P-2:*** *It is a policy of the Council to facilitate the appropriate development of renewable energy from a variety of sources, including, hydro power, ocean energy, bioenergy, solar, wind and geo-thermal and the storage of water as a renewable kinetic energy resource, in accordance with all relevant material considerations and the proper planning and sustainable development of the area.*
>
> ***E-P-10:*** *It is a policy of the Council that development proposals for wind energy shall be in accordance with the requirements of the Wind Energy Development Guidelines: Guidelines for Planning Authorities, 2006 (or as may be amended).*
>
> ***E-P-11:*** *It is a policy of the Council to consider the development of renewable energy, through the development of on offshore wind energy proposals, in accordance with the proper planning and sustainable development of the area.*
>
> ***E-P-12:*** *It is the policy of the Council to:*
>
> *Consider the development of appropriate new wind energy developments within the areas identified as 'Open To Consideration' on the Wind Energy Map 8.2.1, subject to compliance with all other relevant objectives and policies contained within this Plan.*
>
> *Consider the augmentation, upgrade and improvements of existing windfarm developments within areas identified as 'Acceptable for augmentation of/improvements to existing windfarms' on the Wind Energy Map 8.2.1 on a case by case basis subject to compliance with other relevant objectives and policies contained within this plan and the following:*

a) Repowering

Repowering is the process of replacing older turbines with newer ones that either have a greater capacity or more efficiency which results in a net increase of power generated. Repowering may also seek to extend the overall lifespan of the development. Proposals for repowering, shall not result in a net increase in turbines, and it shall be demonstrated that there is no adverse impact on the receiving environment; or

b) Extension

In areas located outside of Natura 2000 sites, proposals for an extension to an existing windfarm (of up to 20% in terms of permitted numbers of turbines or in cases where 5 or less turbines are permitted in a windfarm, one additional turbine) will be considered. The proposal will be required to demonstrate that the additional turbines may be served by the infrastructure serving the existing development; or

c) Reapplication

In areas located outside of Natura 2000 sites, where an existing windfarm has been permitted and this permission has expired, a revised proposal will be considered within the planning unit of the previously permitted development, and where it is demonstrated that there is no net increase in turbines. Not favourably consider wind energy proposals in those areas identified as 'Not Acceptable' on the Wind Energy Map 8.2.1.

***E-P-13:** Within the areas identified as 'Open To Consideration' on Map 8.2.1, it is a policy of the Council to encourage the development of community windfarms/co-operatives to enable communities to generate their own electricity, income and to sell surplus back to the grid, in accordance with other objectives and policies of this Plan and the proper planning and sustainable development of the area.*

***E-P-14:** It is a policy of the Council to support voluntary initiatives from developers/renewable energy operators for local community benefits, in accordance with other policies of this Plan and the proper planning and sustainable development of the area.*

(Examples could include; shared ownership of development proposals, financial dividends, the development of improved local infrastructure, the donation of land for community use, such as playing fields, the development or refurbishment of local community facilities, the creation of rights of way/cycle, walking and bridleways, educational tours and promotional days).

***E-P-16:** It is a policy of the Council to support the strengthening and enhancement of the capacity of existing windfarms, within the local environmental capacity including the sustainable upgrade/replacement of older turbines with newer and more efficient models.*

***E-P-17:** It is a policy of the Council to ensure that all roads associated with the development of windfarms are maintained or repaired at the developer's expense to the satisfaction of the Council.*

***E-P-18:** It is a policy of the Council that potential impacts on natural, built and cultural heritage including impacts on archaeological monuments and watercourses are assessed as part of renewable development proposals. Where such impacts are identified, mitigation measures such as buffer zones, separation distances and access arrangements should be employed as appropriate.*

***E-P-19:** It is a policy of the Council to facilitate the development of combined wind and wave, tidal and/or hydro proposals in areas where there are no significant environmental, heritage or landscape constraints, to generate and export renewable energy and to generate local revenue subject to the proper planning and sustainable development of the area.*

***E-P-20:** It is the policy of the Council that all proposals for renewable energy development will have regard to the cumulative effect of the development on the environment when considered in conjunction with other existing and permitted developments in the area.*

> ***E-P-21:*** *It is the policy of the Council that all applications for renewable energy projects will ensure that details of the proposed grid connection and all associated infrastructure are considered in the Environmental Impact Statement (EIS) and Natura Impact Statement as may be required.*

11.3.4.6 Planning Policy Statement (PPS) 18 – Renewable Energy (Wind Energy Development in Northern Ireland's Landscapes)

As part of the Planning Policy Statement (PPS) for Northern Ireland a Renewable Energy planning policy statement (PPS18) was produced. Within this, an accompanying document called 'Wind Energy Development in Northern Ireland's Landscapes' was prepared, which identifies sensitivities relating to the landscape character areas identified in the Northern Ireland Landscape Character Assessment 2000. The Wind Energy Development in Northern Ireland's landscapes document classes 'LCA 19 – Killeter Uplands' as a 'medium' sensitivity landscape in relation to wind energy development. The assessment states:

> *"the generally large scale and simple, homogenous character of this LCA, combined with the presence of rounded hills and extensive afforestation, indicate reduced landscape sensitivity to wind energy development. In visual terms sensitivity is also relatively low, as much of the area is isolated, inaccessible and not visible from public roads or settlements. In addition, there are relatively few scenic, natural or cultural heritage interests. The south-western part of the LCA contains craggier landform of somewhat higher sensitivity as the rugged hill profiles in this area lend a sense of scale and form part of the scenic setting of Lough Derg in County Donegal. Open upland areas are also more sensitive than forested areas, as they retain the strongest sense of wildness."*

The assessment also identifies a number of 'location, siting, layout and design considerations' which have been summarised below:

- *The broken, undulating character of the main ridgeline suggests that inappropriate wind energy development could flatten the landscape.*
- *The more rounded, broader hills in the north and west may be best able to accommodate wind energy development.*
- *South-western part of the LC contains rockier and craggier tops that are more sensitive, although the lower ridges may also provide suitable locations.*
- *Siting within or close to forestry plantations may be beneficial, reducing impacts on the area's wild character. Existing forest tracks might prove useful to access wind energy development.*
- *Care should be taken to avoid adverse impacts on important skylines at the head of the Derg valley and to the south above Lough Derg. Care should also be taken to avoid detrimental impacts on River Valleys and the wild character of intact moorland and bogs.*

With regard to cumulative wind energy development:

> *"the recommended strategy in this LCA would be to create distinct areas of wind energy development, clearly separated by areas of undeveloped landscape. It is recommended that within each area a consistent site layout and design be utilised. Adequate separation distances between wind energy developments or clusters will be a very important issue to help conserve its wild character."*

11.3.5 Visual Baseline

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

11.3.5.1 Zone of Theoretical Visibility (ZTV)

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

The following key points are illustrated by the ZTV maps (**Figure 11.10a and 11.10b**):

- Theoretical visibility within the immediate vicinity of the Site is relatively comprehensive as much of the surrounding lands constitute elevated hills and ridges at a similar elevation to the Site itself. However, as the terrain descends rapidly towards the Barnesmore Gap to the west of the Site visibility tends to become more sporadic (indicating views of fewer turbines). Furthermore, as the terrain begins the transition to the rolling lowlands to the south of the Site, large areas with no-visibility emerge.

- In the wider south-western quadrant of the Study Area, the 'sand ripple' ZTV pattern highlights the sporadic visibility associated with the drumlin hills that surround Donegal town. Aside from the drumlin hill context, relatively comprehensive visibility occurs within the environs of Donegal Town and Donegal Bay.

- In the western half of the Study Area comprehensive visibility occurs on the south-eastern face of Croaghconnellagh mountain and then further along the western and southern banks of Lough Eske. Further to the west of Lough Eske, theoretical visibility is almost entirely eliminated due to the numerous elevated hills and ridges associated with the Bluestack Mountains. Visibility begins to re-emerge on the westernmost periphery of the Study Area along an elevated ridge in the Bluestack mountains.

- A number of relatively large areas of comprehensive scheme visibility occur in the elevated north-eastern portions of the Study Area. However, theoretical visibility reduces approximately 12 km north of the Site where the terrain begins to descend towards the meandering River Finn valley, which flows through the centre of the settlement of Ballybofey. Sporadic theoretical visibility occurs within the central portions of Ballybofey, however this increases as the land ascends again on the northern side of the River Finn valley.

- Relatively comprehensive visibility also occurs throughout much of the eastern half of the Study Area due to the upland terrain present here. Although the north-western half of Lough Derg is situated in an area of no visibility, the southern and eastern banks of the lake are located in a large portion of comprehensive (blue colour) visibility. This visibility is almost entirely eliminated south/south-east of Lough Derg due to a number of elevated hills and ridges. Whilst there will be very little if any theoretical visibility situated in the surrounds of Pettigo to the south-east of the Site, the settlement of Killeter in the outer eastern half of the Study Area is situated within an area of comprehensive visibility. Whilst there will be the potential for Site visibility in the eastern periphery of the Study Area, theoretical visibility will be sporadic with large areas of no-visibility.

11.3.5.2 Comparative Zone of Theoretical Visibility Map

In the case of the Development, it is more important to understand the increase in visual exposure compared to the Operational Barnesmore Windfarm and whether this increase brings in new receptors that do not currently have a view of the existing turbines, but may see the taller proposed turbines. Thus, a comparative ZTV map has also been generated (**Figure 11.11**).

The following key points are illustrated by the ZTV map (**Figure 11.11**):

- Given that the Development turbine height is almost three times that of the existing turbines, the 13% increase in visual exposure within the overall Study Area is surprisingly low. The pattern for increased visual exposure provides a hint as to why this is the case, as it tends to extend downslope from ridges for relatively short distances. Thus, the steeply undulating terrain is a stronger influence on visual exposure than turbine height in this landscape.

- It is within the rolling plateau of the Croaghnameal uplands, to the south of the Site, that the highest proportion of increased visual exposure of the proposed repowering turbines occurs. Whereas, in the northern, eastern and western portions of the Study Area, the increase is less pronounced and coincides with slightly lower slopes within distinct valleys compared to existing visual exposure occurs, which occurs closer to the ridgelines.

- Notwithstanding the increased quantum of visual exposure from the proposed repowering turbines, this still tends to occur within sparsely populated upland areas with few notable visual receptors (designated views, settlements, major routes) introduced.

11.3.5.3 Theoretical Visual Intensity (TVI) Map

Notwithstanding the analysis of the standard and Comparative ZTV maps in Sections 11.3.5.1 and 11.5.3.2, ZTV maps provide only a basic level of information. That is, they show from where in the landscape of the Study Area the

Development will, or will not, be visible due to 'bare-ground' terrain screening only. Basic ZTV analysis does not account for the scale in relation to distance of turbines as a ZTV map would, for example, indicate the same level of visibility at one km as at 100 km. Thus, they are often misunderstood or assigned excessive importance in the context of proposed windfarm developments by the Planning Authority. For this reason, a more advanced form of ZTV analysis has also been utilised for this baseline study and this has been coined Theoretical Visual Intensity (TVI) mapping. It uses the same basis as ZTV mapping, but also takes into account other factors relating to the perceived visual presence of turbines. These factors include 'scale in relation to distance' and proportional screening of turbines by terrain (fully revealed or blade tips only).

