11.0 LANDSCAPE

11.1 INTRODUCTION

This chapter describes the landscape context of the proposed Yellow River Wind Farm and assesses the likely landscape and visual impacts of the scheme on the receiving environment. Although closely linked, landscape and visual impacts are assessed separately as the effects on the physical landscape and landscape character resulting from the development form the baseline of the assessment of visual impacts from key visual receptors.

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

Visual Impact Assessment (VIA) relates to changes in the composition of views as a result of changes to the landscape, how these are perceived and the effects on visual amenity. Such impacts are population based rather than resource based as in the case of landscape impacts. Visual impacts are measured on the basis of:

Visual Obstruction (blocking of a view, be it full, partial or intermittent) or;

Visual Intrusion (interruption of a view without blocking).

This landscape and visual impact assessment is based on:

Environmental Protection Agency (EPA) publication 'Guidelines on the Information to be contained in Environmental Impact Statements (2002) and the accompanying Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (2003)

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) Environmental Assessment Handbook –Guidance on the Environmental Impact Assessment Process Appendix 1: Landscape and Visual Impact Assessment (2011)

Scottish Natural Heritage (SNH) Guidance Note: Cumulative Effect of Wind Farms (2005)

11.1.1 Statement of Authority

This assessment report was prepared by Richard Barker, Senior Landscape Architect, MosArt Landscape Architects, Wicklow. MosArt have extensive experience at both project level and strategic planning for wind farms in Ireland. A summary of relevant experience is included below:

- Assisted the Department of Environment, Heritage and Local Government (DoEHLG) in drafting the Landscape Section of the revised Wind Energy Development Guidelines (2006);
- Responsible for the landscape section of the national attitude survey to wind farms commissioned by Sustainable Energy Ireland (2003);
- Drafted the DoEHLG Landscape and Landscape Assessment Guidelines (2000);
- Completed a wind farm strategy for Waterford County Council (2004);
- Landscape character and sensitivity classification of County Cork for wind farm planning for Cork County Council (2003);
- Involved in landscape impact assessment of over 100 on-shore wind farm projects;

- Prepared the landscape impact assessment reports for the Arklow Bank, Codling Bank and Oriel offshore wind farm projects; and

- Presented papers at numerous national conferences concerning landscape assessment for strategic planning and also for the planning and design of wind farms

11.1.2 Description of the Proposed Development

The developer proposes to locate the wind farm between the settlement of Rhode and the M6 motorway in County Offaly. The proposed development comprises of the following main elements:

- 32 turbines – with a maximum blade tip height of up to 166m as well as associated areas of hard standing;

- One permanent wind measurement mast;

- One substation and compound and associated areas of hard standing;

- Access tracks – approximately 5.5m wide; and

- Underground electric cabling.

11.1.3 Definition of Study Area

The Wind Energy Development Guidelines published by the Department of the Environment, Heritage and Local Government specify different radii for examining the zone of theoretical visibility of proposed wind farm projects (ZTV). The extent of this search area is influenced by turbine height, on the basis that taller turbines would be visible at greater distances, as follows:

- 15 km radius for blade tips up to 100 m; and

- 20 km radius for blade tips greater than 100 m.

In the case of this project, the blade tips are up to 166m high and, thus, the ZTV radius required is 20 km from the outermost turbines of the scheme. This 20 km radius, therefore, defines the extent of the Study Area for this project.

11.2 METHODOLOGY

Production of this Landscape and Visual Impact Assessment involved desktop studies and fieldwork comprising professional evaluation by qualified and experienced Landscape Architects. This entailed the following:

11.2.1 Desk Study

- Establishing an appropriate Study Area from which to study the landscape and visual impacts of the proposed wind farm;

- Review of a Zone of Theoretical Visibility (ZTV) map, which indicates areas from which the 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;

- Preparation of an initial VRP selection map from which the visualisation consultant can prepare 'wireframe images' at each potential VRP location for use during fieldwork. Wireframe images depict the proposed wind farm within the context of a basic three dimensional view of the terrain as seen from each selected VRP location.

11.2.2 Fieldwork

- Recording of a description of the landscape elements and characteristics within the Study Area generally and within view from each VRP.

- Selection of a refined set of VRP's for assessment. This includes the capture of panoramic photography and grid reference coordinates for each VRP location for the visualisation specialist to prepare photomontages;

11.2.3 Impact Assessment Methodology

- Description of the geographic location and landscape context of the proposed wind farm site;

- General landscape description concerning essential landscape character and salient features of the Study Area, discussed with respect to; landform and drainage; vegetation and land use; centres of population and houses; transport routes and; public amenities and facilities;

- Consideration of design guidance, the planning context and relevant landscape designations.

- Assessment of predicted landscape impacts.

- Assessment of predicted visual impacts using standard ZTV maps and cumulative ZTV maps as well as photomontages prepared from selected VRP locations.

- Discussion of mitigation measures.

- Assessment of residual impacts following mitigation

11.2.4 Assessment Criteria for Landscape Impact

When assessing the potential impacts on the landscape resulting from a wind farm development, the following criteria are considered:

- landscape character, value and sensitivity

- Magnitude of likely impacts; and

- Significance of landscape effects

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

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

Table 11.1: Landscape Value and Sensitivity

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

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

Table 11.2: Magnitude of Landscape Impacts

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:

	Sensitivity of Receptor				
Scale/Magnitude	*Very High*	*High*	*Medium*	*Low*	*Negligible*
Very High	Profound	Profound-major	Major	Moderate	Slight
High	Profound-major	Major	Major-moderate	Moderate-slight	Slight-imperceptible
Medium	Major	Major-moderate	Moderate	Slight	Imperceptible
Low	Moderate	Moderate-slight	Slight	Slight-imperceptible	Imperceptible
Negligible	Slight	Slight-imperceptible	Imperceptible	Imperceptible	Imperceptible

Table 11.3: Landscape Impact Significance Matrix

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).

11.2.5 Assessment Criteria for Visual Impact

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

Sensitivity of Visual Receptors

Unlike landscape sensitivity, the sensitivity of visual receptors has an anthropocentric basis. It balances the visual susceptibility of the viewer against the value of the view on offer. The susceptibility of a viewer to changes in a particular view relates to the occupation or activity they are engaged in at that location and whether views of the surrounding landscape are an important aspect of that occupation or activity i.e. hill walkers versus commuters. By comparison, the value of the view relates to the visual setting of the viewer and whether this is recognised through county designations and guidebooks or is likely to just have local value. A list of the factors considered by MosArt in estimating the level of sensitivity for a particular visual receptor is outlined in Section 11.4.2 below and these are used in Table 11.7 to establish visual receptor sensitivity at each VRP.

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 something of a 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 movement experienced i.e. within 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 often 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 as might be the case for a factory, a road or electricity pylons, for which the general consensus is likely to be almost wholly negative. Instead, the 2003 SEI funded survey of 'Attitudes towards the Development of Wind Farms in Ireland' found that "wind farms are seen in a positive light compared to other utility-type structures that could be built on the landscape".

Furthermore, a clear and comprehensive view of a wind farm might be preferable in many instances to a partial 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:

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

Table 11.4: Magnitude of Visual Impact

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.

	Sensitivity of Receptor				
Scale/Magnitude	*Very High*	*High*	*Medium*	*Low*	*Negligible*
Very High	Profound	Profound-major	Major	Moderate	Slight
High	Profound-major	Major	Major-moderate	Moderate-slight	Slight-imperceptible
Medium	Major	Major-moderate	Moderate	Slight	Imperceptible
Low	Moderate	Moderate-slight	Slight	Slight-imperceptible	Imperceptible
Negligible	Slight	Slight-imperceptible	Imperceptible	Imperceptible	Imperceptible

Table 11.5: Visual Impact Significance Matrix

11.2.6 Characteristics of the Development

Full technical details of the project are given in Chapter 2, Project Description. The following is a summary of the characteristics of the development:

- Total site area **1,002.234 ha**
- Development footprint **20.58 ha**
- Peat Depth Range **0 – 3.6m**. Average peat depth **0.5 m** (Whitefords, Soils & Geology Report Chapter 6)
- Construction of foundations for 32 wind turbines (Excavations diameter 18m, Depth 2m)
- Hardstands, including turning area, set down area & ancillary crane area **Total Area 1,995m^2**
- Temporary construction compound, approximately **50 m x 30 m**.

- Clear fell of plantation forestry area 1.5 ha per turbine (four turbines T1; T25; T26 and T27 = 6 ha) plus part of T2 area = 0.77 ha plus areas felled for new roads, total clear felling 3.63 ha. (2,425m of road x 15 m wide corridor) **Overall Clear fell area Total 10.4 ha**

- T11 scrub area to be felled = **1.5 ha**

- Construction of approximately **18,275 m** of new access tracks having a minimum finished width of 5 m with passing bays

- Upgrading of approximately **5,916 m** of tracks by widening, strengthening and bend improvement.

- Installation of site drainage network.

- Installation of underground ducts and cabling from each turbine to the substation. Cable trenches, which will typically be 0.5 – 1.0m wide and 0.75 – 1.00m deep, will generally follow the edge of the site access tracks and will be installed in conjunction with the tracks. The excavated material will be laid alongside the trench for use in reinstatement following the laying of cables.

- Construction of an Substation Control Buildings and Compound on site area **1,850 m^2**

- Erection of 1 permanent meteorological mast, comprising a lattice steel tower.

- Stream/River crossings **9**

- Upgrade of existing bridges **1**

- The terrain is sloping with gradients between 1:25 and 1:100.

The development site does not require a borrow pit as required stone and gravel will be sourced from local quarries.

11.3 RECEIVING ENVIRONMENT

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 proposal will be assessed. This also includes reference to any relevant landscape character appraisals and the current landscape policy context (both are generally contained within County Development Plans).

A description of the landscape context of the proposed wind farm site and wider study area is provided below under the headings of landform and drainage, vegetation and land use, centres of population and houses, transport routes and public amenities and facilities and the site context. 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 proposed development. The visual resource will be described in greater detail in Section 9.3.2.

Landform and Drainage

This is generally a very flat landscape that is occasionally punctuated by small, but prominent hills. These hills tend to rise in the order of 50m to 100m above the prevailing ground level (80m a.s.l). The highest is Croghan Hill near the centre of the study area, which reaches 234m a.s.l.

The study area is located on something of a midlands watershed with the head waters of several major river systems emanating in different directions from here. In this flat and peaty area these headwaters are often manifest as small and meandering streams and drains. Lough Ennell is the largest water body in the study area (northwest segment) and this drains via the River Brosna in a south-westerly direction towards the Shannon system. The Yellow River emanates in the centre of the study area and drains eastwards to join the River Boyne in it north-easterly journey to the east coast.

Vegetation and Land Use

The vegetation and land use within the study area is largely dictated by soil type. Substantial parts of the central and southern portions of the study area are contained

in peat bog with poorly drained peaty soils at the fringes. In such areas the principle land use in evidence is that of commercial scale peat extraction which was used to fuel the iconic peat fired power station at Rhode. The bog fringes tend to be in a combination of marginal pasture, unmanaged scrubland and extensive commercial conifer plantations. Surrounding the bogs in areas with better drainage, pastoral farmland and cropping become the predominant land uses. These occur as geometric fields defined by broadleaf hedgerows and tree lines.

Figure 11.1 Elevated view over the central study area

Centres of Population and Houses

The two most significant settlements within the study area are Mullingar in County Westmeath and Tullamore in County Offaly. Mullingar is located approximately 18km to the northwest of the site, whilst Tullamore is a similar distance to the southwest. Edenderry in County Offaly is also a substantial sized settlement and this is approximately 10km to the southeast of the site.

The nearest settlements to the proposal site are Rhode which is approximately 2km to the southeast and the crossroad settlement of Castlejordan which is a similar distance to the east. Three similar sized settlements line the old N6 (now the R446) including Milltownpass, Rochfortbridge and Tyrrellspass. These lie between 5 and 7km from the northwestern quarters of the proposal site. The settlements of Daingean and Kinnegad are similar distances to the south and northeast of the site respectively.

There are numerous small villages and crossroad settlements serving the dispersed rural communities throughout the wider study area. Farmsteads are spread relatively

evenly throughout the arable portions of the landscape with slightly higher concentrations in the vicinity of settlements.

Transport Routes

At a junction near Kinnegad the M4 motorway from Dublin veers northwest towards Mullingar and branches into the M6 motorway, which runs in a westerly direction towards Galway. Through the centre of the study area the M6 runs parallel to the northwest of the proposed turbine array. It remains less than 6km away from the nearest turbines for a distance of more than 10km. The M4 motorway is at its closest point to the site where it connects with the M6 at Kinnegad.

The N52 national secondary road runs southwards between Mullingar and Tyrrellspass to the northwest of the site and then between Kilbeggan and Tullamore along the western periphery of the study area. It is nearest the site where it links with the M6 at Tyrrellspass. The N80 national secondary route skirts the south-western periphery of the study area to the south of Tullamore.

There is a relatively dense network of regional roads throughout the study area. Those closest to the site include the R400 which dissects the proposed wind farm as it links from the M6 to Rhode. The old N6 national road has been reclassified as the R446 regional road since the completion of the M6 motorway. It runs parallel, several kilometres to the north of its successor and thus, it remains within 10km of the site from Kinnegad to Tyrrellspass.