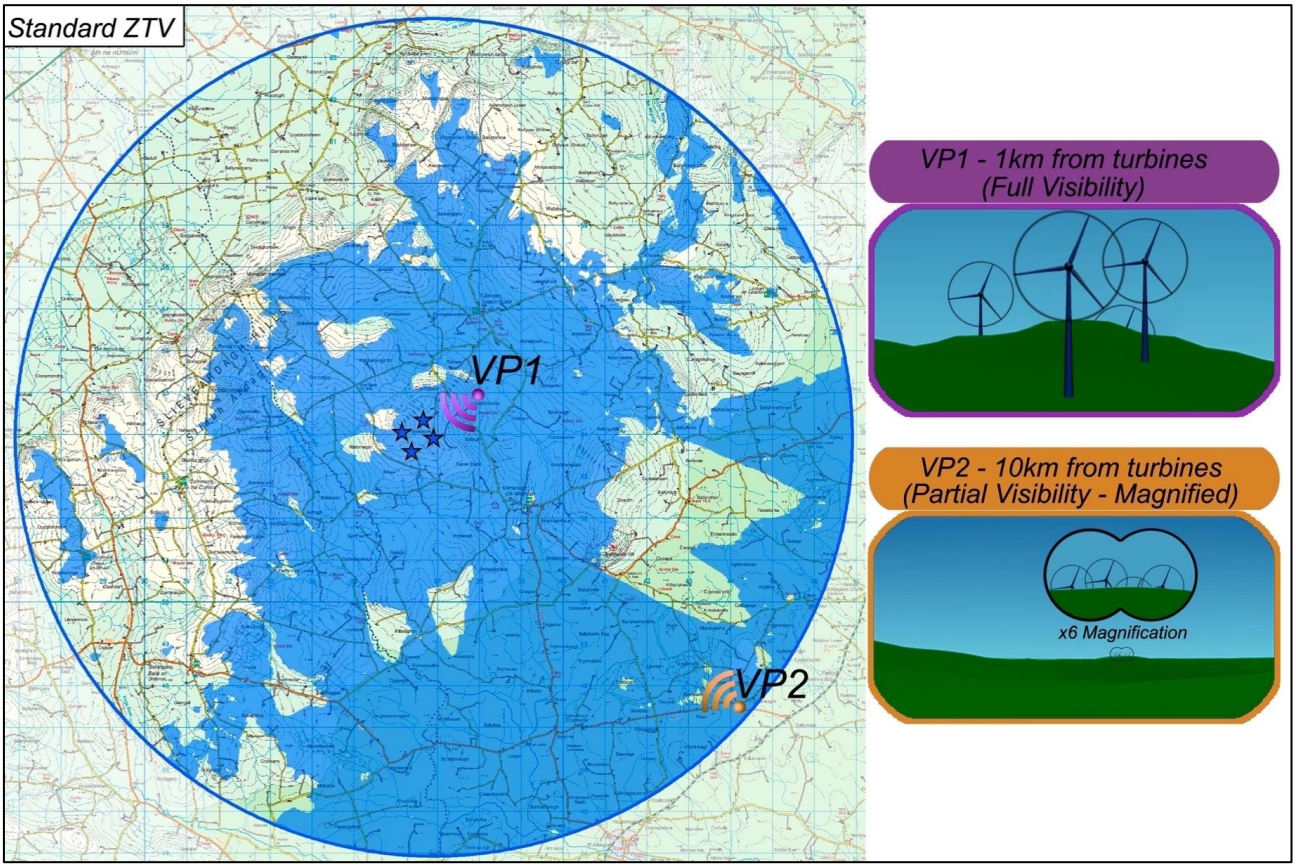


Diagram 11.1: Rationale for using TVI mapping to differentiate 'Theoretical Visibility' – i.e. Both VP examples indicate Theoretical Visibility, but the scale and nature of that visibility is distinctly different.

The value of visual intensity mapping is that it highlights where in the Study Area the proposed turbines are likely to be a prominent visual feature and, therefore, have the potential to give rise to higher order visual impacts. It must be reiterated that Visual Intensity Mapping is still a part of baseline analysis as it does not take account of the nature of change to views or the sensitivity of visual receptors, which remain the subject of professional judgment by the landscape assessor. As with standard ZTV analysis, Visual Intensity Mapping also does not account for screening of views by the likes of vegetation and buildings. TVI mapping is of particular interest with respect to the Development because a direct comparison can be made between the proportional visual exposure of the 25 existing turbines and the 13 taller proposed turbines (**Figure 11.12** and **Figure 11.13**).

The following key points are noted from a comparison of **Figure 11.12** and **Figure 11.13**:

- Even through the existing Barnesmore turbines are exposed to views from a slightly smaller proportion of the Study Area, when fully visible from close and elevated receptors the visual intensity score is higher than for the taller/fewer proposed turbines. This tends to occur in sparsely populated upland areas.

- In lower areas near the fringe of the ZTV pattern, such as along the corridor of the N15 to the west of the Site, the proposed turbines have a marginally greater visual intensity score on the basis that a similar number of turbines are likely to be exposed above the brow of the escarpment at Barnesmore, but the increased height of the proposed turbines will make them more prominent.

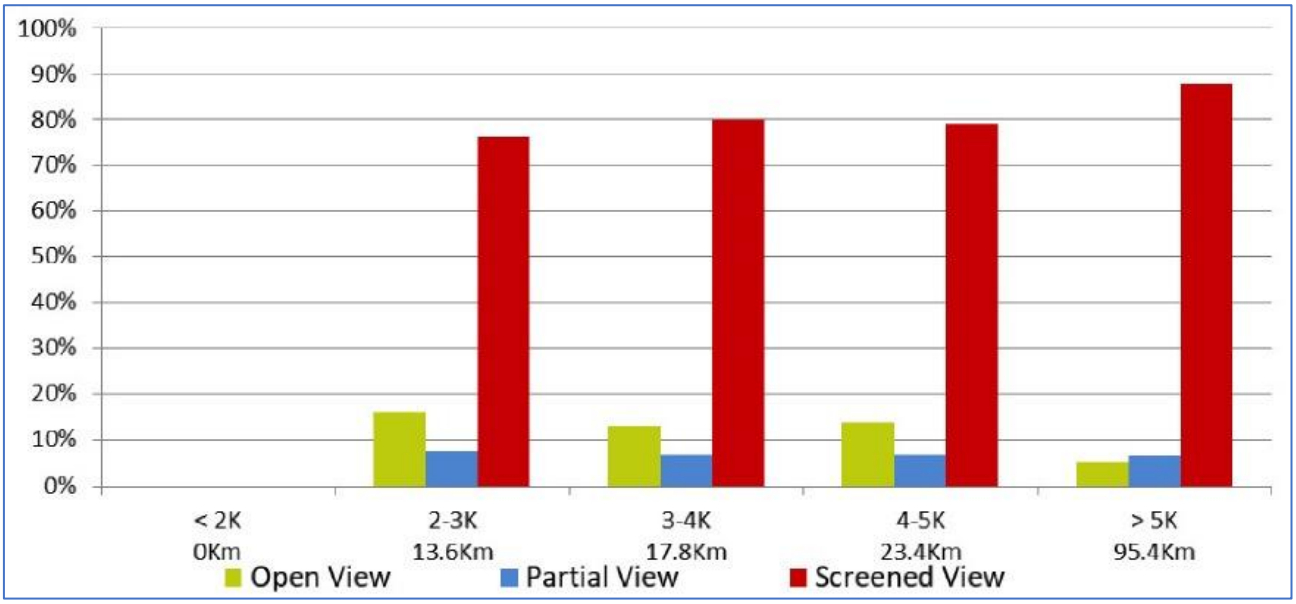
- Overall, there is some balance in the visual intensity of the operational and proposed Barnesmore turbines due to the inverse relationship between the number and size of turbines and where both are visible the Operational turbines have a greater visual intensity.

11.3.5.4 Route Screening Analysis (RSA)

In a rural and upland rural landscape, such as that of the Central Study Area, which incorporates hedgerows and commercial conifer plantations 'bare-ground' ZTV mapping can be of limited value in understanding actual visibility. That is, it can overestimate visibility compared to more open landscapes. In order to get a clearer understanding of visibility within the Central Study Area, RSA was undertaken for every road within a five km radius of Development turbines. In this instance the RSA area was also extended beyond the five km extent to the west so that it incorporated the roads surrounding Lough Eske where high amenity scenic views occur. It was also extended to nearly nine km in an eastward direction to incorporate one of the few public roads in that portion of the Study Area. Extending beyond the normal five km radius reflects the low density of roads within this broad upland area and was considered pertinent to gain a good understanding of project visibility from the surrounding road network.

The RSA map provided at **Figure 11.14a** indicates whether views of the Development turbines are 'Open', 'Partial' or 'Screened' from all sections of the analysed road network. For the purposes of RSA, an 'Open' view represents the view of at least one full blade set of one turbine, whereas 'Partial' visibility represents the view of less than one full blade set and/or filtered views of turbines through vegetation. 'Screened' road sections have no potential visibility of the Development.