Figure 11.2 M6 motorway near Kinnegad

Public Amenities and Facilities

The key public recreational facility within the study area is the network of canals and tow path walks. These historic transport routes also link many of the towns and villages within the study area. The main arm of the Grand Canal connects from beyond Tullamore in the west and passes through the middle of the study area linking Daingean and Edenderry on its journey towards Dublin. Its associated walking path is known as the 'Grand Canal Way'. The Royal Canal also dissects the north-eastern portion of the study area as it links between Mullingar and Dublin. It is closely aligned with the national railway line from Dublin to the northwest, which runs adjacent to its southern bank for much of its journey through the study area. The towpath on the northern bank is known as the Royal Canal Way. A second arm of the Grand Canal, 'the Barrow Line' passes through Rathangan, which is near the south-eastern periphery of the study area. The canal then travels in a north-easterly direction before joining the main arm of the canal just to the southeast of the study area. Its associated walking path is known as the 'Barrow Way'.

Figure 11.3 Grand Canal and associated towpath (Grand Canal Way) at Ticknevin Bridge

Croghan Hill is an extinct volcano that lies a short distance to the southwest of the proposal site. It is a prominent hill in the context of the vast midland bogs and thus, it has been a focus of settlement in this area since the bronze age, based on the dating of a burial cairn on its summit. Although most of the hill appears to be in private ownership there are recognised local walking routes to the summit past an ancient graveyard high on its eastern slopes.

Lough Ennell is a popular location for fishing and boating as well as other passive recreational pursuits. Belvedere House is a popular tourist attraction on the eastern shores of the Lough. Lilliput at the southern end of the Lough has an adventure centre and coffee shop. Jonathan Swift Park at Lilliput is named in honour of the legend that the author was inspired by this location when writing Gulliver's Travels.

Site Context

The site is actually a relatively dispersed sequence of land holdings that run in a broadly linear pattern in parallel to the M6 motorway alignment. Whilst this area is largely contained in cutaway bog, only three of the proposed turbines are on this land cover type. The remainder are located on rehabilitated zones and scrubland at the fringes of the bog or within farmland adjacent to the bog.

Figure 11.4 Cutaway Bog near the centre of the proposal area – Lagan Cement plant in the background

Figure 11.5 Typical combination of land uses within the flat landscape context of the site

11.3.2 Landscape Policy Context and Designations

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

The Wind Energy Development Guidelines (2006) provide guidance on wind farm siting and design criteria for a number of different landscapes types. The proposal site is considered to be most characteristic of the 'Flat Peatland' landscape type from the Guidelines in terms of its flat terrain, openness and vast scale. However it also includes some elements of the 'Hilly and Flat Farmland' landscape type in terms of land cover pattern. Siting and design recommendations for these landscape types include the following:

Flat Peatland

Location – "Wind energy developments can be placed almost anywhere in these landscapes from an aesthetic point of view."

Spatial extent - "The vast scale of this landscape type allows for a correspondingly large spatial extent for wind energy developments."

Spacing - "Regular spacing is generally preferred, especially in areas of mechanically harvested peat ridges"

Layout - "In open expanses, a wind energy development layout with depth, preferably comprising a grid, is more appropriate than a simple linear layout."

Height - "Aesthetically, tall turbines would be most appropriate."

Hilly and Flat Farmland

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

"Location on ridges and plateaux is preferred…"

"Elevated locations are also more likely to achieve optimum aesthetic effect."

Spatial extent - "This can be expected to be quite limited in response to the scale of fields and such topographic features as hills and knolls"

Spacing - "The optimum spacing pattern is likely to be regular, responding to field pattern…However … a balance will have to be struck between adequate spacing to achieve operability and a correspondence to field pattern."

Layout - "The optimum layout is linear, and staggered linear on ridges and hilltops but a clustered layout would also be appropriate on a hilltop"

Height - "Turbines will tend not to be tall … the more undulating the topography the greater the acceptability of an uneven profile."

Offaly County Development Plan 2009 – 2015

The Offaly County Development Plan does not contain a Landscape Character Analysis, but objective O16-04 states that; "It is an objective of the Council to evaluate the need for Landscape Character Analysis in the county". Nonetheless, a classification of landscape sensitivity for various landscape types is provided. This utilises three sensitivity categories including high, medium and low. General urban and farming areas fall into the low category, whilst cutaway bogs are identified as moderate sensitivity areas. A number of landscape features, habitats and natural heritage areas have been identified as being of a high sensitivity. These are included in table 16.1 of Volume I of the County Development Plan, an excerpt of which is provided below;

Areas of High Sensitivity and Areas of High Amenity	
Waterways, Wetlands	River Shannon, Grand Canal Lough Boora Parklands[1], Pallas Lake
Upland Areas	Slieve Bloom Mountains, Croghan Hill[2]
Peatlands	Clara Bog, Raheenmore Bog
Eskers	Eiscir Riada, Clara Eskers Other Eskers
Archaeological and Historical	Clonmacnoise Durrow Monastic Site and Demesne

Excerpt of Table 16.1 from Volume I of the Offaly County Development Plan (2009 – 2015)

From table 16.1 the most relevant areas of high sensitivity and amenity with regard to this proposal are the Grand Canal, Croghan Hill, and Raheenmore Bog. The Grand Canal is approximately 5km to the south of the site at its nearest point, whilst Croghan Hill and Raheenmore Bog are approximately 2km and 4km respectively from south-western corner of the proposal site.

Table 16.2 of the development plan summarises the landscape sensitivity categories in terms of a description; acceptability for development and; need for landscaping and appropriate design. Table 16.2 is also provided below;

Landscape Sensitivity	Description	Acceptability of Development for consideration	Need for Landscaping and Appropriate Design
LOW	This class largely encompasses the county's main urban and farming areas. These areas comprise natural enclosing features (e.g. topography, vegetation) which have the capacity to absorb a range of new development.	A wide range of Development subject to appropriateness / conditions.	High
MODERATE	Areas which are generally 'open' in character with intrinsic quality and moderate capacity to absorb new development.	Some form of development subject to appropriateness / conditions.	Very High
HIGH	• Identified features or areas of natural beauty or interest which have extremely low capacity to absorb new development. • Areas included within this class are designated Areas of High Amenity.	Very limited development subject to appropriateness / conditions.	Essential

Excerpt of Table 16.2 from Volume I of the Offaly County Development Plan (2009 – 2015)

Table 16.5 of the County Development Plan provides a summary of the landscape characteristics and sensitivities of each of the previously identified High Sensitivity areas from table 16.1. The relevant text relating to the Grand Canal, Croghan Hill and Raheenmore Bog is provided below:

b) The Grand Canal Corridor

The Grand Canal traverses the county from Edenderry to Shannon Harbour, a distance of approximately 64 kilometres. It passes through the towns of Daingean, Edenderry (spur line) and Tullamore and the villages of Belmont, Rahan, Pollagh and Shannonharbour. There is a disused Kilbeggan branch line, which is now used as a walking route. The canal traverses large tracts of boglands and is bordered by hedgerows dating back 200 years and small fringes of wild vegetation along the canal bank.

- The Grand Canal is a focus for a wide range of uses, in particular, for recreation and tourism purposes.

- The visual quality of the surrounding areas is intrinsic to maintaining the attractiveness of the Grand Canal corridor.

- Hence, the corridor particularly outside of settlements, is especially sensitive to large development structures, insensitively designed sporadic housing and large-scale land uses such as extractive industries.

- Offaly County Council will have regard to the Waterway Corridor Study 2002 (and any relevant successive studies) in the development management process.

e) Croghan Hill and its Environs

Croghan Hill and its environs including Raheenmore Bog (which was designated a nature reserve under the Wildlife Act 1976) and Cannakill Deserted Medieval Village, are the main elements of this high amenity area. Croghan Hill is an extinct

volcano which lies 234 metres above sea level and commands views over north and east Offaly and the surrounding counties.

- This is an area of archaeological and high amenity value and is highly sensitive to new developments.

- Croghan Hill, due to its elevated nature in comparison to its surrounding flat landscape, impacts on the visual quality of the surrounding area and is highly sensitive to developments of any nature, in particular sand and gravel extraction.

- The Council recognises the scenic quality and recreational value of the Croghan Hill area including Croghan Hill, Raheenmore Bog and Cannakill Deserted Medieval Village.

f) Bogland Areas

County Offaly contains a number of raised and blanket boglands. Clara bog, an important Natural Heritage Area (NHA), is also important for its visual amenities and scenic qualities. Other important bogland areas include the All Saints Bog, Sharavogue Bog, Slieve Bloom Blanket Bog and Raheenmore Bog.

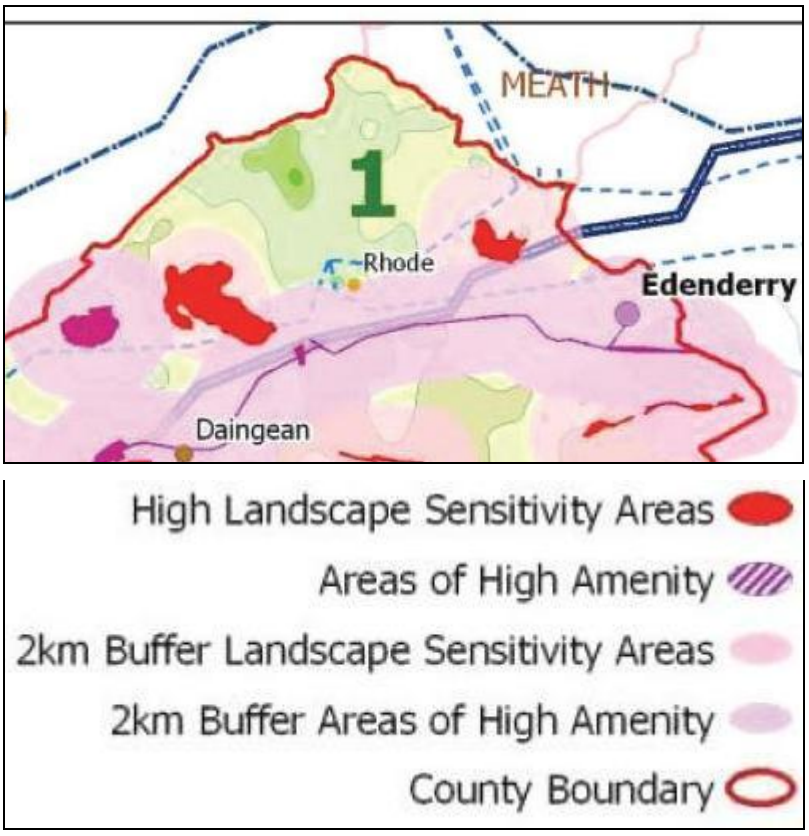
- Offaly County Council has a strong policy of conservation of a representative sample of peatlands and the protection of peatland habitats.

Relevant landscape policies include;

P16-02 It is Council policy to control development as per the county's landscape classification listed in Tables 16.2-16.5.

P16-03 It is Council policy to protect and preserve the county's Areas of High Amenity, including the Slieve Bloom Mountains, Clonmacnoise Heritage Zone, River Shannon, Lough Boora Parklands, Grand Canal, Croghan Hill, Raheenmore Bog, Pallas Lake, Clara Bog and eskers, Eiscir Riada, other eskers and Durrow High Cross, Abbey & surrounding area from development(s) which would be visually obtrusive or which would detract from the intrinsic character and environmental quality of the landscape.

A wind energy strategy has been prepared for Offaly, which forms part of the County Development Plan. Areas of high sensitivity are identified in the constraints mapping and this includes the Grand Canal, Croghan Hill and Raheenmore Bog in the vicinity of the proposal site. High sensitivity areas are allocated a 2km buffer zone, which leaves 12 residual areas within the county that are then rated in terms of suitability for wind energy development. The result of this analysis is that half of the residual areas are considered suitable and the other half, not suitable. The area in which the site is contained is identified as Area No. 1 'North of Rhode'.



Excerpt from Figure 8. 'Areas of Wind Energy Development Potential' in the Offaly Wind Energy Strategy 2009

The consideration for this area states:

"Having regard to proximity to existing substation access, roads, cutover bog, large landholdings, precedent of existing visually intrusive infrastructure, this area is highly suitable. There is some sensitivity to the overlooking of the western portion of this area from protected views."

The subsequent decision is that Area No. 1 'North of Rhode' is;

Suitable *for large-scale Wind farms*

Westmeath County Development Plan 2008 - 2014

The proposal site is adjacent to the border of County Westmeath to the north. Given the close proximity and therefore the potential to influence the landscape character of County Westmeath it is necessary to consider cross-boundary landscape designations and policies.

A Landscape Character Assessment has been prepared for County Westmeath and incorporated into the development plan. The area adjacent to the site is identified as being part of landscape character unit 10 – 'Lough Ennell and South-Eastern Corridor'. A description of this landscape unit and its associated relevant policies is provided hereunder;

10. Lough Ennell & SE Corridor

This area comprises of pasture land of mixed productivity. Lough Ennell is situated to the western side of this LCA and is designated as an Area of High Amenity, an SPA and an SAC. A number of preserved views are listed from the N4 between Tyrrellspass and Rochfortbridge. The area around Lough Ennel and particularly to the south of the Lake is characterised by scrub land with a mixture of marsh, bog, and poor pasture land. There is also a large tract of bog to the east of Rochfortbridge and Milltownpass along the County Boundary. The bog areas in this LCA are mainly exploited but some have been left intact. This area has a large number of old demesnes, these are easily recognisable in the landscape with the existence of fine mature hardwood trees and estate walls in some cases. Settlements within this landscape have developed mainly along the main road network. These include Kinnegad, Milltownpass, Rochfortbridge, and Tyrrellspass along the N6. Recreational areas have been developed on the shores of Lough Ennell including Ladestown, Liliput, and Tudenham. The N6 is currently being upgraded and this shall see a new N6 dual carriageway traversing the southern part of the LCA. The N52 by-pass has also added to the transport corridor around Mullingar.

Wind Farms;

P-EH75 This area is considered as having medium capacity for wind farms. The area to the east of the LCA is considered to be potentially most suitable with extensive cutover peatland offering suitable sites as one area of potential.

Future of Cutaway Peatland;

P-EH76 Within the next 20–30 years, large areas of peatland will be exhausted and provide tracts of land that have potential for agriculture, habitat and amenity. The Council in consultation with relevant agencies will explore future potential of cut away peatlands that may offer opportunities for habitat creation or amenity and recreation areas such as community woodlands or parklands.

Meath County Development Plan 2007 - 2013

The proposal site lies a short distance from a section of the County Meath border and thus, it is deemed necessary to consider the landscape related designations and polices of the County Development Plan. As with County Westmeath, a landscape character assessment has been prepared for County Meath. The landscape character unit closest to the proposal site is No. 15 – 'Southwest Lowlands' (Map 02). The landscape sensitivity of each character unit is indicated on Map 03 and in the case of Unit 15 this is deemed to be 'High'. Map 04 then indicates landscape capacity in relation to different development types within each landscape unit. For Unit 15 a medium capacity for wind turbines is indicated. This capacity is detailed further in the descriptive text for Unit 15 in the Landscape Character Assessment and is provided below:

Medium potential capacity to accommodate wind farms or single turbines because views within this LCA are generally short range and limited by topography and vegetation so there are opportunities for choosing locations where visual impacts are minimal. However, such development could cause the loss or degradation of hedgerows and trees and archaeology so location will be a critical consideration.

11.3.3 Visual Baseline

Only those parts of the study area that potentially afford views of the proposed wind farm are of interest to this part of the assessment. Therefore, the first part of the visual

baseline is establishing a 'Zone of Theoretical Visibility' and subsequently, identifying important visual receptors from which to base the visual impact assessment.

Zone of Theoretical Visibility (ZTV)

A computer automated study of the zone of theoretical visibility (ZTV) was carried out in respect of the proposal. The purpose of this exercise is to identify the 'theoretical' extent and degree of visibility of turbines. This is a theoretical exercise because it is based on topography only at 10 m contour intervals and does not allow for intermittent screening provided by, for example, hedgerows, forests or buildings and does not involve the actual height of crests (but using the nearest 10m contour below). Thus the ZTV map, assuming no screening, represents a 'worst-case-scenario' with respect to viewing exposure. For the purposes of this project a radius of 20 km was used for the ZTV as discussed earlier.

The following key points should be noted from the ZTV study:

- The vast majority of the landscape within 10km of the centre of the proposed development is afforded full theoretical visibility of all turbines. The only exception is an area in the 'view shadow' of Croghan hill to the southwest. This is a typical ZTV scenario for flat midland sites, but from experience there is a large discrepancy between theoretical and actual visibility in such landscapes due to hedgerow screening.

- Beyond 10km theoretical visibility reduces significantly in the western half of the study area corresponding to the broad corridor of the River Brosna which includes Lough Ennell. Theoretical visibility then increases again on the opposite shore of Lough Ennell at the north-western edge of the study area reflecting a gentle rise in the landform.

- Relatively comprehensive theoretical visibility occurs to the edge of the study area throughout the eastern quarters due to the flat nature of the landscape and the fact that the site lies at the head of the broad water catchments of the Boyne and Barrow Rivers. This is relevant because view sheds and watersheds are often closely related.

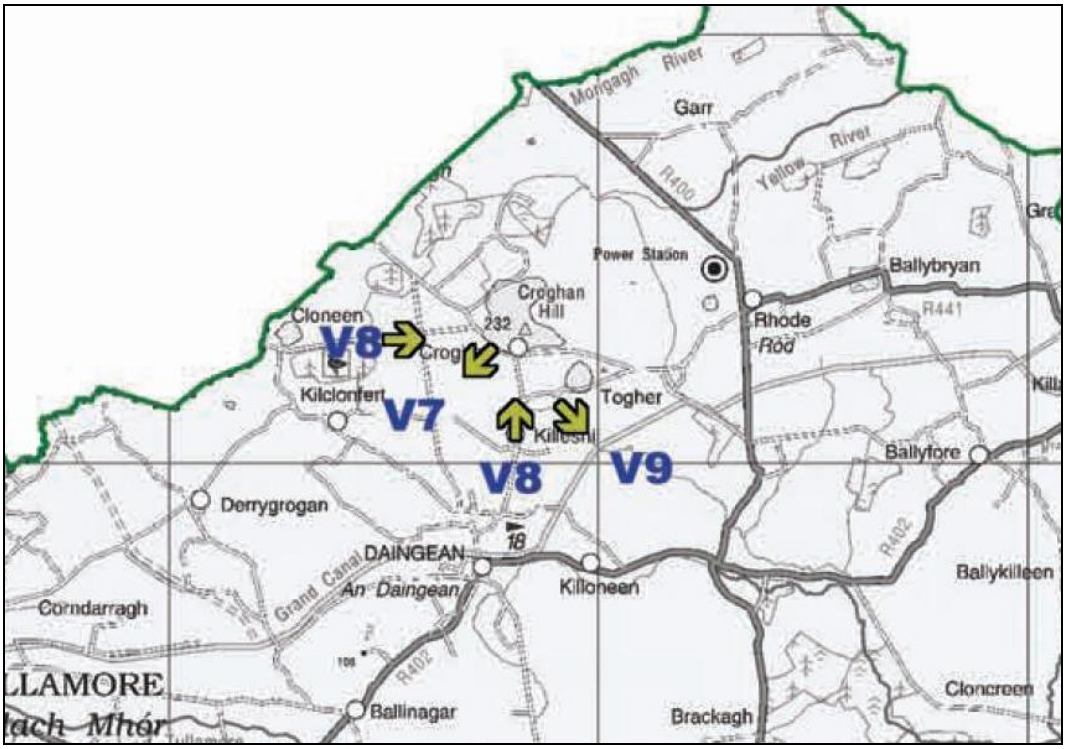
- Due to the diminishing scale of the proposed turbines at increased distances, actual visibility of the proposed development from beyond 10km is likely to be limited to elevated hills with very little in the way of foreground screening. From experience, ZTV maps are of limited value in flat rural landscapes.

Views of Recognised Scenic Value

Views of recognised scenic value are primarily indicated within County Development plans in the context of scenic views/routes designations, but they might also be indicated on touring maps, guide books, road side rest stops or on post cards that represent the area. The following sections set out the published views of scenic value known to occur in the area.

Offaly County Development Plan (2009-2015)

The Offaly County Development Plan (2009 – 2015) identifies a total of 19 'views and prospects of special amenity or special interest' in table 16.6. These are also indicated on map 16.10. Four of these are potentially relevant to this proposal being clustered several kilometres to the south and west of the proposal site in the vicinity of Croghan Hill. As can be seen from map 16.10, Croghan Hill is considered as both a view and a prospect (views of and views from), but these are essentially reverse views to and from the south and west, whereas the proposal is to the northeast of the Hill. Nonetheless, these designated views were a key consideration in the Viewshed Reference Point (VRP) selection process for this proposal.

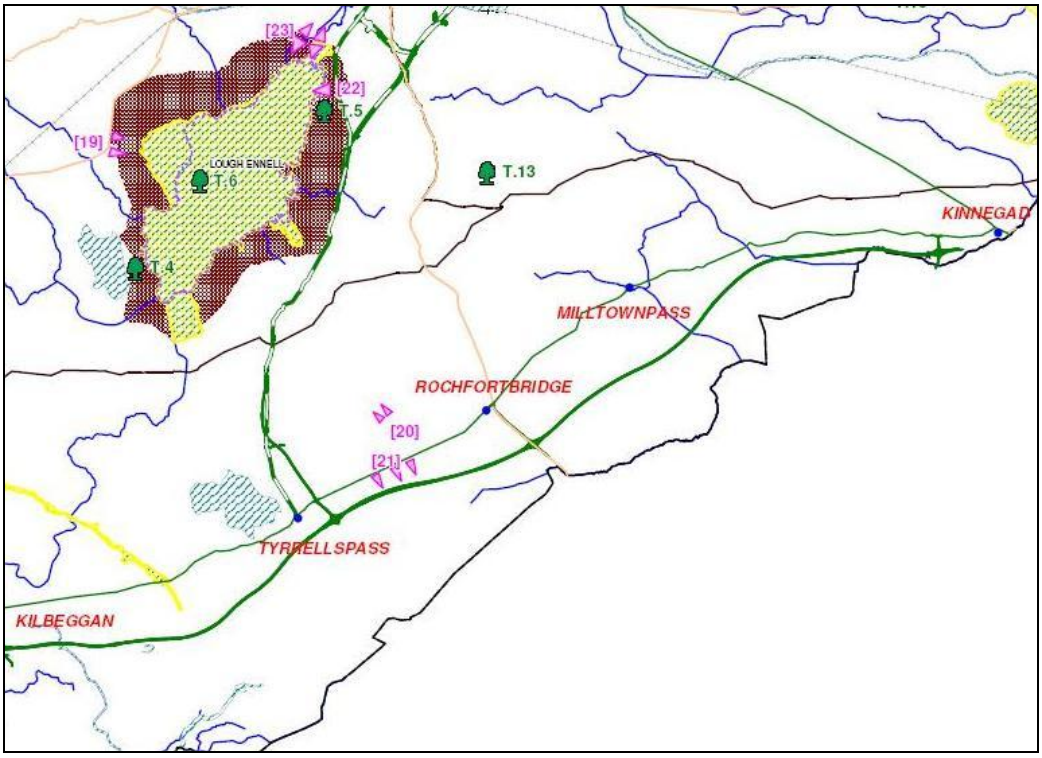


Map Ref	View From	View To
V7	Road No. L-01018 in the townlands of Cannakill and Croghan Demesne.	Slieve Bloom Mountains.
V8	Townlands of Barnan, Kilduff, Old Croghan, Croghan Demesne, Down.	Views towards Croghan Hill and Boglands.
V9	Townlands of Grovesend and Coole.	South to boglands.

Excerpts from Map 16.10 and table 16.6 of the Offaly County Development Plan (2009 – 2015)

Westmeath County Development Plan 2008 - 2014

The Westmeath County Development plan contains a 'Countywide Designations' map which includes 'Views to be preserved or improved'. Views 19 and 21 are potentially relevant to the proposal being within the study area and oriented in the direction of the scheme. These were both investigated during fieldwork and subsequently only view No. 21 from the old N6 was retained as a VRP from which to assess the visual impact of the proposal.