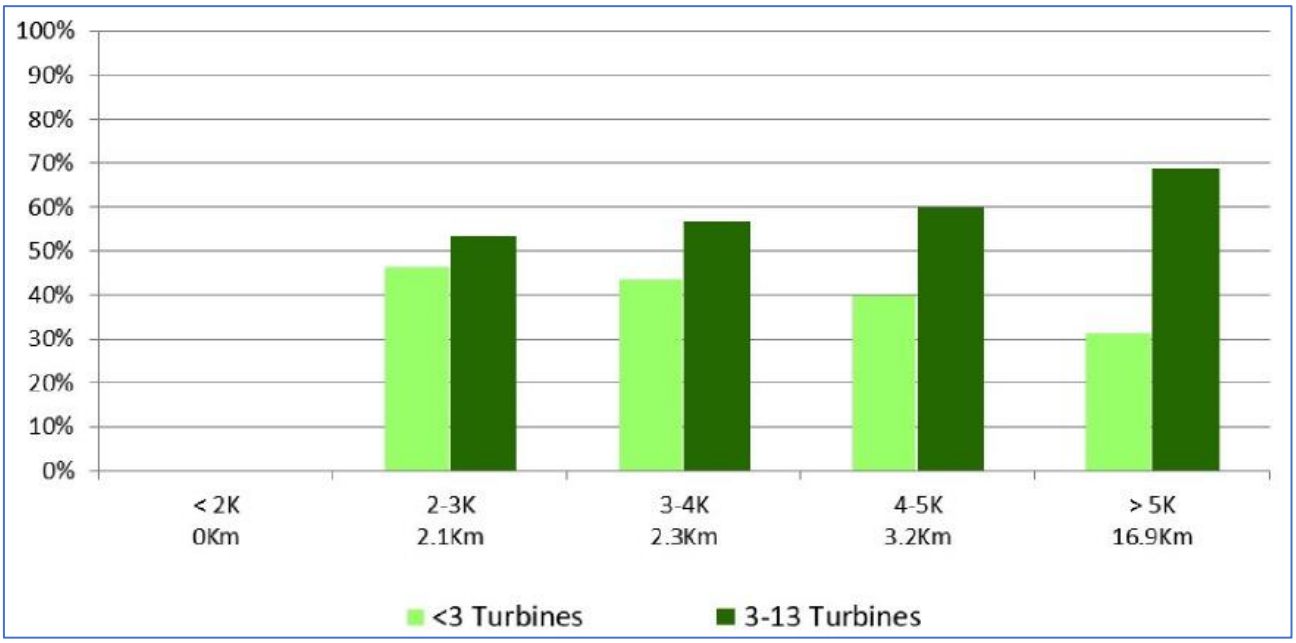
A second RSA map (**Figure 11.14b**) refines all sections of 'Open' visibility (from **Figure 11.14a**) to determine how many Development turbines are likely to be visible. In this instance only two categories are used; 'Visibility of less than 3 turbines' and 'visibility of 3 or more turbines'. Graphs are derived from the RSA and these are provided below.



Graph 11.1: Results from Route Screening Analysis (RSA)

As can be seen from **Figure 11.14** and associated Graph 11.1, the Development turbines will be screened from the vast majority of the local road network. Unlike RSA undertaken within vegetated lowland areas, there is little ambiguity regarding visibility – the turbines tend to be either visible or not above the bare ridgeline, hence the 'Partial' category accounts for less than 10% of road sections in all distance bands. Furthermore, there is no gradual decrease in visibility as would typically be expected in flat lowland areas – visibility begins low and remains low. One point that should not be overlooked, is that there were no roads to be surveyed within two km of the Site, which is particularly rare in an Irish rural context. Although the RSA was undertaken in summer when deciduous trees are in-leaf, it is not considered that this had a material influence on the results in this instance due to the prevalence of evergreen vegetation in the Central Study Area nearest the Site and the fact that much of the screening is also afforded by terrain.

In terms of the sensitive roads surrounding Lough Eske beyond four km to the west of the Site, there is also remarkably low visibility of the Development turbines. This only appears to occur where clear views across the Lough are afforded from the shoreline and also once higher elevations are achieved above the Lough in excess of eight km from the Site. Likewise, there is very limited visibility of the Development turbines from the uplands to the east of the Site and this is mainly due to screening by conifer plantations.



Graph 11.2: Results from Refinement of the 'Open Visibility' category derived from Route Screening Analysis (RSA)

As can be seen from **Figure 11.14b** and associated Graph 11.2, in nearly half of the instances of 'Open' visibility inside four km, the view will consist of less than three turbines. This proportion decreases marginally across the distance bands beyond four km, which suggests that the screening effects of the brow of the hill reduce as the viewer is further removed from the Site.

Overall, the Route Screening Analysis indicates a very low degree of visibility from the roads surrounding the Site and this is also representative of views from the local residences that typically line these roads. Even where open visibility (of at least one turbine blade set) occurs is likely that only a few turbines and not the whole Development will be present within the scene.

11.3.5.5 Views of Recognised Scenic Value

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

All of the scenic routes and views that fall inside the 'Tip Height' ZTV pattern (**Figure 11.10a**) were investigated during fieldwork to determine whether actual views of the Development might be afforded. Where visibility may occur, a viewpoint has been selected for use in the visual impact appraisal later in this chapter.

11.3.5.6 Donegal County Development Plan 2018-2024 – Views and Prospects

The current County Development Plan (2018-2024) categorises the landscape into three layers of value which are noted in Section 11.1.2.2 of this chapter. Whilst designated views have not been mapped within the current Development Plan, they were included within the Draft County Donegal Development Plan 2018-2024 - 'Part D: Environmental Report' and it is understood that they were intended to be included in the adopted plan. Figure 5.12 of this report includes a scenic amenity map which identifies designated views within Donegal (**Figure 11.15**). For the purposes of clarity, the nearest four designated views have been numbered for the purposes of this assessment and identified on **Figure 11.15**:

- **Scenic View 1** – Views from the N15 north-west of Lough Mourne in a south-westerly direction.

- **Scenic View 2** – Views from the N15 south of the Barnesmore gap in a north/north-easterly direction.
- **Scenic View 3** – Views from the N15 south of Lough Eske in a north/ north-westerly direction.
- **Scenic View 4** – Bluestacks Way above Lough Eske.

11.3.5.7 Planning Policy Statement (PPS) 18 – Renewable Energy (Wind Energy Development in Northern Ireland's Landscapes)

Whilst there are no specific designated views or prospects outlined within the PPS 18, it does state that in regards to 'LCA 19 Killeter Uplands' *"the scenic quality is quite high, largely due to the remote and open character of this LCA although coniferous plantations detract from this quality".*

11.3.5.8 Centres of Population and Houses

The most notable centre of population in relation to the Development is that of the coastal settlement of Donegal Town which is situated in the south-western quadrant of the Study Area just under 10 km from the Site Boundary at its nearest point. Ballybofey situated along the River Finn is another notable settlement within the Study Area and is located just over 13 km north-west of the Site at its nearest point.

Other notable smaller settlements within the Study Area include Killeter situated just under 16 km east of the Site, Cloghan located 16 km north of the Site and Pettigo situated just under 18 km south-east of the Site. A number of small settlements also occur on the outskirts of Donegal Town and include Laghy situated 13 km south-west of the Site and Mountcharles situated 17.5 km south-west of the Site.

In general, the immediate vicinity of the Site is sparsely populated due to the upland nature of the terrain in the immediate surrounds of the Site. However, as the terrain descends towards the Barnesmore Gap and further south-west towards Donegal Town the rural population density increases resulting in a relatively modest rural population situated along the local roads that emanate from the N15 national primary route and surrounding Lough Eske.

11.3.5.9 Transport Routes

Oriented in a north-east by south-west direction, the most notable transport route in relation to the Development is that of the N15 national primary route, which passes through the Barnesmore Gap connecting the settlements of Donegal Town and Ballybofey and is situated two km to the west of the Site at its nearest point. North of Ballybofey, the N13 national primary route diverges from the N15 in a northerly direction towards Letterkenny and is situated approximately 16 km north-east of the Site. The N56 national secondary route diverges from the N15 east of Donegal town and is situated just over ten km south-west of the Site at its nearest point.

In terms of major routes in the Wider Study Area, the R267 and R925 regional roads both travel through the settlement of Donegal Town, with the R267 being the nearer of the two, situated just over 10 km south-west of the Site. The R232 regional road extends from the settlement of Laghey in the southern extents of the Study Area and is situated just under 12 km south-west of the Site at its nearest point. The R233 runs from the settlement of Pettigo in the southern half of the Study Area and is oriented in northerly direction and terminates on the south-east banks of Lough Derg 11.5 km south-east of the Site. The A35 road also occurs within the southern periphery of the Study Area and extends out from Pettigo in a south-easterly direction, situated just under 18.5 km south-east of the Site at its nearest point. The R262 regional road flanks the western periphery of the Study Area and is situated just under 19 km west of the Site at its nearest point. In the northern quadrant of the Study Area, the R252 runs from Ballybofey in a westerly direction and is just under 14 km north of the Site at its nearest point. The R253 diverges from the R252 west of Ballybofey and is similarly situated just under 14 km north of the Site. The B72 road occurs along the eastern periphery of the Study Area connecting the settlements of Castlederg and Ederney, both of which are situated outside of the 20 km Study Area.

A relatively low number of local roads occur within the Central Study Area due to the upland nature of the terrain. The nearest local road is situated adjacent to the N15 national primary route within the Barnesmore Gap and is situated approximately 2.5 km west of the Site at its nearest point. Further to the south-west of the Site, the quantum of local roads begins to increase as the rural population increases and as the upland terrain begins to transition into the rolling drumlin lowlands.

11.3.5.10 Tourism, Recreational and Heritage Features

Several walking and cycling trails occur within the Study Area, the nearest and most notable of which is the Bluestack national waymarked trail, which is situated just over eight km to the west of the Site as it passes along the banks of

Lough Eske. The trail commences in the centre of Donegal Town and skirts through the south-western quadrant of the Study Area across the Bluestack mountains. The Donegal Way national waymarked trail passes through the north-western quadrant of the Study Area and is situated just over 11 km north-west of the Site where it traverses the south-eastern face of Gaugin Mountain. It is also understood that there is a local community walking loop that takes in the Meenadreen Windfarm, though it does not appear to be widely promoted or recognised.

The north-west cycle trail is a 326 km looped cycling trail that passes through counties Donegal, Sligo, Tyrone, Fermanagh and Leitrim. The cycle trail follows N15 through the Central Study Area and is just over 2.3 km west of the Site at its nearest point.

Killeter Forest is situated just over five km to the east of the Site and encompasses a number of looped walking trails the follow the forest roads and tracks and the Glendergan River. Causeway Hill walk is another local walk situated within the Study Area and is located just outside of Killeter village approximately 15 km east of the Site at its nearest point.

Situated just over five km west of the Site, Lough Eske is a popular destination for tourists and locals alike due to its scenic and recreation values. A number of local forest paths occur in the surrounds of the lake whilst the lake itself is well known among anglers for its salmon fishing. The lake also hosts two popular hotels, most notably the Lough Eske Castle hotel which is situated on the south-western banks of the lake just under nine km south-west of the Development.

Situated on a small island in Lough Derg just over ten km south-east of the Development, St Patrick's Purgatory is an ancient pilgrimage site that is still in use today. Pilgrims travel from Ireland and abroad during the Spring and Summer months for typically a three-day pilgrimage. A local looped walking trail known as the Lough Derg Pilgrim path also commences adjacent to the ferry port on the south-eastern banks of Lough Derg and skirts around the southern and western banks of the lake.

The coastal settlement of Donegal Town is a popular tourist destination and host a number of touristic amenities and facilities including the Famine Graveyard near the centre of the town and Donegal Golf Club. In the northern portions of the Study Area on the northern banks of the River Finn in Ballybofey is Drumboe forest and recreation area. The forest hosts a number of looped walking trails with views over the meandering valley of the River Finn and is just under 15 km north-east of the Site at its nearest point.

The Wild Atlantic Way is a long distance tourist driving Route along the west coast of Ireland from Donegal to Cork. It has become very popular with international and domestic visitors since its inauguration in 2014. The route skirts the northern side of Donegal Bay, predominantly following the R263 before passing through Donegal Town and heading south along the R267 and R231.