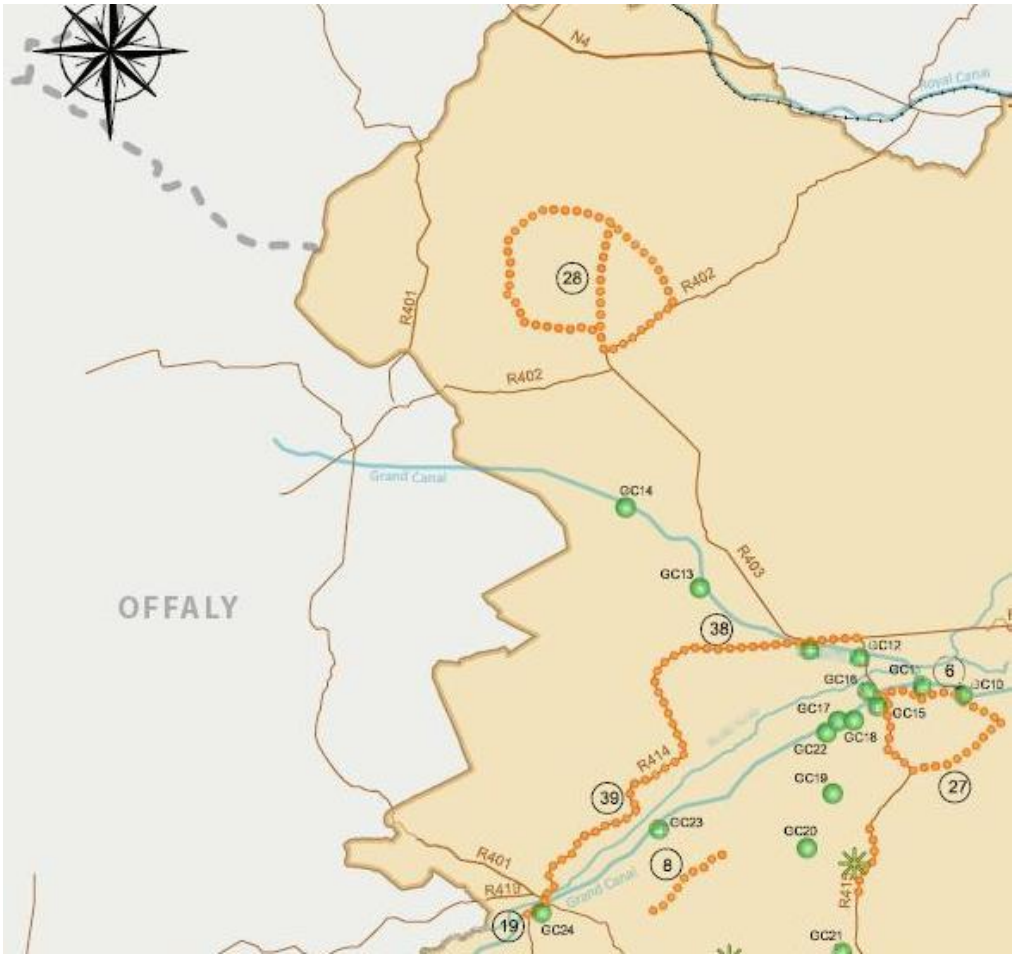
Excerpt from Map 8.3.4 of the Westmeath County Development Plan (2008-2014) showing views to be preserved (pink)

Meath County Development Plan 2007 - 2013

Map 05 – 'Visual Amenity' of the Meath landscape Character Assessment which is incorporated into the Meath County Development Plan 2007 – 2013 indicates protected views. Only one potentially relevant view with regard to this proposal is shown. This is described as 'Views over Rathmoylan Farmland' and it is at the north-eastern perimeter of the study area. This was investigated during fieldwork for potential inclusion as a VRP in this visual assessment, but a view of the proposed development would not be afforded.

Kildare County Development Plan2011-2017

Map 14.3 of the Kildare County Development Plan indicates scenic routes and viewpoints. Within the study area there are two relevant scenic routes (Nos. 28 and 38). Whilst there are also several scenic views they relate to contained views of the Grand Canal. The two scenic routes were investigated during fieldwork and VRPs have been selected on each of them for assessment herein.



Excerpt from Map 14.3 of the Kildare County Development Plan (2011-2017) scenic routes and scenic views

Identification of Viewshed Reference Points as a Basis for Assessment

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

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

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

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

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

Key Views

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

Designated Scenic Routes and Views

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

Local Community Views

This type of VRP represents those people that live and/or work in the locality of the wind farm, usually within a 5km radius of the site. Although the VRP's are generally located on local level roads they also represent similar views that may be available from adjacent houses. The precise location of this VRP type is not critical, however, clear

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 VRP's is necessary in order to sample the spectrum of views that would be available from surrounding dwellings.

Centres of Population

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

Major Routes

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

The precise location of this category of VRP is not critical and might be chosen anywhere along the route that provides clear views towards the proposal site, but with a preference towards close and/or elevated views. Major routes typically provide views experienced whilst in motion and these may be fleeting and intermittent depending on screening by intervening vegetation or buildings.

Amenity and Heritage Features

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

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

VRP No.	*Location*	*Direction of view*
KV1	Sliabh na Callaighe	S
KV2	Hill of Tara	SW
DR1	R446 at Garrane	E
DR2	Local Road at knockcor	W
DR3	Local Road at Kilcorby	NE
DR4	Local Road at Down	NNE
DR5	R414 at Lullymore	NW
LC1	Local Road at Baltinoran	S
LC2	Local Road near Castlejordan	W
LC3	Local Road at Croghan Hill	NE
LC4	Local road at Togher	N
LC5	Garr Road at Corbetstown Bridge	NW
LC6	Garr Road at Garr	E&W
LC7	Local Road at Ballyburley	NW
CP1	Milltownpass	S
CP2	Rochfortbridge	SE
CP3	Tyrrellspass	E
CP4	Rhode	N
CP4 North	Rhode (Garr Road roundabout)	NE
CP5	Edenderry	NW
CP6	Mount Lucas	N
CP7	Clonbulloge	NNW
MR1	N4 at The Downs	S
MR2	M6 overpass at Kinnegad	SW
MR3	M6 at Hardwood	S
MR4	R400 overpass of M6	SE
MR5	R400 at Derrynagreenagh	E & W
AV1	R161 / Royal Canal Way at Molrick	SW
AV2	Grand Canal Way at Rathmore	NW

Table 11.6: Outline Description of Selected Viewshed Reference Points (VRPs)

11.4 POTENTIAL IMPACTS OF THE DEVELOPMENT

11.4.1 Landscape Impact

Landscape Character, Value and Sensitivity

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

As described above, the landscape directly surrounding the site is mainly that of pastoral farmland, conifer forests and vast areas of peatland fringed by marginal scrubland and rehabilitated cutaway bog. A significant motorway corridor skirts just to the north of the site and a regional road passes through the middle of it. In terms of large scale industry and infrastructural developments there is the familiar form of the Lagan Cement plant near Kinnegad as well as electricity peaking plants at Rhode and Ballykilleen. Thus, the character of this landscape is strongly influenced by human intervention and modification, particularly in relation to energy production. The most distinctive aspects of the immediate site context are the vast openness of the peat bogs and the scale of the extractive operations that occur on them. There is little in the way of land form containment in this area other than Croghan Hill which is only prominent in the context of the otherwise flat surroundings. Overall it is considered that the site and its immediately surrounding landscape has a productive landscape character with few sensitive features. Furthermore, the scale of the production and infrastructure in terms of peat harvesting, energy generation, forestry and the major transport corridor provide a sense that this landscape serves a regional or national demand rather than just a local one.

Several sensitive landscape features occur in relatively close proximity to the south of the site including Raheenmore Bog, Blackcastle Bog, Croghan Hill, and the Grand Canal. The bogs are not particularly distinctive landscape features in the context of the vast peatlands surrounding them. Raheenmore Bog is the deepest raised bog known in Ireland and is therefore sensitive in a geological and hydrological sense due to its rarity. Both of these bogs have habitat value, however, in the broader context they have little influence on the landscape character of this area.

Croghan Hill is a distinctive landscape feature that influences the surrounding landscape character on the basis that it is an isolated, prominent landform in an

otherwise vast, flat landscape. *"Croghan owes its prominence to its unique geology – which gives it a distinct ecological character also – but it also has special cultural significance, because there is a magnetism about hills like this that draws the eye and stirs the imagination …"* (Feehan 2011). It acts as a familiar reference point within the local landscape and has been considered a strategic feature in this region for millennia, based on evidence of settlement and use. Therefore, Croghan Hill has landscape value in terms of both the distinctiveness of the land form and its cultural heritage associations.

The Grand Canal was once an important transport corridor linking the River Shannon and the midlands with Dublin. Its current value primarily relates to recreation and as a public right of way. It is a pleasant linear waterway that affords some visual amenity, but due to its containment it has little influence on the landscape beyond a short distance either side of the canal corridor. It has more influence on the townscape of the settlements it passes through, such as Daingean and Tullamore, as it has dictated urban form and has become a defining feature.

The sensitive landscape features outlined above are relatively isolated from each other in a physical sense and also in terms of the particular nature of their sensitivities. Only Croghan Hill influences the surrounding landscape character to a noticeable degree. This is appropriately reflected in the Offaly County Development plan, which identifies these features as being sensitive in landscape terms, but limits their protection to a 2km buffer from wind farm development.

The broader landscape in the southern half of the study area is typical of that described for the site and its immediate surrounds. The flat landscape is cloaked in a combination of pastoral farming and some tillage, with large cutaway bogs particularly to the south of Mount Lucas. Again, the transitional land between these landscape types is contained in scrub or coniferous forest plantations.

In the northern half of the study area beyond the R466 (the old N6), the terrain becomes slightly more undulating with a subtle plateau of comparatively high ground to the east of substantial sized Lough Ennell. This elevated zone is also a pastoral landscape, but in a more classical sense with tall broadleaf tree lines and several demesne landscapes. When coupled with the naturalistic influence of Lough Ennell, the pleasant rural character of this area is considered to be of a high integrity.

There are currently no operational wind farms within the study area and such development, whilst not being an unfamiliar component of the wider region, is not characteristic of this locality.

In summary, there are specific landscape features within relatively close proximity to the site that are deemed to be of high sensitivity in accordance with the development plan designations. However, other than Croghan Hill they have limited influence on the landscape character even in relatively close proximity. There are also parts of the wider landscape that have an anthropogenic rural character, but of a relatively high degree of integrity with modest levels of development. Notwithstanding, the landscape character in the immediate context of the site is strongly anthropogenic being influenced by strategic scale transport infrastructure, peat extraction, power generation and timber production. The fact that commercial scale wind farms do not currently exist within the study area makes it marginally more sensitive to the introduction of this new form of development. On balance of all of these factors, landscape sensitivity is deemed to be **low**.

Magnitude of Landscape Effects

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

It is considered that the proposed wind farm development will have a relatively minor physical impact on landscape within the site as none of the proposed development features (turbines, substation, anemometer mast) have a significant 'footprint'. The topography and land cover of the site will remain largely unaltered with excavation being limited to tracks and areas of hard standing for the turbines. Within a flat landscape such as this, earthworks requirements are considerably less than on upland or sloping sites. Excavations will tie into the existing contours and will be the minimum required for safe working. Any temporary excavations or stockpiles of material will be re-graded to marry into existing site levels and reseeded appropriately in conjunction with advice from the project ecologist. The land cover of the site will only be interrupted as necessary to build the structures of the

development and to provide access. The current grazing and forestry regimes will be able to continue below the wind turbines without significant disruption following the construction phase.

The principal landscape impact will be the change in character of the immediate area due to the introduction of large scale structures with moving components. These will be a prominent landscape feature within the local landscape as would be the case for a commercial scale wind farm placed into almost any landscape context. Nonetheless, this is generally a vast open landscape context, within which, the proposed wind farm will be easily assimilated in terms of scale. The least open landscape context of the study area is the pastoral one. This is due to the moderate degree of enclosure provided by hedgerows. However, within the site and its immediate surrounds, field sizes tend to be large and there is unlikely to be a sense of scale disparity between the turbines and the land use patterns below.

The proposed wind farm represents the introduction of a new and uncharacteristic form of development within both the immediate and wider landscape context of the study area. Thus, the landscape impact is marginally greater than if wind farms were already a familiar feature of the study area. Nonetheless, the proposal will be accompanied by some degree of expectation within the local population given the commencement of construction on a similar sized scheme at Mount Lucas (10km south). Until recently wind farms in Ireland were synonymous with upland areas, but due to improving turbine technologies and various other factors, lowland sites have become viable. In landscape terms, there is a strong thematic relationship and natural synergy between the generation of energy from peat extraction and the harnessing of wind energy on the same sites. Despite the modal shift these areas can continue a considerable legacy as 'energy landscapes' in the public perception.

Site activity will be at its greatest during the construction phase due to the operation of machinery on site and movement of heavy vehicles to and from site. This phase will have a more significant impact on the character of the site, but it is a temporary impact that will cease upon completion of the scheme (approximately 2 years). Furthermore, the volume of heavy traffic will be familiar in the context of other land uses in and around the site.

In summary, there will be physical impacts on the land cover of the site as a result of this development, but in the context of the surrounding peat extraction and forestry

activities this will be barely discernible and will take place on already modified land. This strategic scale of development can be comfortably assimilated into this broad and open landscape context without undue conflicts of scale with underlying land form and land use patterns. There is also a sense of progression within this energy landscape from a non-renewable, extractive form of power generation (peat harvesting) to a modern renewable form (wind turbines). Although this represents a relatively new form of development within the study area it is not an unfamiliar or unexpected one. For these reasons the magnitude of the landscape impact is deemed to be low.

Significance of landscape impact

As outlined in section 11.2.4 above, the significance of landscape impacts is a function of landscape sensitivity weighed against the magnitude of the landscape impact. This is established using the significance matrix (Table 11-3) within which, a 'low' sensitivity judgement coupled with an impact magnitude of 'low' results in a **Slight-imperceptible** significance of landscape impact.

11.4.2 Visual Impact

The assessment of the visual sensitivity of the viewshed reference points is based on the criteria set out below. The following table (11.7) indicates whether the VRP is generally considered to be sensitive or not sensitive to each criterion on a graduated scale. No relative importance is inferred by the order of listing in the criteria set out in the table.

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 and views tend to be valued to a higher degree than in less sensitive landscape areas;

Amenity views from dwellings. Whilst dwelling occupants tend to be in the higher category of receptor sensitivity the amenity value of views afforded from dwellings can vary widely. Where dwellings have been located and oriented to take in a particular vista or landscape feature the amenity value of the view will be higher than from those dwellings that are afforded restricted and/or unremarkable views;

Intensity of use, popularity. This 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 routes 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 on the basis that higher amenity value tends to be associated with broad, elevated vistas.

Absence of wind energy development or other significant built infrastructure within the view. This criterion gives a sense of whether the character of the existing view is currently influenced by wind turbines or other development of a significant scale or intensity.