11.3.5.11 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 Development in detail. It is not warranted to include each and every location that provides a view of the 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 were selected that are likely to provide representative views of the Development from different distances, different angles and different contexts. These viewpoint locations were agreed with The Council at scoping stage.

The visual impact of a proposed development is assessed using up to six 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
- Amenity and heritage features

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

Key Views

These 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

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

Local Community Views

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

Centres of Population

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

These include national and regional level roads and rail lines and are relevant VRP locations due to the number of viewers potentially impacted by the Development. The precise location of this category of VRP is not critical and might be chosen anywhere along the route that provides clear views towards the 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

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 (**Chapter 13: Archaeology and Cultural Heritage**). 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.

Table 11.6: Outline description of selected Viewshed Reference Points (See also VRP map at Figure 11.17)

VRP No.	Location	Distance to nearest turbine (km)	Direction of view
VP1	Local Road at Meenagrauv	17.4	SSW
VP2	Donegal Way - Slí na Finne at Kilrean	14.6	S
VP3	N15 at Ballybofey	15.8	SW
VP4	Local road junction with N15 Northwest of the Site	2.2	SE
VP5	N15 Scenic View at Lough Mourne	6.8	SSW
VP6	Local road at Meenbog	6.9	SW
VP7	Bluestack Way at Sallows	17.3	ESE
VP8	Local Road at Toughboy	8.6	SW
VP9	Bluestack Way at Greenan	8.3	ESE
VP10	Local road at Tawnaghlahan	3.9	E
VP11	Biddy O'Barnes Public House	2.1	SE
VP12	R262 at Meenagran	19.3	E
VP13	B72 at Killen	19.6	W
VP14	Bluestacks Way at Lough Eske	7.1	E
VP15	N15 South-west of the Site	5.5	ENE
VP16	Local Road at Barnesmore	3.5	E
VP17	Woodside Road at Killeter	15.9	W
VP18	N56 at Donegal Town	9.9	NE
VP19	Local road at Croaghnakern	3.7	NNW
VP20	Donegal Town	10.5	NE
VP21	N56 at Mountcharles	15.7	NE
VP22	N15 at Drumbar	10.1	NE
VP23	Local road west of Laghey	5.9	NE
VP24	Donegal Golf Club	15.4	NE
VP25	B72 at Shanvia	18.6	NW
VP26	Station Island Pilgrimage site in Lough Derg	9.5	NNW

VRP No.	Location	Distance to nearest turbine (km)	Direction of view
VP26a	Visitors Centre Pier at Lough Derg	10.1	NNW
VP27	R232 at Trumman West	10.3	NNE
VP28	Local road at Barr of Ballynacarnick	14.3	NNE
VP29	Procklis Road at Bigwood	17.1	NW

11.3.6 Cumulative Baseline

The SNH Guidelines relating to the Cumulative Effects of Wind Farms (2005) and GLVIA - 2013 identify that cumulative impacts on visual amenity consist of combined visibility and sequential effects. The same categories have also been subsequently adopted in the Landscape Institute's 2013 revision of the Landscape and Visual Impact Assessment Guidelines:

> *"Combined visibility occurs where the observer is able to see two or more developments from one viewpoint. Combined visibility may either be in combination (where several windfarms 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 windfarms).*
>
> *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 windfarms 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 windfarm might also contribute to a sense of being surrounded by turbines with little relief from the view of them. The term 'skylining' is used in the SNH Guidelines to describe the effect:

> *"Where an existing windfarm is already prominent on a skyline the introduction of additional structures along the horizon may result in development that is proportionally dominant. The proportion of developed to non-developed skyline is therefore an important landscape consideration."*

In terms of visual amenity, there is a range of ways in which an additional windfarm 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 windfarm that are seen stacked in perspective against the turbines of nearer or further developments tend to cause visual clutter and confusion. Such effects are exacerbated when, for example, the more distant turbines are larger than the nearer ones and the sense of distance is distorted. **Table 11.7 below** provides criteria for assessing the magnitude of cumulative impacts.

Table 11.7: Outline Magnitude of Cumulative Impact

Magnitude of Impact	Description
Very High	- The proposed windfarm will strongly contribute to wind energy development being the defining element of the surrounding landscape. - It will strongly contribute to a sense of windfarm proliferation and being surrounded by wind energy development.

Magnitude of Impact	Description
	- Strongly adverse visual effects will be generated by the proposed turbines in relation to other turbines.
High	- The proposed windfarm will contribute significantly to wind energy development being a defining element of the surrounding landscape. - It will significantly contribute to a sense of windfarm 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 windfarm will contribute to wind energy development being a characteristic element of the surrounding landscape. - It will contribute to a sense of windfarm 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 windfarm will be one of only a few windfarms in the surrounding area and will be viewed in isolation from most receptors. - It might contribute to windfarm development becoming a familiar feature within the surrounding landscape. - The design characteristics of the proposed windfarm accord with other schemes within the surrounding landscape and adverse visual effects are not likely to occur in relation to these.
Negligible	- The proposed windfarm 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 nine operational windfarms and six permitted windfarms contained within the Study Area. These are set out in **Table 11.8** below and illustrated on **Figure 11.18**.

Table 11.8: Cumulative Windfarms within the Study Area (as of December 2019)

Windfarm Name	Number of Turbines	Distance and Direction from the Development Site	Status
Altgolan	7	18km South-east	Permitted
Anarget	6	16 km north-west	Operating
Church Hill	8	15 km East	Operating
Crighshane	14	10 km South-east	Operating
Crilly	4	16km South-east	Permitted
Culliagh	18	18 km North	Operating
Gronan	4	15km South-east	Permitted
Meenakeeran	4	6km East	Permitted
Meenbog	19	2 km North-east	Permitted
Meenmullan	5	15km South-east	Operating
Seegronan / Seegronan Extension	9	16 km South-east	Operating / Permitted

Windfarm Name	Number of Turbines	Distance and Direction from the Development Site	Status
Tievenemeenta	15	13 km South-east	Operating
Meenadreen (consolidation of five schemes)	42	1 km South	Operating
Meentycat (consolidation of seven schemes)	35	17 km North	Operating

11.4 Assessment of Potential Effects

11.4.1 Do Nothing Effects

In this instance, with the perpetual planning permission for the Operational Barnesmore Windfarm, the do-nothing-scenario is that the existing windfarm will continue to operate as it currently does with no additional landscape or visual impacts likely to occur.

11.4.2 Landscape Impacts

Landscape impacts are assessed on the basis landscape sensitivity weighed against the magnitude of physical landscape effects within the Site and effects on landscape character within the wider landscape setting. This wider setting is considered in respect of the immediately surrounding landscape (Central Study Area <five km) as well as the broader scale of the Wider Study Area (5-20 km).

11.4.2.1 Landscape Character, Value and Sensitivity

Central Study Area (<five km)

The landscape of the Site and its immediate surrounds is that of rugged mountain moorland containing rock outcrops and small lakes within a general landcover context of blanket bog. The other key feature is the Operational Barnesmore Windfarm, which consists of 25 turbines, associated substation and network of Site tracks that subdivide the land cover of the Site.

The Site straddles a transition in the physical landscape, which also represents a strong perceptual divide in landscape character. To the east is a fairly homogenous and unremarkable upland plateau predominantly contained in commercial conifer plantations. Contrastingly, to the west, the terrain falls steeply from just beyond the Site towards the Barnesmore Gap – an iconic and distinctive 'U' shaped valley. This is shortly followed by the substantial sized Lough Eske, which is surrounded on its eastern side by a knotty landscape of marginal farmland and rural/ residential properties as well as some forestry and two hotel developments above which rises the south-eastern slopes of the Bluestacks mountain range. A relatively populous rural farming landscape lies within undulating terrain down-valley to the south-west of the Site in the direction of Donegal Town, whilst the Croaghnameal uplands continue to the south as a matrix of marginal farmland, blanket bog and forestry. This upland landscape to the south and south-east also contains the substantial Meenadreen Windfarm consisting of 42 turbines.

In respect of notable landscape associations, Barnesmore Gap, or the 'The Gap' as it is known locally has always held strategic importance as a threshold between north and south Donegal and has historic associations with both Saint Patrick and St. Colmcille. As well as hosting the N15 national route, the former Donegal Railway ran through the Gap from 1882 until 1959. Prior to that it had a darker repute as a place for highwaymen and robbers. Biddy O'Barnes public house at the base of the Gap has been an inn for passing travellers since the 18th century. All of these historic and cultural associations reinforce the iconic status of Barnesmore Gap and therefore its landscape value and sensitivity.

In terms of the Landscape Character Assessment contained in the Donegal County Development Plan, the Site is shown to be located within 'LCA 41 - Croaghnameal Border and Uplands', which is a comparatively small LCA located a short distance south-east of LCA 39 'Lough Eske' and LCA 38 'Bluestack'. Slightly further beyond to the south-west is LCA 37 – Donegal Bay Drumlins', to the north-west is LCA 40 – 'Cashelnaven Uplands' and across the border to Northern Ireland less than a kilometre to the east is LCA19 – 'Kileter Uplands' from the Northern Ireland Landscape Character Assessment. This confluence of LCAs reinforces that the Site and Central Study Area is a diverse transitional landscape.

In respect of sensitivity designations, the precise area containing the existing Barnesmore wind turbines and Site tracks, which is also the Site of the Development is identified as being of 'Moderate Scenic Amenity' (MSA) – the lowest of three categories which together cover all of County Donegal. This clearly reflects the fact that the scenic amenity classifications were determined after Barnesmore Windfarm was constructed and the windfarm is determined to reduce the scenic amenity of its immediate context. Otherwise encompassing the Site is an area of High Scenic Amenity (HSA), the median of the three scenic amenity classifications. This classification stretches southwards across the Croaghnameal uplands interrupted only by areas of Moderate Scenic Amenity adjacent to the Northern Irish border. Contrastingly, immediately to the north of the Site, associated with the Barnesmore Gap and Bluestack range, is an area of Especially High Scenic Amenity (EHSA) – the highest scenic amenity category. Again, these scenic amenity classifications reinforce that this is a zone of transition in terms of landscape character, but also that the character and sensitivity is influenced by the presence of the Operational Barnesmore Windfarm.

Although relating more to ecological value and protection, it is important to note that the Barnesmore Windfarm is contained within the Barnesmore Bog NHA, albeit the turbine foundations, hard stands and Site tracks (i.e. footprint of the Operational Barnesmore Windfarm) are excluded from the designation. This designation indicates that the landcover of the Site surrounds is important from particularly an ecological / hydrological perspective.

Whilst it is acknowledged that the Central Study Area contains high sensitivity landscapes to the north relating to the Barnesmore Gap, Lough Eske and the south eastern extents of the Bluestack range, the landscape to the south and east is a much less remarkable upland plateau of predominantly commercial conifer plantations. On balance, and because it is contained in a transitional zone and already hosts considerable wind energy development, the Site and Central Study Area is deemed to be of **Medium-low** landscape sensitivity.