Sense of remoteness and/or tranquillity. Receptors taking in a remote and tranquil scene, which is likely to be fairly static, are likely to be more receptive to changes in the view than those taking in the view of 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 distinctly manmade features;

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 and / or spiritual significance. Such attributes may be evident or sensed by receptors at certain viewing locations, which may 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 the receptor could take in similar views anywhere in the broader region or the country;

Integrity of the landscape character. This looks at 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 considers whether there is special sense of wholeness and harmony at the viewing location; and

Sense of awe. This considers whether the view inspires an overwhelming sense of scale or the power of nature.

Those locations which are deemed to satisfy many of the above criteria are likely to be in the higher order of magnitude in terms of sensitivity and vice versa. The overall sensitivity judgement may be a result of a number of these factors or, alternatively, a strong association with one or two in particular. Whilst the final sensitivity judgement is cognisant of the trends highlighted in the table, it is ultimately a matter of professional opinion based on experience rather than the simple quantifying of results.

Analysis of Visual Receptor Sensitivity at Viewshed Reference Points

Scale of sensitivity for each criterion

Strongly Sensitive	Moderately Sensitive	Mildly Sensitive	Not Sensitive

	KV1	KV2	DR1	DR2	DR3	DR4	DR5	LC1	LC2	LC3	LC4	LC5	LC6	LC7	CP1	CP2	CP3	CP4	CP4N	CP5	CP6	CP7	MR1	MR2	MR3	MR4	MR5	AV1	AV2
Recognised scenic value of the view																													
Views from within highly sensitive landscape areas																													
Amenity views from dwellings																													
Intensity of use, popularity (number of viewers)																													
Viewer connection with the landscape																													
Elevated panoramic views																													
Absence of wind energy development / other significant scale development																													
Sense of remoteness / tranquillity at the viewing location																													

Degree of perceived naturalness																												
Presence of striking or noteworthy features																												
Sense of Historical, cultural and / or spiritual significance																												
Rarity or uniqueness of the view																												
Integrity of the landscape character within the view																												
Sense of place at the viewing location																												
Sense of awe																												
Overall sensitivity assessment	**VH**	**VH**	**M**	**M**	**M**	**M**	**M**	**L**	**L**	**H**	**M**	**L**	**L**	**M**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**N**	**L**	**L**	**L**	**M**	**M**

Notes: **N = Negligible; L = low sensitivity; M = medium sensitivity; H = high sensitivity; VH = very high sensitivity**

Table 11.7: Analysis of Visual Receptor Sensitivity at Viewshed Reference Points

11.4.3 Estimation of Visual Impacts at VRPs

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
KV1	Sliabh na Callaighe	S	36km	12

Representative of:	• A National Monument – megalithic complex • A recreational area • A tourist attraction		
Receptor Sensitivity	**Very High**		
Existing View	This is a vast elevated vista from the megalithic tomb on the summit of Sliabh na Callaighe. This southerly view takes in hilly farmland in the foreground characterised by pastoral fields defined by scrubby hedgerows and tree lines. Forest plantations and a quarry are also noticeable features in the nearer aspects of the view. The landscape beyond is generally flatter and is perceived as a continuous pattern of fields and hedgerows with no containment out to the flat horizon.		
Visual Impact of Yellow River Wind Farm	At this distance the proposed turbines are unlikely to be discernible at all to the casual observer. They would be seen with little tonal contrast above the distant horizon and their visibility would be further reduced by atmospheric perspective (the fading of distant objects). Therefore, the visual presence of the scheme is deemed to be minimal. On the basis of the low degree of visual presence within the vast vista afforded from here there will be no measurable effect on the amenity of the scene and overall the magnitude of the visual impact is judged to be negligible.		
Summary	Based on the assessment criteria and matrices outlined in section 11.2.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	Visual Impact Magnitude	Significance of Visual Impact
	Very High	**Negligible**	**Slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
KV2	Hill of Tara	SW	41km	12

Representative of:	• A Candidate World Heritage Site • A recreational area • A popular tourist attraction	
Receptor Sensitivity	**Very High**	
Existing View	This is a vast elevated view to the southwest from the summit of the Hill of Tara. Immediately below the hill the landscape spreads as an expansive flat plain with no containment out to the distant horizon. The singular pattern of fields and hedgerows becomes more condensed with distance until a continuous band of vegetation is perceived.	

Visual Impact of Yellow River Wind Farm	At this distance the proposed turbines are unlikely to be discernible at all to the casual observer. They would be seen with little tonal contrast above the distant horizon and their visibility would be further reduced by atmospheric perspective (the fading of distant objects). Therefore, the visual presence of the scheme is deemed to be minimal. On the basis of the low degree of visual presence within the vast vista afforded from here there will be no measurable effect on the amenity of the scene and overall the magnitude of the visual impact is judged to be negligible.		
Summary	Based on the assessment criteria and matrices outlined in section 11.2.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	Visual Impact Magnitude	Significance of Visual Impact
	Very High	**Negligible**	**Slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
DR1	R446 at Garrane	E	4.3km	12
Representative of:	• An area identified on the ZTV map as having a theoretical view of all 32 of the proposed turbines • A designated scenic route • A major route			
Receptor Sensitivity	**Medium**			
Existing View	This is a slightly elevated view to the south from the old N6 (now R446) where several dwellings are clustered around cross roads. There is a relatively open foreground due to the absence of roadside screening and a large field that falls away gently to the south. Hedgerow vegetation including some mature trees along the eastern boundary of the field screens much of the context beyond to the southeast. Lower vegetation and lower ground levels along the southern boundary of the field reveal glimpses of the landscape beyond. This is seen as a band of vegetation comprising hedgerows that are stacked in perspective. The profile of Cloghan Hill is just discernible through an intervening section of mature trees on the otherwise flat skyline in the distance.			
Visual Impact of Yellow River Wind Farm	A linear cluster of approximately 8 of the proposed turbines rises above a section of the middle ground hedgerow to the extent that their blade sets are fully revealed. This represents the nearest group of turbines, which are seen at a comparatively larger scale than those sited beyond the R400 to the east. The blades of several of these more distant turbines are visible in lower sections of the intervening hedgerow to the left of the main cluster. From this location the eye is naturally drawn southwards along the foreground field towards the most extensive aspect of the vista. The proposed turbines will be a noticeable feature, but they are somewhat peripheral within this panoramic vista. The visual presence of the scheme is deemed to be in the order of co-dominant to sub-dominant.			

	The main cluster of turbines are seen in silhouette against the sky with a generous spacing that avoids overlapping. There is some visual clutter and ambiguity generated by the partially revealed turbines rotating on and just above the nearer hedgerow. This is exacerbated slightly by the electricity pylon that is visible within the most prominent cluster of turbines. However, this effects only a small section of the view the turbines do not intrude on the main axis of the vista to the south. On balance of the reasons outlined above the magnitude of visual impact is judged to be medium.		
Summary	Based on the assessment criteria and matrices outlined in section 11.2.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	Visual Impact Magnitude	Significance of Visual Impact
	Medium	**Medium**	**Moderate**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
DR2	Local Road at knockcor	W	12.3km	0
Representative of:	• An area identified on the ZTV map as having a theoretical view of all of the proposed turbines. • A designated scenic route.			
Receptor Sensitivity	**Medium**			
Existing View	This section of road affords intermittent views to the east over a pleasant pastoral landscape of gently rolling terrain, mature tree lines and woodlands. The combination of these landscape elements tends to limit views to a relatively short distance even though there is not a strong degree of enclosure.			
Visual Impact of Yellow River Wind Farm	Although there are occasional open views to the west between elements of foreground screening (as depicted in the photomontage) the wooded skyline will prevent the proposed turbines from being visible at this distance. Even if the occasional turbine blade tip emerged in views from this section of road it would be within a 'fuzzy' skyline context at a distance of beyond 10km. Thus it would be almost impossible for the casual observer to discern. For this reason the visual impact is deemed to be negligible.			
Summary	Based on the assessment criteria and matrices outlined in section 11.2.5 the significance of visual impact is summarised below.			
	Visual Receptor Sensitivity	Visual Impact Magnitude	Significance of Visual Impact	
	Medium	**Negligible**	**Imperceptible**	

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
DR3	Local Road at Kilcorby	NE	3.4km	0

Representative of:	• An area identified on the ZTV map as having a theoretical view of between 1 and 8 of the proposed turbines • A designated scenic view • A local community view
Receptor Sensitivity	**Medium**
Existing View	This is a relatively contained view towards Croghan Hill, which lies a short distance to the east. Hedgerow vegetation to the left and right of the marshy foreground field tends to channel the view towards this focal point. Clumps of mature trees line the base of the hill with more open pasture emerging above.
Visual Impact of Yellow River Wind Farm	As can be seen in the wireframe image that accompanies the photomontage for DR3, the proposed turbines would be theoretically visible above the lower northern slopes of Croghan Hill and on the plains further north. However, intervening hedgerow vegetation screens all of the turbines from view. A veiled view of turbine blades within the branches of these trees might be afforded during winter months, but they would remain difficult to discern. Nonetheless, the distinctive profile of Croghan hill would be unaffected by the proposal. For these reasons the visual impact magnitude is deemed to be negligible.
Summary	Based on the assessment criteria and matrices outlined in section 11.2.5 the significance of visual impact is summarised below.

	Visual Receptor Sensitivity	Visual Impact Magnitude	Significance of Visual Impact
	Medium	**Negligible**	**Imperceptible**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
DR4	Local Road at Down	NNE	5.6km	0

Representative of:	• An area identified on the ZTV map as having a theoretical view of between 1 and 8 of the proposed turbines • A designated scenic view • A local community view
Receptor Sensitivity	**Medium**
Existing View	This is a confined view towards Croghan Hill from a local road to the south. Several dwellings line the western side of road, whilst mature conifers flank it to the right. The profile of Croghan hill rises above foreground dwellings and associated vegetation and it is also seen in the context of a cluster of utility poles that line the road.

Visual Impact of Yellow River Wind Farm	Whilst the blade sets of several turbines are potentially visible in the low saddle between the two crests of Croghan Hill when seen from this stretch of road, they will be largely screened from view by a band of vegetation that occupies the intervening slopes. Even where they might emerge between screening elements, views are likely to be limited to blade tips within a complex visual context. The profile of Croghan Hill will be unaffected. On the basis of these factors the visual impact magnitude is judged to be negligible.		
Summary	Based on the assessment criteria and matrices outlined in section 11.2.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	Visual Impact Magnitude	Significance of Visual Impact
	Medium	**Negligible**	**Imperceptible**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
DR5	R414 at Lullymore	NW	19.5km	0

Representative of:	• An area identified on the ZTV map as having a theoretical view of all of the proposed turbines • A designated route		
Receptor Sensitivity	**Medium**		
Existing View	This is a vast horizontal vista to the north across a peatland context that includes cutaway bog, scrub and conifer plantations. The most distinctive aspect of this vista is the openness due to the absence of containment from topography and vegetation. Nonetheless, there is a sense of a gentle rise in ground level to the north.		
Visual Impact of Yellow River Wind Farm	The slightly raised profile of the distant forest plantations to the northwest are barely discernible in the context of a generally flat, scrubby skyline. However, they are high enough to fully screen the proposed turbines from view at this considerable distance. Even in a future scenario where these mature plantations have been harvested, the distant turbines will be difficult for the casual observer to identify. This is on the basis of their low level of contrast against the sky and the effects of atmospheric perspective (the fading of distant objects). For the above reasons the magnitude of visual impact is deemed to be negligible.		
Summary	Based on the assessment criteria and matrices outlined in section 11.2.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	Visual Impact Magnitude	Significance of Visual Impact
	Medium	**Negligible**	**Imperceptible**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
LC1	Local Road at Baltinoran	S	0.9km	9

Representative of:	• An area identified on the ZTV map as having a theoretical view of all of the proposed turbines • A local community view		
Receptor Sensitivity	**Low**		
Existing View	This is a short distance view to the south and west from a local crossroad that is intended to represent typical views of the proposed development from within the local area. The view is contained at a short distance by hedgerow vegetation in all directions. These hedgerows range in nature from low clipped sections to sporadic tree lines, which together line the pastoral fields in this area.		
Visual Impact of Yellow River Wind Farm	The eastern half of the scheme is seen at a significant scale throughout the southern and western aspects of this view. The nearest and largest turbines are immediately to the west. The westernmost turbines (beyond the R400) are seen at a much smaller scale and tend to be screened by the foreground hedgerows. Other than the nearest turbine, which is almost fully revealed, only the blade sets and upper tower sections of the remaining close turbines are revealed above the vegetated skyline. This tends to diminish their perceived height even though the visible components are seen at a considerable scale. The turbines will be the most distinctive feature within this otherwise homogenous short range view and when coupled with the scale and extent of the scheme the visual presence is deemed to be dominant. In terms of visual amenity, the turbines are generally well spaced avoiding undesirable overlap. Nonetheless, there is a sense of being surrounded by them through the southern and western quarters due to the considerable lateral extent of the scheme experienced at this location. The view of blade sets rotating just above the vegetated skyline generates a degree of visual ambiguity as turbine scale in relation to distance is not clear. However, the blades rotate freely above the skyline vegetation avoiding the less desirable effect of rotating against it, which could otherwise increase the sense of visual clutter within the scene. Overall the magnitude of the visual impact at LC1 is considered to be high.		
Summary	Based on the assessment criteria and matrices outlined in section 11.2.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	Visual Impact Magnitude	Significance of Visual Impact
	Low	**High**	**Moderate-slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
LC2	Local Road at Clongall Bridge	W	2.8km	7

Representative of:	• An area identified on the ZTV map as having a theoretical view of all of the proposed turbines • Local Community views
Receptor Sensitivity	**Low**
Existing View	This is a pleasant pastoral view across a slightly more rolling landscape than exists in much of the central study area. The view is contained at a moderate distance by a series of low tree lined ridges. Yellow River, which is a fairly minor watercourse at this point passess under the viewer but adds to the sense of rural tranquillity at this location.
Visual Impact of Yellow River Wind Farm	Although all of the proposed turbines are potentially visible to some extent from here in one extensive cluster, only the nearest turbines at the centre of the cluster are visible due to foreground and middle ground screening. The blade sets can be seen rising above the vegetation at a fairly modest scale despite their proximity. In the context of the vista they are judged to be co-dominant in terms of visual presence. Compositionally, the proposed turbines are seen at a scale and extent that compliments other elements of the vista. There will be some minor instances of blades rotating against intervening tree tops, but this is ameliorated by a clearer view of their cohorts. For the reasons outlined above, the magnitude of the visual impact is deemed to be medium.
Summary	Based on the assessment criteria and matrices outlined in section 11.2.5 the significance of visual impact is summarised below.