Wider Study Area (5 km – 20 km)

Although the Wider Study Area contains a more diverse landscape and covers a much broader land area, there are some similarities with the dispersal of sensitive landscape areas. That is, the landscape to the west, which encompasses Lough Eske and much of the Bluestack range is considered to be a remote and highly sensitive mountain landscape. Whereas, to the east, the landscape is predominantly contained in rolling uplands of forestry and marginal grazing interspersed with occasional farmsteads and small settlements. One key exception being Lough Derg which hosts an ancient monastic site and present-day pilgrimage centre on an island in the middle of the Lough. The Lough itself is contained by relatively modest forested ridges for the most part and although there are few other buildings visible within this setting, there are a number of wind energy developments apparent on the surrounding skyline to the north and west.

Donegal Bay is a sensitive coastal landscape to the south-west, but it also has a busy and well developed coastline that includes Donegal Town. The associated Donegal Bay drumlin belt penetrates inland for over five km and this is contained in rolling farmland that hosts a relatively dense rural population.

The River Finn valley, which runs across the northern portion of the Wider Study Area and divides the Bluestack mountains from the Derryveagh mountains. It is a pleasantly enclosed and settled landscape of predominantly pastoral farmland giving way to naturalistic moorland, commercial forestry and notable wind energy development on upper slopes and ridges. This is a landscape that is as valued for productive value and rural subsistence as it is for scenic or naturalistic value and is not considered to be a particularly sensitive to wind energy development on distant horizons.

Aside from the Bluestacks range, which is designated as an area of EHSA), the majority of the Wider Study Area is designated as HSA and MSA in the Donegal County Development Plan.

In the context of the Wider Study Area, it is considered that the Bluestacks range, Lough Eske and Lough Derg are specific landscape features of High landscape sensitivity within a general matrix of settled and productive rural landscapes that are more consistent with a Medium-low sensitivity in accordance with the criteria set out in **Table 11.1**. This consideration of landscape sensitivity is cognisant of the Landscape Character Assessment and Scenic Amenity designations within the Donegal County Development Plan, but employs a different and more universal categorisation system. One that includes five rather than three categories and for which the median category is 'Medium' rather than 'High' and a lowest category of 'Negligible' rather than 'Moderate'.

11.4.2.2 Magnitude of Landscape Effect

In terms of physical impacts on the terrain and landcover of the Site, the most critical consideration in this instance is that there is an existing windfarm on the Site consisting of 25 turbines and associated substation, hard stands and Site

tracks. These have already interrupted the blanket bog that otherwise hugs this site and is subject of the Barnesmore Bog NHA designation. The Development will reduce the number of turbines by nearly half allowing some sections of Site track and existing hard standings at unutilised turbine locations to be reinstated and revert to a more naturalistic peatland state over time. However, the larger Development turbines will require larger set-down and hard stand areas than existing in the immediate vicinity of the current track and turbine network. This will see some areas of blanket bog within the NHA designation disturbed in the long term and / or partially reinstated immediately following construction, where not required for operational stage maintenance (**TA2.1 Outline CEMP**). The value of this blanket bog landcover principally relates to habitat and drainage (**Chapter 6: Biodiversity** and **Chapter 9: Hydrology and Hydrogeology**) as it is not a particularly rare or distinctive form of land cover in the local, regional or national landscape context - certainly not to the extent that the loss of very small areas of bog immediately adjacent to existing Site tracks within an existing windfarm context will have a material landscape impact.

In addition to physical landscape impacts on the Site, there is also potential for some removal of roadside vegetation along the turbine Haul Route to facilitate the delivery of long turbine components. Such vegetation removal will be very minor along this Haul Route, the majority of which has already facilitated the delivery of turbine components for the nearby Meenadreen Windfarm in the recent past. Furthermore, any vegetation removal will be reinstated insofar as possible where it will not restrict the ongoing maintenance of the repowered windfarm.

The cable route for the Development will be relocated underground from the existing Barnesmore substation along a 1.2 km section of existing Site Access Track to the western Site Boundary where an existing end mast will be replaced by a new one to transfer the cable to the existing OHL from the Site Boundary down to the existing Clogher Substation. The proposed underground section of cable route will result in the removal of 1.15km of OHL from within the Site Boundary. Just to the north of the connection to Clogher Substation another existing end mast replacement will occur, this time to transfer the cable back underground along a short section of access track to the substation. The proposed grid connection will result in very minor effects to physical landcover and no material effects to landscape character.

For most commercial wind energy developments, the greatest potential for landscape impacts to occur is as a result of the change in character of the immediate area due to the introduction of tall structures with moving components. Thus, wind turbines that may not have been a characteristic feature of the area become a new defining element of that landscape character. However, in this instance, there are already 25 wind turbines on the Site, which are a defining element of the landscape character of the Site and its immediate surrounds. Furthermore, the existing Meenadreen turbines beginning approximately 1 km to the south-east of the site Boundary also contribute strongly to the landscape character of this upland setting.

However, notwithstanding the reduction in the number of Development turbines from 25 down to 13, the tip height of the Development turbines is nearly three times that of the Operational turbines. This means they will be visible from some parts of the landscape that do not currently afford views of the Operational Barnesmore Windfarm, and even where the Operational Barnesmore Windfarm is visible, the scale, if not the intensity, of the Development will be noticeably greater as will its influence on landscape character. This influence is to make wind energy development an even more defining element of the Croaghnameal Uplands landscape. However, it is not considered that the increased scale of the Development turbines tips a threshold whereby this becomes a ‘wind energy landscape’. It is still considered to be a relatively remote upland landscape where a network of moorland, marginal farmland, forestry and wind turbines contribute in a balanced way to what is something of a transitional landscape. This being a transition between a more intensively farmed and settled landscape on lower slopes / valley floor and the more rugged, remote and naturalistic peaks and ridges of the Bluestacks range to the west.

Although the Development turbines are nearly three times the height of the operational turbines, this increased height is well assimilated within the context of the Central Study Area. This is due to the very broad scale of the landform, landscape elements and land use patterns in this area. These attributes prevent the height of the Development turbines causing the type of scale conflict that can occur in more intricate landscapes. The Operational Barnesmore Windfarm was one of the first wind energy developments to be constructed in Ireland over 20 years ago. At 61 m tip height, the generation of turbines used at that time was much smaller than the vast majority of turbines that can currently be seen in operation around the country, which are generally in excess of 120 m tip height. These, in turn, are smaller again than the most recent generation of turbines that are currently under construction or proposed at planning stage, which are generally greater than 150 m tip height. Thus, it is considered that the existing 61 m tall Operational Barnesmore Windfarm turbines could be considered more anomalous in scale and appearance than the proposed 180 m tall turbines, notwithstanding that the nearby Meenadreen turbines bridge the height differential at a modest tip height of 115 m.

Site activity will be at its greatest during the initial decommissioning and construction phase due to the operation of machinery onsite and movement of heavy vehicles to and from the Site. This phase will have a more significant impact on the character of the Site and the landscape in the immediate vicinity of the proposed haul roads, but it is a 'short-term' impact that will cease as soon as the Development is constructed and becomes operational (approximately 12 months from the commencement of construction).

It is important to note that in terms of duration, this Development represents a permanent impact on the landscape, but one that is readily reversible if decommissioning occurs. In such a case, the Development will be dismantled and the landscape reinstated to prevailing conditions. Within 2-3 years of decommissioning there would be little evidence that a windfarm ever existed on the Site, albeit the associated substation may remain in perpetuity as part of the national grid infrastructure.

The final decommissioning phase will have similar temporary impacts as the initial decommissioning and construction phase with the movement of large turbine components away from the Site. There may be a minor loss of roadside vegetation that has grown during the operational phase of the Development, but this can be reinstated upon completion of final decommissioning. Areas of hard standing and Site tracks that are of no further use will be reinstated or left to regenerate – whichever is likely to be most successful for long term reestablishment of the blanket bog. It is expected that the final decommissioning phase would be completed within a period of approximately 4 months

In summary, there will be additional physical impacts on the land cover of the Site as a result of the Development, but these will be very small areas of blanket bog in the context of this upland plateau site and the existing track and hard stand network, which will be utilised insofar as possible and has dictated the layout of the Development. This scale of development can be comfortably assimilated into this upland plateau landscape context without undue conflicts of scale with underlying land form and the combination of both naturalistic and anthropogenic land use patterns. By far the most important factor in respect of the impact on landscape character is the fact that the Development will replace an existing windfarm which currently operates almost double the number of proposed turbines, albeit with a tip height of around one third of the proposed turbines. Thus, the key consideration is the balance between the intensity of the Operational Barnesmore Windfarm layout and the vertical scale of the Development one. Overall, it is considered that the larger turbines of the Development will have the greater impact on landscape character because they are a more prominent feature within the landscape.

For these reasons outlined above, the magnitude of landscape impact is deemed to be Medium-low within the Site and Central Study Area. Within the Wider Study Area, the magnitude of landscape impact is deemed to reduce to Low and negligible at increasing distances as the Development becomes a proportionately smaller component of the overall landscape fabric.

11.4.2.3 Significance of Potential Landscape Effects

The significance of landscape impacts is a function of landscape sensitivity weighed against the magnitude of landscape impact. This is derived from the significance matrix (**Table 11.3**) used in combination with professional judgement. Based on a **Medium-low** sensitivity judgement and a **Medium-low** magnitude of landscape impact, the significance of impact is considered to be **Moderate-slight** within the Central Study Area. Thereafter, significance will reduce to Slight at increasing distances as the Development becomes a progressively smaller component of the wider landscape fabric where wind turbines are a familiar feature. This also applies to higher sensitivity landscape units / features of the Wider Study Area such as Lough Derg and the Bluestacks range as the Development will only ever be a discrete background feature in relation to the immediate landscape setting.

11.4.3 Summary of Visual Effects

In the interests of brevity and so that this chapter remains focussed on the outcome of the visual assessment (rather than a full documentation of it), the visual impact assessment at each of the 30 selected representative viewpoint locations has been placed into **Technical Appendix 11.1**. This section should be read in conjunction with both **Technical Appendix 11.1** and the associated photomontage set contained in Volume III.

Table 11.9: Summary of Visual Impact Assessment at Representative Viewpoint Locations (Technical Appendix 11.1)

Visual Impact			
VP No.	**Visual Receptor Sensitivity**	**Magnitude of Visual Impact**	**Visual Impact Significance**
VP1	High medium	Low-negligible	**Slight-imperceptible**
VP2	High	Negligible	**Imperceptible**
VP3	Medium low	Negligible	**Imperceptible**
VP4	Medium	Low	**Slight**
VP5	High	Medium low	**Moderate**
VP6	Medium low	Low	**Slight**
VP7	High	Negligible	**Imperceptible**
VP8	Medium	Low	**Slight**
VP9	High	Medium low	**Moderate**
VP10	Medium	Medium low	**Moderate slight**
VP11	Medium	Low	**Slight**
VP12	Medium	Low negligible	**Slight-imperceptible**
VP13	Medium low	Low-negligible	**Slight-imperceptible**
VP14	High medium	Medium low	**Moderate**
VP15	Medium	Medium low	**Moderate slight**
VP16	Medium low	Medium low	**Moderate slight**
VP17	Medium low	Low-negligible	**Slight**
VP18	Low	Medium-low	**Slight**
VP19	Medium low	Low	**Slight**
VP20	Medium low	Low	**Slight**
VP21	Medium low	Medium low	**Moderate slight**
VP22	Low	Medium low	**Slight**
VP23	Medium low	Negligible	**Imperceptible**
VP24	Medium	Low	**Slight**
VP25	Medium low	Low	**Slight**
VP26	Very high	Low-negligible	**Moderate-slight**

Visual Impact			
VP26a	High	Low-negligible	**Slight**
VP27	Low	Low	**Slight imperceptible**
VP28	Medium	Low-negligible	**Slight-imperceptible**
VP29	Medium low	Negligible	**Imperceptible**

Often a summary of visual impacts will be categorised simply by receptor type, however in this instance, there is a much stronger distinction between the various landscape context / visual settings of this diverse Study Area. Thus, it is considered more pertinent to understand the range and nature of visual impacts based on geographical setting as follows:

- N15 Corridor and Barnesmore Gap (VP4, VP5, VP11, VP10, VP15, VP16)
- Lough Eske Environs and Bluestacks Way (VP9, VP14)
- Donegal Town and Drumlin Hinterland (VP18, VP20, VP21, VP22, VP23, VP24, VP27)
- Upland Plateau - Croaghnameal uplands / Killeter Uplands (VP6, VP8, VP19)
- Lough Derg Monastic Site (VP26, VP26a)
- Outer Study Area (VP1, VP2, VP3, VP7, VP12, VP13, VP17, VP25, VP28, VP29)

11.4.3.1 N15 Corridor and Barnesmore Gap (VP4, VP5, VP11, VP10, VP15, VP16)

Travelling north-eastwards, the N15 corridor follows the valley of the River Eske through drumlin farmland from Donegal Town passing to the east of Lough Eke just before running through the steeply enclosed Barnesmore Gap on its way to Ballybofey. It is a rugged and scenic landscape setting that is duly recognised with several scenic view designations (VP5 and VP15). Six viewpoints were selected from either the N15 itself or to represent nearby residential and community receptors such as the iconic Biddy O'Barnes public house at the base of Barnesmore Gap (VP11).

Of the six viewpoint locations selected to represent the short to mid-distance south-eastward views towards the Development from this aspect of the Study Area, the significance of visual impact ranges between 'Moderate' and 'Slight'. The 'Moderate impact occurs at VP5, which is a High sensitivity designated scenic view across Lough Mourne towards Barnesmore Gap. Whilst around eight of the existing Barnesmore turbines are visible from this location, the majority of Development turbines will be visible and at a more prominent scale above the ridgeline to the left of the Barnesmore Gap. Indeed, it is the visual relationship of the Development and the Gap that is the most critical aspect of this view. The nearest Development turbine lies just to the left of the base of the distinctive dome shaped peak that serves as the marker and sentry to the Gap. The profile of the windfarm also remains subservient to the same domed peak. For these reasons, it is not considered that the Development unduly imposes on, or compromises, the integrity of this iconic landscape feature.

From VP4, VP11 and VP16, which all lie below the steep eastern slopes of Barnesmore Gap, the significance of visual impact is deemed to be 'Slight' for the first two and 'Moderate-slight' for the latter. Despite being in close proximity to the Development turbines, the brow of the escarpment will substantially screen the Development from view leaving only the blade sets and partial blade sets of the westernmost turbines rising above the ridge. Because the Operational Barnesmore Windfarm extends further to the west than the Development and even accounting for the taller turbines of the latter, there is not a drastic change in the visual envelope and overall visual presence of turbines within these views. VP15 represents a scenic view near the N15 turnoff to Lough Eske and because it is located further back from the steep slopes around Barnesmore Gap, a clearer view of the turbines is afforded than from its nearer counterparts (described above). Consequently, a Moderate-slight significance is attributed to VP15.

In contrast to the busy N15 corridor, VP10 is located on a quiet rural access lane on the north-western slopes above Barnesmore Gap and due to the elevation, all of the Development turbines will be visible to some degree from here. A 'Moderate-slight' significance of impact is attributed for VP10 on balance of the fact that wind turbines are already a long established feature on the Site, and these do not unduly intrude on the key cross-valley and down valley views that are afforded to the southwest from here.

11.4.3.2 Lough Eske Environs and Bluestacks Way (VP9, VP14)

Lough Eske is a rugged and enclosed setting where the principle focus is the Lough itself. There are two hotels located on the western shores and numerous dwellings line the eastern shores competing for views of the Lough and the Bluestacks range to the west. It should be noted that there is almost no visibility of the Development turbines from the farmed and settled eastern slopes above the Lough as evidenced by both the ZTV maps (**Figure 11.10** and **Figure 11.11**) and the Route Screening Analysis results (**Figure 11.14**). For this reason, the two representative viewpoints were selected from the western side of Lough Eske, where the Development has the potential to be visible in the context of eastward views across the Lough – one from the shoreline (VP14) and one from a more elevated section of the Bluestacks Way, which is also a designated scenic view in the CDP (VP9). The sensitivity of these viewpoints was deemed to be 'High-medium' and 'High' respectively.

The significance of visual impact is deemed to be 'Moderate' in the case of both VP9 and VP14 for similar reasons. That is, the Development will replace a smaller, but more intensive stacking of twice as many existing turbines and will form a visually and thematically legible backdrop to this complex vista across a landscape that is settled, managed and naturalistic in equal measure. The most important features of the view, being the peaks of the Bluestacks range to the north and Lough Eske in the lower middle distance are not impeded or unduly intruded upon by the Development turbines, which lie in a section of the view where wind energy development is already and established feature.

11.4.3.3 Donegal Town and Drumlin Hinterland (VP18, VP20, VP21, VP22, VP23, VP24, VP27)

The representative visual receptors in and around Donegal Town and its drumlin farmland hinterland consist of the major routes that converge on Donegal's principle settlement from the south (VP22 and VP27) and the west (VP21 and VP18), whilst VP20 is from within the Donegal Town itself. VP23 lies mid-way between the Site and Donegal Town. Donegal Golf Club (VP24) lies on a spit that penetrates into Donegal Bay from the south.

Due to the considerable screening afforded from intervening drumlin terrain, vegetation and buildings within the lowland coastal setting of Donegal Town, the significance of visual effects across the seven representative viewpoints is generally considered to range between 'Slight' and 'Imperceptible' resulting from partial views of relatively distant turbines. The one exception is VP21 from the N56 national secondary road above Mount Charles where a 'Moderate-slight' significance is recorded. This location affords direct and elevated views towards the Development in-combination with the turbines from the extensive Meenadreen Windfarm further south along the same upland context. The Development turbines are considerably more visually prominent than their existing counterparts, but aesthetically, there is a balance between the dense 'picket fence' of existing turbines hugging the skyline ridge and the more overt, yet comprehensible view of fewer larger turbines rising well above the skyline. Overall, the increase in visual presence and the resultant contribution to cumulative impact in conjunction with the Meenadreen Windfarm is considered to result in the 'Moderate-slight' significance.

Also of particular note within this viewpoint set is the impact at VP23 within the drumlin farmland setting, which represents the typical nature of views in this relatively populated rural area. Only the blade tips of 2-3 of the proposed turbines emerge into view above and between sections of nearby skyline vegetation, albeit in conjunction with a view of around 6 of the nearer Meenadreen turbines – the resultant visual impact significance being 'Imperceptible'. This viewpoint is from an elevated slope near the top of a drumlin hill that is contained within the ZTV pattern (**Figure 11.10a and 11.10b**), whereas much of the lower lying and more settled drumlin landscape has no potential for scheme visibility (according to the ZTV map) due to terrain screening. This is further confirmed by the results of the Route Screening Analysis (**Figure 11.14),** which show almost no 'Open' visibility from within the drumlin landscape to the south-west of the Site.

11.4.3.4 Upland Plateau - Croaghnameal uplands / Killeter Uplands (VP6, VP8, VP19)

These views are all relatively similar in nature and composition, consisting of extensive vistas across a broad upland plateau of rough grazing, naturalistic mountain moorland, large conifer plantations with turbines from the Meenadreen and Operational Barnesmore Windfarms rising intermittently. It is a sparsely populated area with few public roads and some degree of remoteness and tranquillity that even in the context of existing windfarm Development.

The land form and land cover pattern is so broad within this upland plateau and wind energy is already a characteristic feature. Thus, the increased height, but fewer number of proposed turbines (relative to the Operational Barnesmore Windfarm) is only considered to give rise to a 'Slight' significance of impact at all three of the representative viewpoints in this area.

11.4.3.5 Lough Derg Monastic Site (VP26, VP26a)

Lough Derg and the ancient (5th century) Christian pilgrimage site of 'St Patrick's Purgatory' on Station Island at its centre is a unique and sensitive landscape and visual setting within the context of the Study Area. Though Station Island is intensively developed and a largely introspective space, the tranquillity of its wider setting within Lough Derg and enclosed by sparsely developed farmed and forested ridges is an important aspect of its setting and use. There is also a substantial visitors centre on the south-eastern shore of the Lough from where the ferry to Station Island runs. For many tourist visitors to Lough Derg this is likely to be the vantage point from which they experience views of Station Island, hence representative viewpoints have been selected from Station Island (VP26) and from the visitors centre pier (26a) and these were attributed 'Very High' and 'High' receptor sensitivity respectively. However, it is also important to note that wind turbines also line sections of the enclosing ridgeline to the north and east of Lough Derg (not including the existing Barnesmore turbines) and though they noticeably contribute to the otherwise low intensity of built development within view, it is not considered that the distant turbines unduly impact on the sense of tranquillity.

The significance of visual impact from the Development turbines is deemed to be Moderate-slight from VP26 on Station Island and Slight from VP26a at the visitors centre pier. The main reason for the variation is relative sensitivity attributed to each as the effect itself is very similar. In both cases, it is very restricted views of blades and partial blade sets of some but not all of the proposed turbines above the forested skyline ridge to the north in relatively close proximity to a small cluster of Meenadreen turbines that occur further south along the same ridge. The proposed turbines are not prominent within the view and although the view of turbine blades rotating on the skyline is not aesthetically optimal, this effect is ameliorated by the clearer view of northernmost Barnesmore turbines (near full blade sets) and the Meenadreen turbines further south. The proposed turbines represent the minor intensification and spread of a familiar form of development around the perimeter skyline of Lough Derg. However, this is not a form of development that conflicts with the sense of tranquillity in this setting at its current or proposed levels.