	Visual Receptor Sensitivity	Visual Impact Magnitude	Significance of Visual Impact
	Low	**Medium**	**Slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
LC3	Local Road at Croghan Hill	NE	2.5km	18

Representative of:	• An area identified on the ZTV map as having a theoretical view of all of the proposed turbines. • A sensitive landscape feature • Local community views • A recreation and heritage location
Receptor Sensitivity	**High**

Existing View	This is a vast, elevated panorama to the north from the highest point on a local road that crosses Croghan Hill. The pastoral land cover context of the foreground sweeps down into the plains below. The large fields of improved grassland then gradually give way to a broad and more informal pattern of cutaway bog, conifer plantations and scrub on the marginal land between these uses. The commanding vista gives the viewer some sense of why Croghan Hill has been a strategic and iconic landscape feature within the otherwise flat midland landscape for millennia. The value and sensitivity of this vista relates to its vastness and the cultural heritage associated with the viewing location and not for any sense of the naturalistic. Indeed, the landscape below is testimony to decades of industrial scale peat extraction for energy production. The other land uses contribute to a sense that this is a productive landscape, which is valued as such.
Visual Impact of Yellow River Wind Farm	The proposed turbines provide a distinctive vertical counterpoint to the strongly horizontal nature of the view. They are by far the most noticeable built structures within the view, which otherwise tends to be read as a land use pattern rather than as a combination of particular landscape features. Despite the fact that they are eye catching, they are not spatially overwhelming in the context of this vast vista. Whilst the half dozen turbines presented immediately to the north of the viewer are seen at a considerable scale, the remaining turbines trickle away quickly to the east and are much more peripheral within the view. On balance of all of these factors, the visual presence of the scheme is deemed to be co-dominant. Aesthetically, this is striking view of the proposed development, which adds a picturesque quality to the vista. The turbines are fully revealed to the viewer in an unambiguous manner so that the layout of the scheme is readily comprehended. There is a minor detraction caused by the overlapping of two pairs of the nearest turbines and yet, the spacing between these pairs and the neighbouring turbines remains consistent. The turbines may be a new and distinctive manmade feature within this view, but they are consistent with its underlying character of production. Energy production, no less. From this viewpoint the synergy between large scale peat extraction and the harnessing of renewable wind power is most apparent. Thus, the proposed wind farm reinforces this as an 'energy landscape'. The broad land use patterns also comfortably assimilate the scale of the development. An interesting consideration for the assessor in this instance is whether the proposed wind farm is likely to detract from the existing view to an extent that visitors would no longer be attracted to this prominent location to take in the vista. It is considered that this would not be the case and, in fact, the number of visitors may even increase given the opportunity to view a wind farm from this somewhat unique perspective. On the basis of this reason and those outlined above, the magnitude of the visual impact is deemed to be low. Note: Flashing warning lights will be mounted on the hubs of turbines 1 – 7 as a mitigation measure to reduce the potential for Whooper Swan turbine collision during poor light conditions or inclement weather (fog etc.). These lights will be in use from November to March inclusive, for 1 or 2 hours at dusk. Whilst the lights will generate a brief visual impact during these periods, this will always coincide with times when the amenity of the vista is at its lowest due to poor visibility. Similar levels of impact will by the warning lights at other viewing locations, particularly in the local area.
Summary	Based on the assessment criteria and matrices outlined in section 11.2.5 the significance of visual impact is summarised below.

Visual Receptor	Visual Impact	Significance of Visual

	Sensitivity	Magnitude	Impact
	High	**Low**	**Moderate-slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
LC4	Local road at Togher	N	3.4km	31

Representative of:	• An area identified on the ZTV map as having a theoretical view of all of the proposed turbines • A sensitive landscape area • Local community views
Receptor Sensitivity	**Medium**
Existing View	This is a broadly panoramic vista to the northeast from a slightly elevated location associated with Croghan Hill. There are several houses on this crest of high ground oriented to take in the vista. The view encompasses an open pastoral context in the foreground, which gives way to cutaway bog, conifer plantations and scrub on the plains to the northeast. Several low hills in the distance reveal further pastoral land use, which is typical in this area where comparatively better drainage occurs. The Lagan Cement factory is a distinctive feature on the distant skyline at the centre of the depicted view.
Visual Impact of Yellow River Wind Farm	The proposed turbines are spread right across this north-easterly vista at a range of scales depending on relative distance. The nearest turbines are seen at a considerable scale, but they do not appear overwhelming in relation to the underlying land form and land use patterns. The easternmost cluster of turbines is seen at a much less noticeable scale and they are partially screened by vegetation. The proposed turbines are easily the most distinctive feature within the vista and they occupy the vast majority of it in terms of lateral extent. For these reasons the development is deemed to have a dominant visual presence. The proposed wind farm is seen in a legible arrangement where the three dimensional layout clearly accounts for the range in apparent turbine size. The generous linear spread of the turbines largely avoids turbine overlap and reduces the potential for visual clutter. The other side to this is that the lateral extent of the scheme is fairly unrelenting across the broad vista. Contextually, the turbines have a strong thematic relationship with the underlying cutaway bog in terms of the association with energy production. The turbines are also well assimilated in relation to scale and extent within the flat terrain and broad land cover pattern. On balance of the reasons outlined above the visual impact magnitude is deemed to be high.
Summary	Based on the assessment criteria and matrices outlined in section 11.2.5 the significance of visual impact is summarised below.

	Visual Receptor Sensitivity	Visual Impact Magnitude	Significance of Visual Impact
	Medium	**High**	**Major-moderate**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
LC5	Garr Road at Corbetstown Bridge	NW	0.55km	7

Representative of:	• An area identified on the ZTV map as having a theoretical view of all of the proposed turbines • Local community views
Receptor Sensitivity	**Low**
Existing View	This is a relatively uncontained yet short distance vista to the northwest. The low degree of containment compared to much of the local area is due to the low height of roadside vegetation and hedgerows in the foreground. Nonetheless, this vegetation and a low ridge limits the view to several hundred metres, Otherwise this is a typical view in the local rural context of fields, hedgerows and occasional dwellings.
Visual Impact of Yellow River Wind Farm	The northernmost cluster of turbines are seen at a considerable scale from this short distance and will be easily to most noticeable element within the view. The turbines are fully revealed to the viewer and occupy much of the available view to the northwest in terms of lateral extent. For these reasons the proposed wind farm is considered to have a Highly dominant visual presence from here. Aesthetically, the turbines are seen in a clear and comprehensible manner with a strong sense of perspective generated between the nearest and furthest units. However there is a conflict of scale between the turbines and the finer grain of the fields and houses in the foreground. Overall, the magnitude of the visual impact is deemed to be high.
Summary	Based on the assessment criteria and matrices outlined in section 11.2.5 the significance of visual impact is summarised below.

	Visual Receptor Sensitivity	Visual Impact Magnitude	Significance of Visual Impact
	Low	**High**	**Moderate-slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
LC6	Garr Road at Garr	E&W	1.3km	19

Representative of:	• An area identified on the ZTV map as having a theoretical view of all of the proposed turbines • Local community views
Receptor Sensitivity	**Low**
Existing View	This location on the Garr Road affords 360° views with only a minor degree of containment by hedgerow vegetation due to the absence of tall vegetation at the roadside. However, the view is not particularly expansive given the flat terrain.

	The typical rural view consists of pastoral fields to the north and south of the road with a range of tree lines and lower hedgerows containing them.		
Visual Impact of Yellow River Wind Farm	The turbines to the east are seen at a considerably larger scale than those to the west due to the comparative viewing distance. Although the scale of turbines is not dominating at this distance there is a sense of being surrounded by turbines with little respite. Consequently, the visual presence of the development is deemed to be dominant. The proposed turbines are seen in a relatively unambiguous manner overall, but with some instances of turbine overlap and blade sets rotating against intervening vegetation in perspective. The scale of the turbines does not contrast strongly against other elements of the view, but the appearance of turbines throughout a number of aspects of the vista has a negative effect on visual amenity. For the reasons outlined above the magnitude of the visual impact is judged to be high.		
Summary	Based on the assessment criteria and matrices outlined in section 11.2.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	Visual Impact Magnitude	Significance of Visual Impact
	Low	**High**	**Moderate-slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
LC7	Local Road at Ballyburley	NW	1.2km	9
Representative of:	• An area identified on the ZTV map as having a theoretical view of all of the proposed turbines • Local community views			
Receptor Sensitivity	**Medium**			
Existing View	This is a broad open vista to the northwest from a local road at Ballyburley. In this vicinity the slight increase in ground level in comparison to the basin landscape to the north results in more panoramic views from the surrounding dwellings. Thus there is an increased degree of receptor sensitivity in comparison to most of the other Local Community (LC) views assessed. As well as the slightly increased elevation there is also a low level of screening in the foreground, which also contributes to the extent of available views. Otherwise this is typical rural scene for this are with large pastoral fields, mixed species hedgerows and occasional farmsteads.			
Visual Impact of Yellow River Wind Farm	Three of the proposed turbines are seen at a considerable scale due to their close proximity to the VRP. The remainder are seen in two clusters at a smaller scale and they are substantially screened by intervening hedgerow vegetation. The proposed wind energy development will be the most distinctive element within the view but is not overwhelming in terms of scale. It has a broad lateral extent, but many of the more distant turbines are barely visible due to screening. On balance the visual presence is in the order of dominant to co-dominant.			

	In terms of aesthetics, the three most prominent turbines draw the eye and they are seen in a clear and comprehensible manner. They do not cause a dramatic conflict of scale in relation to other landscape elements in this broad vista. The more distant turbines are seen in a more ambiguous manner with blade sets rotating within the tops of intervening trees and hedgerows. This is ameliorated considerably by the degree of screening. Due primarily to the visual presence of the scheme at this short distance, the magnitude of the visual impact is deemed to be high.		
Summary	Based on the assessment criteria and matrices outlined in section 11.2.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	Visual Impact Magnitude	Significance of Visual Impact
	Medium	**High**	**Major-moderate**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
CP1	Milltownpass	S	4.3km	5
Representative of:	• An area identified on the ZTV map as having a theoretical view of the proposed turbines • A centre of population • A major route			
Receptor Sensitivity	**Low**			
Existing View	This is a limited view to the south from the R446 as it passes through the settlement of Milltownpass. Views to the south are largely screened by buildings and vegetation within the village. It is accepted that there may be some localities particularly within the private realm where clearer vistas are available. The foreground of this vista is typical of an urban fringe with several houses lining the road with small fields and sporadic trees and low hedgerows beyond. These foreground trees provide windows of view between them to the south.			
Visual Impact of Yellow River Wind Farm	The proposed turbines are substantially screened by foreground vegetation at this location, although several can be seen in a gap between screening elements. Only the blade sets of these turbines are revealed above a more consistent band of vegetation in the middle ground. Although these will be barely discernible to passing motorists they will be a permanent part of the vista for some local residents who may also see a greater number of the proposed turbines. Even in the worst case scenario the turbines are likely to be sub-dominant within the southerly vista from Milltownpass. Aesthetically, the partial view of turbine blades rotating just above intervening vegetation, such as this, can lead to visual clutter and ambiguity. The paradox is that a clearer view of the turbines might lead to a higher degree of visual presence, but a lesser degree of ambiguity. Under either scenario the magnitude of visual impact from Milltownpass is deemed to be low.			