An important point to reiterate in relation the assessment of visual effects, is that the significance of impact is derived from a balance of receptor sensitivity ('Very high' and 'High' in this case) and the magnitude of effect (Low-negligible in both cases). Thus, it is not so much a 'Moderate-slight' significance at Station Island, but because it is Station Island and this is not any more significant than a 'Moderate-slight' effect at any other form of receptor.

11.4.3.6 Outer Study Area (VP1, VP2, VP3, VP7, VP12, VP13, VP17, VP25, VP28, VP29)

In the outer northern portion of the Study Area, the Finn River Valley separates the northern extents of the Bluestacks range from the southern slopes of the Derryveagh range. VP1 is from the Derryveagh mountains at the edge of the extensive Meenalita Windfarm, VP2 is from a section of the Donegal Way at the edge of the Bluestacks range and VP3 is from a high point in the settlement of Ballybofey, which is divided by the Finn River. At VP1 the Development is slightly more noticeable than the Operational Barnesmore Windfarm turbines, due to their increased height. Nonetheless, they are a very distant background feature in the context of this view, which is already characterised by the presence of close wind turbines located in the opposite direction. Thus, the significance of impact is deemed to be 'Slight-imperceptible'. Whereas, from the other two northern viewpoints, only the very blade tips of around 2-3 of the Development turbines are potentially visible from VP2 and there is no visibility of turbines from VP3, hence the 'Imperceptible' significance assigned to these two receptors.

VP7 and VP12 are from the western outer reaches of the Study Area at the south-western end of the Bluestacks range and both afford vast elevated vistas in a general southerly direction. VP7 is from an elevated and isolated section of the Bluestacks Way just to the south of where the trail crosses the main ridgeline of the range. Only the blade tips of around three of the Development turbines will be potentially visible from here in the far distance above an intervening skyline ridge and in the context of a clearer view of some of the Meenadreen turbines. Consequently, the significance of visual impact is deemed to be negligible from this 'High' sensitivity receptor. The view is similar in nature from VP12 on the R262 regional road, but with a clearer view of all of the Development turbines above the distant eastern skyline in close proximity to the Meenadreen turbines. The significance at this receptor is therefore considered to be marginally increased at Slight-imperceptible despite the sensitivity being lower (Medium) than for VP7.

VP13, VP17 and VP25 are all from locally elevated vantage points within Northern Ireland at the eastern edge of the Study Area. VP13 and VP25 are both located on the B72 and the former is also representative of the settlement of Killen, whereas VP17 is on a section of the Causeway walking route as it passes through the Village of Killeter. All of these viewpoints afford discernible views of the Operational Barnesmore Windfarm turbines and more open visibility of the proposed turbines, albeit above a distant section of forested skyline ridge to the right (north) of the partially visible Meenadreen Windfarm. There are also other intervening turbines from wind energy developments within Northern Ireland, making wind energy development a familiar, but not defining characteristic of these views. Consequently, the

visual impact significance of the Development turbines from all three of these receptor locations is deemed to be Slight-imperceptible.

Finally, in the southern extents of the Study Area VP28 and VP29 are from quiet local roads, but with very different outlooks. The view from VP28 is over a vast tundra-like upland landscape of marginal farmland, moorland and forestry interspersed with occasional wind energy developments. VP29 is a more enclosed setting with a traditional pastoral aesthetic of rolling fields and hedgerows near the settlement of Pettigo. Both are on the Kingfisher cycling route. Nearly all of the Development turbines will be visible as a distant background feature from VP28 and due to their comparatively larger scale they appear at a similar scale to the nearer Meenadreen turbines, many of which are also clearly visible. Rather than generating scale /contextual confusion, the two developments will appear as a cohesive single development, albeit an extensive one. The significance of impact at VP28 is, therefore, deemed to be Slight-imperceptible. Contrastingly, the potential glimpse of a couple of distant turbine blades between sections of nearby skyline vegetation is considered to result in 'Imperceptible' significance as they are unlikely to be noticed at all by a casual observer and would have little consequence for visual amenity in any event.

One notable aspect of distant visibility of the Development turbines when compared to the existing turbines is that the small dense stocking of the existing turbines appears like bristles on the skyline ridge and they tend to be dwarfed by the nearby Meenadreen turbines even though the latter are relatively modest scale by current standards. The Development turbines have a more prominent scale and although on the ground they total nearly half of the existing turbines, they have a stronger visual presence and their scale appears more balanced with the Meenadreen turbines. Whilst the small scale of the existing turbines gives them a low order visual presence, they appear under-scaled for their broad upland landscape context – a factor acknowledged by the Wind Energy Development Guidelines (2006), which state that "*larger wind energy developments can generally be accommodated because they correspond in terms of scale".* In this respect the proposed turbines appear more suited to this landscape context. The Guidelines also include a series of figures on page 46 that address issues of height relative to landform as shown in **Diagram 11.2**. This reinforces that the height of the proposed turbines is more appropriate to this broad upland ridge than the existing development.

Fig 24: Turbines are too high relative to the scale of the hill - this results in spatial dominance.

Fig 25: Turbines are too short (squat) relative to the scale of the hill - this results in visual irritation

Fig 26: Height of turbines is appropriate.

Diagram 11.2: Issues of height relative to landform

11.4.4 Cumulative Effects

As described in **Table 11.8** and shown on **Figure 11.18**, there is a reasonable number of operational and permitted windfarms within the Study Area, albeit with a reasonably clear pattern of distribution and consolidation. There is an agglomeration of small and medium scale developments in the northern periphery of the Study Area that read as one extensive development. This consists of the Culliagh and Meentycat Windfarms and associated extensions totalling around 54 turbines. Another distinctive group of existing and permitted windfarms occurs from around 10 km to the to the edge of the study area to the south-east of the Development and these are contained just within the border of Northern Ireland. This group consists of around 66 turbines from nine Windfarms lining a ridge to the north-east of Lough Derg. There is also a considerable concentration of turbines from the Meenadreen and Meenbog (permitted) in the Central Study Area surrounding the Operational Barnesmore Windfarm to the north-east and south respectively within the Croaghnameal upland plateau. The only isolated development within the Study Area is the 6 no. turbine Anarget development in the north-western extents of the Study Area within the Bluestacks range. Although slightly isolated, the small Meenakeeran (4 turbines) Windfarm links between the central cluster of developments and those in the outer southeast of the study area.

Given the nature of this distribution of wind energy developments, the main focus of this cumulative impact assessment will be windfarms within the Central Study Area. A key consideration in this regard is that the overall number of turbines will actually reduce by 12 as a result of the Development and it is the increased prominence of the fewer/taller turbines, particularly in-combination with the surrounding schemes, that is the main concern of this cumulative assessment. Indeed, it should be reiterated that because the Operational Barnesmore Windfarm was the first constructed in this region, all other subsequent developments have been assessed cumulatively with it. Thus, it is only the relative difference in cumulative effects between the Operational Barnesmore Windfarm and the Development that is relevant to this cumulative assessment. **Table 11.10** sets out the nature of cumulative visibility from each of the selected represented viewpoints used in the visual impact assessment.

Table 11.10: Nature of Cumulative Visibility at Representative Viewpoint Locations

VRP Ref.	Number of other windfarms potentially visible	Nearer or further than the Development	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	5+	Most very near to rear of viewer / 1-2 very distant	Yes and No	Yes	No
VP2	5+	Nearer	No	Yes	Yes
VP3	0	-	-	-	-
VP4	0	-	-	-	-
VP5	1	Nearer	Yes	Yes	Yes
VP6	1	Nearer	Yes	No	No
VP7	2	1 nearer / 1 similar distance	Yes	Yes	Yes
VP8	1	Nearer	Yes	No	No
VP9	2	Both slightly further away	Yes	Yes	Yes
VP10	1	Slightly further away	Yes	No	No
VP11	0	-	-	-	-
VP12	2	Nearer and slightly further away	Yes	Yes	Yes
VP13	2	Similar distance	Yes	Yes	Yes
VP14	1	Slightly further	Yes	No	Yes
VP15	1	Slightly nearer	Yes	Yes	Yes
VP16	0	-	-	-	-
VP17	2	Similar distance	Yes	Yes	Yes

VRP Ref.	Number of other windfarms potentially visible	Nearer or further than the Development	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)
VP18	1	Slightly nearer	Yes	No	Yes
VP19	2	1 immediate context / other further	Yes	Yes	No
VP20	1	Slightly nearer	Yes	No	No
VP21	1	Slightly nearer	Yes	No	Yes
VP22	1	Slightly nearer	Yes	No	Yes
VP23	1	Slightly nearer	Yes	No	No
VP24	2	Similar distances	Yes	Yes	No
VP25	3	Nearer	Yes	No	Yes
VP26	3	Nearer	Yes	Yes	No
VP26a	3	Nearer	Yes	Yes	No
VP27	1	Nearer	Yes	No	Yes
VP28	2	1 nearer and 1 further	Yes	Yes	Yes
VP29	1	Nearer	Yes	No	Yes

Table 11.10 indicates that combined visibility of the Development with at least 1 or 2 other developments (mainly Meenadreen and Meenbog) 'in combination' is fairly commonplace from the selected viewpoint set, but views of multiple developments (3 or more) 'in succession' are relatively rare. Views of multiple developments tend to occur from elevated vantage points where vast panoramic views are afforded. Such views also tend to be within reasonably close proximity to the consolidated groups of windfarms in the wider northern and south-eastern extents of the. Cumulative views incorporating the more isolated Anarget Windfarm in the Bluestacks range occur from the two viewpoints selected within the south-western extents of the Bluestacks range in the outer western portion of the Study Area (VP7 and VP12) and also from views around Donegal Bay. **Table 11.10** also indicates that just over half of the cumulative views are afforded from linear receptors such as way-marked walking trails or major routes where viewers might encounter a number of wind farms 'sequentially' at different times in a journey scenario.

Cumulative Effects with Windfarms in the Central Study Area (Meenadreen and Meenbog)

A series of cumulative ZTV maps have been produced to examine the inter-visibility relationship between the Development and the Meenadreen and Meenbog windfarms in the near vicinity, both individually and collectively. The final cumulative ZTV examines the same collective relationship in respect of the Operational Barnesmore turbines as a means of comparison. The following cumulative ZTV maps are provided:

- Proposed Barnesmore repower / Meenadreen (**Figure 11.19**)
- Proposed Barnesmore repower / Meenbog (**Figure 11.20**)
- Proposed Barnesmore repower / Meenadreen and Meenbog (**Figure 11.21**)
- Operational Barnesmore / Meenadreen and Meenbog (**Figure 11.22**)

Figure 11.19 indicates that the Meenadreen turbines are theoretically visible in isolation within their immediate vicinity and in small patches to the south as would be expected in this terrain context, which falls generally to the south. There are also some small patches of exclusive Meenadreen visibility in the outer western and mid-eastern portion of the Study Area. By contrast, there are much larger areas of exclusive Development visibility in the north half of the Study Area and also within the vicinity of Barnesmore Gap. Combined visibility of the Meenadreen Windfarm and the Development occurs throughout the upland plateau landscape to the south-east and also throughout the drumlin farming landscape and Donegal Town / Donegal Bay to the south-west. Higher slopes throughout the Wider Study Area to the north, west and east also indicate combined visibility.

Figure 11.20 indicates a distinctly different cumulative visibility pattern between the Development and the permitted Meenbog development when compared to the Development's intervisibility relationship with Meenadreen Windfarm (**Figure 11.19**). That is, Meenbog tends to be exclusively visible in small patches to the east and north (3.9% of the Study Area). Whereas, the bulk of exclusive visibility for the Development occurs throughout the drumlin landscape in the southwestern quarters of the Study Area (17.4% of the Study Area) and also within the vicinity of Barnesmore Gap. Combined visibility is focussed in a broad patch of sparsely populated upland landscape centred around the Meenbog development and higher slopes and ridges throughout the Wider Study Area, particularly to the north and east.

When the surrounding developments of Meenadreen and Meenbog are combined for visibility comparison against the Development (**Figure 11.21**), the only notable area of exclusive visibility of the Development is within the Barnesmore Gap. Exclusive visibility of the other developments is predominantly to the south of Meenadreen and east of Meenbog corresponding with each, rather than both of these developments. Somewhat surprisingly, there are also notable patches of exclusive visibility of these two developments (i.e. without the Development) on higher slopes within the outer northern portions of the Study Area. Combined visibility of all three developments occurs for the majority (40.4%) of the 52.3% of the Study Area that has a theoretical visibility of any of these windfarms. Of particular note, the combined visibility of the Operational Barnesmore Windfarm with Meenadreen and Meenbog is a much lesser percentage (29.5%) of the overall 49.9% of the Study Area with visibility of any of these schemes than for the Development (**Figure 11.22**).

In terms of aesthetics, the cumulative view of turbines from the Development are seldom seen to be stacked in perspective with the Meenadreen or Meenbog developments from any of the representative viewpoint locations (**Table 11.10).** Where this might occur, it is likely to be within the sparsely populated upland plateau landscape context throughout the eastern quarters of the Central Study Area. In such instances, the turbines of these two cumulative developments (Meenadreen and Meenbog) are likely to be seen in the foreground and a strong sense of spatial perspective will highlight the distance between the turbines of each development, thereby reducing the potential visual clutter. Most often, the Development turbines will be seen with a linear layout along the same upland ridge as the Meenadreen turbines, which lie further south. There is a minor sense of 'sky lining' along this ridge, due to the considerable portion of the ridge that hosts wind turbines, but this is balanced by the fact that there will be 12 turbines fewer on this skyline, albeit less prominent, as a result of the Development. The scale of the Development turbines is less likely to generate a sense of scale conflict with the modern generation turbines from the Meenbog and Meenadreen developments. There is also a stronger sense of cohesion with the more dispersed layout of these nearby cumulative developments than with the tight spacing of the Operational Barnesmore Windfarm turbines.

Cumulative Effects with Windfarms in the Wider Study Area

It is not considered necessary to produce cumulative ZTV maps incorporating outlying windfarms (beyond ten km from the Site) as these are likely to be excessive in number, complex in nature and of little value in understanding the change to the overall cumulative scenario. Instead, it can be concluded that in elevated and open areas that afford views of the Operational Barnesmore Windfarm in conjunction with distant wind energy developments, particularly those to the north, there will be a very marginal increase in cumulative effect. This is on the basis that the visual impact assessment of the Development turbines has shown them to be more prominently visible than their considerably smaller, existing counterparts. This is ameliorated slightly by the fact that fewer turbines are likely to be visible and they are less densely stacked on the Barnesmore ridgeline. Furthermore, the vantage points between the Site and the outlying windfarms will always afford views of the respective developments in opposite directions i.e. 'in succession' rather than 'in combination' (same viewing arc). Otherwise, one of the developments will be seen as a very distant feature in the context of closer views of the other (i.e. when seen 'in combination'). In such circumstances there is not likely to be any material aesthetic effects such as turbine stacking or scale conflict. One minor exception to this scenario is the view of turbines from the Tievenameenta and Crighshane windfarms in the middle ground context of distant views of the Development from VP25 from the B72 at Shanvia. In this instance, it was considered that "*the relative scale of the turbines (small / modest distance versus tall / far distance) results in a perceived reduction in the depth of the scene as the Development turbines almost appear as a seamless continuation into the distance of the nearer developments. Whilst this may cause some*

degree of scale / contextual confusion for those examining the relationship, to a casual observer the relationship is likely to appear cohesive".

Cumulative Impact Summary

Overall, it can be concluded that wind energy development within the Study Area generally consists of consolidated groups of existing and permitted windfarms. These occur within the Derryveagh mountains at the northern perimeter of the Study Area, within the Croaghnameal uplands of the Central Study Area (including the Operational Barnesmore Windfarm) and also within Northern Ireland's Killeter uplands in the eastern portion of the Study Area. Thus, wind energy development is a familiar feature of the upland landscapes within the Study Area, but with a consistent and consolidated pattern that does not generate a sense of randomised dissemination throughout the Study Area. As the Development replaces an existing windfarm this consolidated pattern of development will not be further compromised.

Although the Development turbines are more conspicuous than their existing counterparts, there is nearly half the number of them, which reduces the numerical accumulation of turbines within the Study Area. The cumulative ZTV maps indicate a greater likelihood to see the Development in conjunction with the turbines from the surrounding Meenadreen and Meenbog developments than would occur in conjunction with the Operational Barnesmore Windfarm turbines. However, the increase is relatively modest and most of the areas subject to new cumulative views of these developments tend to be in sparsely populated uplands. Aesthetically, the taller Development turbines are also considered to correlate more readily in terms of scale and dispersed layout with the surrounding turbines from the Meenbog and Meenadreen developments and there are few instances in which turbine 'stacking' from separate developments could occur.

For the reasons outlined above, the cumulative impact of the Development is deemed to be **Low** relative to the Operational Barnesmore Windfarm.

11.4.4.1 Effects on Residential Amenity

A Residential Visual Amenity Assessment (RVAA) has been prepared as part of the overall consideration of residential amenity, which also includes for the likes of noise and traffic related effects. The assessment is undertaken in the context of the 'Landscape Institute Technical Guidance Note 2/19 for Residential Visual Amenity Assessment (March 2019)', wherein, the meaning of Residential Visual Amenity is defined as: *'the overall quality, experience and nature of views and outlook available to occupants of residential properties, including views from gardens and domestic curtilage'*.

Whilst RVAA may be considered in the context of the overall Landscape and Visual Impact Assessment, Technical Guidance Note 2/19 highlights that RVAA is a supplementary stage beyond normal LVIA and is interested in whether effects reach what has been termed the Residential Visual Amenity Threshold. This threshold is a high bar where it is considered that *"the effect(s) of the development on the 'private interest' is so great that it becomes a matter of 'public interest"*. The threshold is expressed throughout the TGN 2/19 in terms of the effect being 'so unpleasant, overwhelming, unavoidable and oppressive that the property would become an unattractive place to live'.

Best Practice in RVAA for windfarms has tended to employ a Study Area of two km, but in this instance there is only one dwelling within this distance of the nearest turbine and so in the interests of a rigorous and comprehensive appraisal, a three km radius Study Area is used for the Development. There are 52 properties contained within the RVAA Study Area.

The results of the RVAA suggest that the Residential Visual Amenity Threshold is not reached in the case of any of the properties within the Study Area and that the level of visual impact is similar in nature and scale to that assessed using representative viewpoints from public realm locations within the local community – i.e. the LVIA subject of this chapter.

11.5 Mitigation Measures and Residual Effects

Given the highly visible nature of commercial wind energy developments, it is not generally feasible to screen them from view using onsite measures as would be the primary form of mitigation for many other types of development. Instead, landscape and visual mitigation for windfarms must be incorporated into the early stage Site selection and design phases. In this instance the key consideration in the siting of the proposed turbines was an ecological one that relates to minimising insofar as possible the blanket bog habitat / land cover of the Site that occurs beyond the immediate footprint of the existing development (turbines bases / hard stands, Site tracks and substation).

Though principally a commercially driven decision, the use of fewer / taller turbines (than the Operational Barnesmore Windfarm turbines) can be considered an embedded aspect of mitigation that reduces the potential impact of using a similar number of larger machines. Furthermore, it was determined at an early stage of design that moving the proposed array eastward away from the edge of the escarpment above the sensitive Barnesmore Gap landscape setting would

avoid sensitive habitat, a designated area of Especially High Scenic Amenity (EHSA) and reduce the visual exposure of the proposed taller turbines from visual receptors within the Barnesmore Gap and Lough Eske environs. This was achieved by rendering the westernmost existing turbine locations redundant for future development.

Notwithstanding the above, the landscape and visual assessment is made in the context of the 'embedded' mitigation measures and thus, the assessment of effects is the equivalent of the assessment of residual (post-mitigation) effects in this instance.

11.5.1 Decommissioning Phase

Decommissioning phase landscape and visual impacts will be similar in nature (albeit reversed), but shorter in duration than construction stage effects. Given that construction stage landscape and visual effects are not considered to be significant, nor are decommissioning stage effects.

11.6 Summary of Significant Effects

This assessment has identified no potentially significant effects. The study area and methodology employed in the LVIA was consistent for those aspects of the Study Area that fall within Northern Ireland and the Republic of Ireland and relevant planning documents from both jurisdictions were consulted. The guidance for LVIA is also the same on both sides of the border and thus, it can be confirmed that there are also no significant transboundary effects.

11.7 Statement of Significance

This LVIA has assessed the landscape effects, the visual effects and the cumulative effects of the Development and is also informed by the findings of the Residential Visual Amenity Assessment. Based on the findings of the collective assessments it is not considered that the proposed Development will give rise to any significant effects.

11.8 References

1. Environmental Protection Agency (EPA) publication 'Guidelines on the Information to be contained in Environmental Impact Statements (2018) and the accompanying Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (2018).

2. Department of Environment Heritage and Local Government (DoEHLG) Wind Energy Planning Guidelines (2006) and Preferred Draft Approach to revising the 2006 Guidance published 2017.

3. Landscape Institute and the Institute of Environmental Management and Assessment publication entitled Guidelines for Landscape and Visual Impact Assessment (2013).

4. Scottish Natural Heritage (SNH) Guidance Note: 'Assessing the cumulative impact of onshore wind energy developments' (2012).

5. Scottish Natural Heritage (SNH) Siting and Designing Wind Farms in the Landscape Version 3 (2017).

6. Landscape Institute Technical Guidance Note 2/19 for Residential Visual Amenity Assessment (March 2019).