Summary	Based on the assessment criteria and matrices outlined in section 11.2.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	Visual Impact Magnitude	Significance of Visual Impact
	Low	**Low**	**Slight-imperceptible**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
CP2	Rochfortbridge	SE	3.2km	4

Representative of:	• An area identified on the ZTV map as having a theoretical view of all of the proposed turbines. • A centre of population • A major route		
Receptor Sensitivity	**Low**		
Existing View	This is a southerly view from the southern outskirts of Rochfortbridge. The view is aligned with the R400 regional road which goes on to dissect the site, however, not before it passes over the M6 motorway. The R400 can be rising up the motorway embankment in the distance. Another significant feature of this view is a large electricity pylon and its associated lines. When coupled with the lighting poles that link to the M6 there is a high degree of visual clutter associated with this view. Views to the south are not readily afforded from within the settlement of Rochfortbridge. Even where foreground screening might allow extended views, these tend to be truncated by the overpass embankments of the M6 motorway.		
Visual Impact of Yellow River Wind Farm	Several of the proposed turbines are visible from this location, but they are substantially screened by intervening vegetation and structures. Two turbine blade sets rise above the vegetation on the alignment of the R400. Despite the degree of screening these components will be seen at a noticeable scale and they will be highlighted by their rotation against the treetops. In the context of this relatively complex vista and given the level of screening, the visual presence is deemed to be sub-dominant to minimal. The proposed turbines will add to the existing sense of visual clutter at this location both as additional structures within the view and also due to the rotation of blades amongst the tree tops in alignment with the R400. Given the low order visual presence of the scheme and the existing context of the view, these effects will only be minor. For the reasons outlined above, the magnitude of visual impact is judged to be low.		
Summary	Based on the assessment criteria and matrices outlined in section 11.2.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	Visual Impact Magnitude	Significance of Visual Impact
	Low	**Low**	**Slight-imperceptible**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
CP3	Tyrrellspass	E	5.3km	0

Representative of:	• An area identified on the ZTV map as having a theoretical view of between 9 and 16 of the proposed turbines • A centre of population • A major route
Receptor Sensitivity	**Low**
Existing View	This is an easterly view from the eastern outskirts of Tyrrellspass. A low clipped hedge defines the southern side of the substantial road corridor at this location. Beyond this is a rolling pastoral farming context contained within a shallow basin. This is defined to the east by the embankment of the N52 national secondary road as it links between the R446 and the M6 motorway, forming an overpass of the latter. A line of electricity pylons runs across the near skyline in combination with the lighting poles that line the N52.
Visual Impact of Yellow River Wind Farm	Whilst the blade sets of a small cluster of the proposed turbines are theoretically visible from here according to the wireframe image, in reality they are screened by foreground vegetation. There are very few other locations within the settlement that are likely to afford a glimpse of the proposed development and thus, its visual presence is deemed to be minimal. Consequently the magnitude of visual impact is negligible.
Summary	Based on the assessment criteria and matrices outlined in section 11.2.5 the significance of visual impact is summarised below.

	Visual Receptor Sensitivity	Visual Impact Magnitude	Significance of Visual Impact
	Low	**Negligible**	**Imperceptible**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
CP4	Rhode	N	0.88km	12

Representative of:	• An area identified on the ZTV map as having a theoretical view of all of the proposed turbines • A centre of population • A major route
Receptor Sensitivity	**Low**
Existing View	This is a relatively open view to the northwest from the northern outskirts of Rhode. This is facilitated by a large field in the foreground with low hedgerow boundaries. Clumps of taller broadleaf trees provide some enclosure to the scene, which otherwise takes in a planar landscape of farmland in the foreground and peatland beyond. Other distinctive features

	within the view are the Rhode electricity peaking plant in the central middle ground surrounded by various forms of electricity pylons. The view to the northeast is fully screened by mature vegetation at the roadside.		
Visual Impact of Yellow River Wind Farm	A dozen of the proposed turbines can be seen on the plains beyond the peaking plant. They are seen at a reasonable, but not dominating scale and the visible cluster is relatively confined within the view in terms of lateral extent. The accumulation of foreground structures associated with the peaking plant makes the wind farm a less distinctive feature than it might otherwise be. For these reasons the visual presence is deemed to be co-dominant. The proposed wind farm is well assimilated within the scene in a thematic sense as there is a clear relationship between the turbines and the infrastructure associated with energy production. The cutaway bog is not an obvious feature in this low angle view, but for residents of Rhode it need not be seen to have a thematic influence as it is the defining feature of this area in terms of identity and employment. Whilst the turbines themselves are relatively well spaced and presented in a legible fashion, there is a degree of visual clutter generated in conjunction with the pylons and structure of the peaking plant. On balance of the factors outlined above the visual impact magnitude is judged to be medium.		
Summary	Based on the assessment criteria and matrices outlined in section 11.2.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	Visual Impact Magnitude	Significance of Visual Impact
	Low	**Medium**	**Slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
CP4 North	Rhode (Garr Road roundabout)	NE	0.67km	7
Representative of:	• An area identified on the ZTV map as having a theoretical view of all of the proposed turbines • A centre of population • A major route			
Receptor Sensitivity	**Low**			
Existing View	This is a fairly unremarkable view approaching the Garr Road roundabout on the R400 from the village of Rhode. The foreground of the view is dominated by the recently upgraded road and new intersection with its associated fencing, light poles and signage. Several dwellings and farm sheds line the road and intersection. On either side of the viewer pastoral farmland can be seen for a short distance before the view is truncated by mature trre lines and hedgerows.			
Visual Impact of Yellow River Wind Farm	A cluster of three turbines occurs a short distance from the viewer just to the right of the intersection and these are seen at a considerable scale above foreground vegetation. Only glimpses of several other turbines are afforded			

	at widely disparate viewing angles between foreground trees. In comparison to the nearer cluster, these are hardly noticeable. In the context of this dynamic vista the visual presence of the turbines is considered to be in the order of dominant to co-dominant. Aesthetically, the trio of close turbines are relatively well presented with a strong sense of perspective between the nearest and furthest. This ameliorates any sense of stacking and the cluttering effect of overlap, which can otherwise occur for turbines with a close lateral association. There is a greater degree of visual ambiguity generated by the remaining turbines appearing sporadically in vegetation gaps throughout the northern quarters of this vista. This is exacerbated by blades sets rotating within the branches of intervening trees in several instances. The character and amenity of this strongly anthropogenic vista is not unduly affected by the proposed turbines. On the basis of these reasons the magnitude of the visual impact is deemed to be high.		
Summary	Based on the assessment criteria and matrices outlined in section 11.2.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	Visual Impact Magnitude	Significance of Visual Impact
	Low	**High**	**Moderate-slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
CP5	Edenderry	NW	9km	3
Representative of:	• An area identified on the ZTV map as having a theoretical view of all of the proposed turbines • A centre of population • A major route			
Receptor Sensitivity	**Low**			
Existing View	This is a view from the centre of Edenderry adjacent to the Grand Canal. There is rare a window of visibility to the northwest at this location on axis with a side street from a slightly elevated location. This is a typical main street setting made up of two storey shops and businesses providing consistent definition to the street.			
Visual Impact of Yellow River Wind Farm	Although the wireframe image indicates that the proposed turbines are theoretically visible from here, in reality, they are screened by a combination of buildings and vegetation. Consequently, the magnitude of the visual impact is deemed to be negligible.			
Summary	Based on the assessment criteria and matrices outlined in section 11.2.5 the significance of visual impact is summarised below.			
	Visual Receptor Sensitivity	Visual Impact Magnitude	Significance of Visual Impact	
	Low	**Negligible**	**Imperceptible**	

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
CP6	Mount Lucas	N	8.4km	0

Representative of:	• An area identified on the ZTV map as having a theoretical view of all of the proposed turbines • A centre of population • An intersection of major routes
Receptor Sensitivity	**Low**
Existing View	This is a northward vista from the crossroad settlement of Mount Lucas, which occupies a ridge of slightly elevated ground. This particular view takes in the rear yards of dwellings that line the R400 near its intersection with the R402. These are bounded by a series of small pastoral fields with low hedgerows. The skyline is defined by a band of vegetation on the crest of a low ridge a short distance away.
Visual Impact of Yellow River Wind Farm	Despite all of the proposed turbines being theoretically visible from here, the screening provided by buildings and, in particular, the vegetation on the near skyline restricts this. As a result, the magnitude of the visual impact is negligible.
Summary	Based on the assessment criteria and matrices outlined in section 11.2.5 the significance of visual impact is summarised below.

	Visual Receptor Sensitivity	Visual Impact Magnitude	Significance of Visual Impact
	Low	**Negligible**	**Imperceptible**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
CP7	Clonbulloge	NNW	12.5km	1

Representative of:	• An area identified on the ZTV map as having a theoretical view of all of the proposed turbines • A centre of population
Receptor Sensitivity	**Low**
Existing View	This is a broad, open view to the north from a short distance to the west of the settlement of Clonbulloge. A large pastoral field occupies the foreground and this is flanked by a mature conifer plantation to the east. At a much greater distance to the north the flat skyline is defined by a band of vegetation that includes conifer plantations and hedgerows stacked in perspective. The most distinctive singular feature within view is the new ESB power peaking plant at Ballykilleen. This tall structure and associated chimney is seen in silhouette on the skyline.
Visual Impact of Yellow River Wind Farm	The blade tips of the proposed turbines will be seen just above the band of vegetation that defines the skyline. The rotation of the blades against the skyline is likely to highlight them within the vista. However, this is

	balanced against the effects of atmospheric perspective (the fading of distant objects) at this considerable distance, particularly as they will have a low tonal contrast against a backdrop of sky. On balance the visual presence is considered to be minimal. Aesthetically, the view of turbine blades rotating against the skyline in silhouette is undesirable as it can lead to visual irritation and ambiguity. However, in this instance these effects are strongly diluted by the low order visual presence described above. Overall, the magnitude of the visual impact is deemed to be low.		
Summary	Based on the assessment criteria and matrices outlined in section 11.2.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	Visual Impact Magnitude	Significance of Visual Impact
	Low	**Low**	**Slight-imperceptible**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
MR1	N4 at The Downs	S	10.8km	0

Representative of:	An area identified on the ZTV map as having a theoretical view of all of the proposed turbines A major route An amenity feature (The Royal Canal and Royal Canal Way)		
Receptor Sensitivity	**Low**		
Existing View	This is a brief window of view to the southwest between sections of roadside vegetation on the N4 national route near the significant settlement of Mullingar. It also represents a point at which the Royal Canal and its associated walking route run immediately adjacent to the road. The viewing location is dominated by this major transport route corridor including the Canal and towpath. The break in vegetation affords a view of a heavily vegetated pastoral landscape beyond to the south.		
Visual Impact of Yellow River Wind Farm	Despite the foreground window of view towards the proposed wind farm, the secondary layer of screening provided by the dense band of broadleaf trees beyond effectively screens the development. Consequently the magnitude of visual impact is deemed to be negligible.		
Summary	Based on the assessment criteria and matrices outlined in section 11.2.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	Visual Impact Magnitude	Significance of Visual Impact
	Low	**Negligible**	**Imperceptible**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
MR2	M6 overpass at Kinnegad	SW	5.2km	20

Representative of:	• An area identified on the ZTV map as having a theoretical view of all of the proposed turbines • An intersection of major routes (R148/M6) • A centre of population (Kinnegad)
Receptor Sensitivity	**Negligible**
Existing View	This is a slightly elevated panoramic vista to the southwest from the R148 overpass of the M6 motorway near Kinnegad. The view is dominated at the lower level by the M6 motorway corridor and the associated 'on' and 'off' ramps including four chains of light poles. Above the motorway cutting the terrain rises gently to the south enclosing the vista with a low ridge a short distance away. A prominent feature on this ridge is the substantial scale Lagan cement factory consisting of several tall silo structures and a chimney. Otherwise the skyline is defined by layers of hedgerow vegetation.
Visual Impact of Yellow River Wind Farm	The majority of the proposed turbines will be seen rising above the vegetated skyline to varying degrees depending on relative proximity. The upper halves of two of the nearest turbines are revealed, whilst only the blade sets and blade tips of the remainder can be seen. In the context of this busy and cluttered vista the turbines will be a noticeable, but not dominating feature. Equally, the scale and lateral extent of the scheme is reasonable, but not overwhelming within this panoramic vista. Thus, the level of visual presence is considered to be in the order of co-dominant to sub-dominant. Aesthetically, the proposed turbines make a significant contribution to the already considerable level of visual clutter within this view. Turbine blades rotating on the skyline also causes some visual irritation and ambiguity. An example of this type of effect is the turbine seen in close alignment with the cement factory as this confuses the scale and spatial relationship between these elements. On the basis of the above factors and in the context of this already complex and cluttered vista, the magnitude of impact is deemed to be medium.
Summary	Based on the assessment criteria and matrices outlined in section 11.2.5 the significance of visual impact is summarised below.

	Visual Receptor Sensitivity	Visual Impact Magnitude	Significance of Visual Impact
	Negligible	**Medium**	**Imperceptible**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
MR3	M6 at Hardwood	S	2.4km	22

Representative of:	• An area identified on the ZTV map as having a theoretical view of all of the proposed turbines • A major route		
Receptor Sensitivity	**Low**		
Existing View	This is a broad and relatively open vista from a section of the M6 motorway that is 'at grade' with the surrounding landscape. The viewing location is dominated by the road corridor and ancillary drainage and fencing. Beyond this to the south is a combination of marshy scrubland and marginal pasture. This is followed by a band of mature conifer forests that provide a low level of containment to the vista in the middle distance.		
Visual Impact of Yellow River Wind Farm	The proposed turbines will be seen rising above the conifer plantations throughout the southerly aspects of the vista at relatively close quarters. The nearest cluster of turbines occurs at an oblique angle to the road immediately to the southeast. Comparatively smaller turbines can be seen beyond this initial cluster. A loosely spaced string of turbines then leads to the southwest where another dense grouping of turbines is aligned with the road. The turbines will be the most distinctive element in this relatively uncomplicated view. When this is added to the close proximity and broad lateral extent of the scheme is it considered to have a visual presence in the order of dominant to co-dominant. The turbines are well assimilated in this productive landscape setting and will not unduly alter the character of the view. In terms of aesthetics, the partially screened view of the turbines beyond the band of conifer forests impacts negatively on the visual legibility of the scheme. The three dimensional layout of the scheme is not apparent other than in the scale differential between turbine clusters. Instead, the uneven profile of the development contrasts against the flat terrain and other horizontal landscape elements. On balance of the above reasons, the magnitude of visual impact is judged to be high.		
Summary	Based on the assessment criteria and matrices outlined in section 11.2.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	Visual Impact Magnitude	Significance of Visual Impact
	Low	**High**	**Moderate-slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
MR4	R400 overpass of M6	SE	2.4km	17

Representative of:	• An area identified on the ZTV map as having a theoretical view of all of the proposed turbines • A major route		
Receptor Sensitivity	**Low**		
Existing View	This slightly elevated location on the overpass affords a broad panoramic vista to the south. Aside from the road corridor and associated structures, the foreground of this vista is contained in pastoral farmland. This gives way to a belt of scrub and conifer plantations in the middle distance. The planar landscape is interrupted on the skyline by the domed form of Croghan Hill.		
Visual Impact of Yellow River Wind Farm	Even though the proposed wind farm wraps around a considerable section of this vista, it is the cluster of turbines to the west of the R400 that are most apparent. The substantially screened and comparatively smaller scale eastern cluster will be less noticeable in the context of this nearer cluster. The turbines are seen at significant, but not overbearing scale. They will be a new and distinctive feature of the vista and they are also aligned with Croghan Hill, which is an existing focal point within the view. Overall the scheme is considered to be in the order of dominant to co-dominant in terms of visual presence in the context of this broad and relatively complex vista. The elevated viewing location gives a sense of the landscape context into which the turbines are placed. This provides legibility to the layout pattern and a frame of reference for the differential scale of the turbines. The turbines are also consistent with the productive character of the landscape in view. The loose spacing of the turbines somewhat counteracts the fact that they occupy most of the southerly aspect of the available vista. Although Croghan Hill will remain clearly visible between turbines, there is a sense of intrusion on the view of this locally iconic landscape feature. On the basis of these reasons the magnitude of the visual impact is deemed to be high.		
Summary	Based on the assessment criteria and matrices outlined in section 11.2.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	Visual Impact Magnitude	Significance of Visual Impact
	Low	**High**	**Moderate-slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
MR5	R400 at Derrynagreenagh	E & W	1.4km	27

Representative of:	• An area identified on the ZTV map as having a theoretical view of all of the proposed turbines • A major route		
Receptor Sensitivity	**Low**		
Existing View	This location affords views across vast cutaway bog for almost 360°. Regenerating scrub can be seen at the fringes of the peatland along with narrow horizontal bands of conifer plantations lining the distant horizons. Croghan Hill is a distinctive feature of the westerly vista that also provides a variation in the land use and relief from the strongly horizontal nature of the view. Although there is little built development in view, the landscape has a post-industrial character.		
Visual Impact of Yellow River Wind Farm	The proposed turbines will completely surround a viewer at this location but not with an intensity or scale that is overwhelming or uncomfortable. Despite this VRP being located near the geographical centre of the proposed development none of the individual turbines is in close enough proximity that it is seen at a large scale or significantly greater scale than the remaining turbines. The turbines will undoubtedly be the most prominent and defining feature of this homogenous vista. Thus, the visual presence of the development is deemed to be dominant. From this location the proposed turbines are seen in a clear and comprehensible manner. Although they are generally located in the landscape beyond the fringes of the cutaway bog, they are perceived to be a part of the peatland landscape from this VRP. This has positive connotations for the energy production relationship between these landscape elements. The viewer gets a sense that one declining land use that has been important to the local economy and identity for several decades is being replaced by a compatible and sustainable alternative. The only minor issue is the intrusion of one of the turbines on the view of Croghan Hill. On balance of the high order visual presence and low order affect on visual amenity, the magnitude of visual impact is judged to be medium.		
Summary	Based on the assessment criteria and matrices outlined in section 11.2.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	Visual Impact Magnitude	Significance of Visual Impact
	Low	**Medium**	**Slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
AV1	R161 / Royal Canal Way at Molrick	SW	12.5km	0

Representative of:	• An area identified on the ZTV map as having a theoretical view of between 9 and 16 of the proposed turbines • An amenity feature • A major transport route		
Receptor Sensitivity	**Medium**		
Existing View	This is a pleasant pastoral view to the west from an elevated bridge over both a national railway line and the Royal Canal at Molrick. This is a relatively contained vista due to the mature broadleaf tree lines that define the field boundaries in the vicinity. A low ridge also assists in truncating the view to the west.		
Visual Impact of Yellow River Wind Farm	Although the wireframe image indicates that some of the proposed turbines would be theoretically visible from here, the level of screening will prevent this from occurring in reality.		
Summary	Based on the assessment criteria and matrices outlined in section 11.2.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	Visual Impact Magnitude	Significance of Visual Impact
	Medium	**Negligible**	**Imperceptible**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
AV2	Grand Canal Way at Ticknevin Bridge	NW	15.2km	1

Representative of:	• An area identified on the ZTV map as having a theoretical view of all of the proposed turbines • An amenity feature
Receptor Sensitivity	**Medium**
Existing View	This is a north westerly view along the Grand Canal and its adjacent towpath from an elevated bridge over it. This is a channelled vista defined on either side of the Canal by mature broadleaf vegetation. Consequently, the only long distance aspect of the vista is directly to the northwest along the Canal. Several dwellings line the Canal at this bridge crossing giving the setting a strong sense of place.
Visual Impact of Yellow River Wind Farm	Only one of the proposed turbines will be visible from here, but it will occupy the focal point of the vista on the axis of the canal. Despite the considerable viewing distance of nearly 20km the viewer's eye will be naturally drawn towards the turbine. Several factors will counter the prominent location of the turbine including; its small scale; its low level of

	tonal contrast against the sky and; the effect of atmospheric perspective (the fading of distant objects). On balance, the visual presence is deemed to be sub-dominant. Aesthetically, the single turbine has a sculptural quality that adds to the picturesque nature of this vista by providing a distant focal point. The positive connotations of this are actually diminished somewhat by the low level of visual presence. Overall, the magnitude of the visual impact is judged to be low.		
Summary	Based on the assessment criteria and matrices outlined in section 11.2.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	Visual Impact Magnitude	Significance of Visual Impact
	Medium	**Low**	**Slight**

11.4.4 Cumulative Impacts

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

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

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

Cumulative impacts of wind farms tend to be adverse rather than positive as they relate to the addition of moving manmade structures into a landscape and viewing context that already contains such development. Based on guidance contained within the SNH Guidelines relating to the Cumulative Effects of Wind Farms (2005) and the DoEHLG Wind Energy Guidelines (2006), cumulative impacts can be experienced in

a variety of ways. In terms of landscape character, additional wind energy developments might contribute to an increasing sense of proliferation. A new wind farm might also contribute to a sense of being surrounded by turbines with little relief from the view of them. The term 'skylining' is used in the SNH Guidelines to describe the effect *"where an existing wind farm 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 wind farm might generate visual conflict and disharmony in relation to other wind energy developments. Some of the most common include visual tension caused by disparate extent, scale or layout of neighbouring developments. A sense of visual ambivalence might also be caused by adjacent developments traversing different landscape types. Turbines from a proposed wind farm that are seen stacked in perspective against the turbines of nearer or further developments tend to cause visual clutter and confusion. Such effects are exacerbated when, for example, the more distant turbines are larger than the nearer ones and the sense of distance is distorted. Table 12.9 below provides criteria for assessing the magnitude of cumulative impacts.

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

Table 11.9: Magnitude of cumulative impact

Cumulative Baseline

The only other wind energy development within the study area is the 28turbine Mount Lucas Development, which is currently under construction. This lies within an area of Bord na Mona owned, cutaway peatland approximately 10km to the south of the Yellow River proposal site.

Department of Environment, Heritage and Local Government (DoEHLG) 'Wind Energy Development Guidelines' (2006)

The above guidelines provide direction on wind farm siting and design criteria for a number of different landscape types. This proposal site is considered to be contained within a landscape context that is consistent with elements of both the 'Flat Peatland' and 'Hilly and flat farmland' landscape types identified within the guidelines. The guidance with respect to cumulative impact in these landscape types is;

Flat Peatland - "The openness of vista across these landscapes will result in a clear visibility of other wind energy developments in the area. Given that the wind energy developments are likely to be extensive and high, it is important that they are not perceived to crowd and dominate the flat landscape. More than one wind energy development might be acceptable in the distant background provided it was only faintly visible under normal atmospheric conditions".

Hilly and flat farmland - "It is important that wind energy development is never perceived to visually dominate. However, given that these landscapes comprise hedgerows and often hills, and that views across the landscape will likely be intermittent and partially obscured, visibility of two or more wind energy developments is usually acceptable".

The proposed Yellow River Wind Farm will almost never be viewed in conjunction with the Mount Lucas Wind Farm due to the level of screening within this predominantly flat landscape. The only locations that may afford views of both schemes are likely to be on elevated ground in the vicinity of Croghan Hill, which lies between the developments. In such cases the two wind farms will be visible in opposite directions or at widely disparate viewing angles. It is therefore considered

that the proposal is not in contradiction to the Wind Energy Guidelines (2006) with regard to cumulative effects.

Cumulative Zone of Theoretical Visibility

The cumulative ZTV map indicates that there would be a relatively high degree of intervisibility between the proposal and the Mount Lucas development. As was discussed in relation to the standard ZTV map, these maps are of little value in a flat landscape where hedgerow vegetation and other forms of screening limit views to a relatively short distance. This was reinforced by the assessment of visual impacts from Viewshed Reference Points, where little or no visibility tends to occur beyond 5km of the development except from elevated vantage points.

Cumulative Impact Assessment

As discussed above, the Mount Lucas Wind Farm and the proposed Yellow River Wind Farm will seldom be visible in conjunction with each other. Where this might occur from elevated locations between the developments, the nature of the cumulative view will be 'successional' with the viewer having to turn to see each wind farm separately. The only receptor affording 'sequential' views is the R400 Regional road, which dissects the proposed Yellow River Wind Farm and passes a short distance to the east of the Mount Lucas development. Given the distance between the developments, the travelling time and the fact that they each only become apparent in relatively close proximity, this sequential cumulative effect is relatively minor.

In terms of the cumulative effect on the overall landscape character of the study area wind farms will no longer be a novel landscape feature. Instead, there will be a sense that they are becoming a familiar form of development in and around the cutaway peatland areas of County Offaly. At the present levels of development this is more likely to have positive consequences for additional developments by establishing wind farms as a characteristic feature of the receiving landscape. More so than negative consequences in terms of cumulative impacts.

In accordance with the criteria set out in table 11.9 above, the additional cumulative impact generated by the proposal is deemed to be **Low**.

11.5 MITIGATION MEASURES

Given the highly visible nature of commercial wind energy developments it is not generally feasible to screen them from view using on-site measures as would be the primary form of mitigation for many other types of development. Instead, landscape and visual mitigation for wind farms must be incorporated into the early stage site selection and design phases. A principal consideration in this regard was the Department of Environment, Heritage and Local Government's Wind Energy Development Guidelines (2006).

11.5.1 DoEHLG Wind Energy Development Guidelines (2006)

As outlined at section 11.3.2 above the Wind Energy Development Guidelines (2006) provide guidance on wind farm siting and design criteria for a number of different landscapes types. The proposal site is considered to have characteristics of both the 'Flat Peatland' and 'Hilly and Flat Farmland' landscape types from the Guidelines.

It is considered that the flat and open nature of the site is most characteristic of the 'flat peatland' landscape type, whilst only the land cover characteristics are reflective of the 'Hilly and flat farmland' landscape type. Thus, for most of the criteria it is the flat peatland guidance that is most applicable. The design of the proposed wind farm is in general accordance with this, particularly in respect of the spatial extent of the development and the height of turbines. The sinuous organic layout of the scheme is somewhat in contradiction to both the peatland and farmland sets of guidance, which suggest a more formal arrangement. However, this layout responds to the irregular shape of the peatlands and the marginal scrub areas that provide a transition to the more regular patterns of farmland. This is considered to be an appropriate response that acknowledges the intent of the guidelines, but adapts to the site specific factors.

A number of general mitigation measures are also included below:

- matt non-reflective finishes will be used on all turbine components;
- transmission lines between individual turbines and the substation will be placed underground;
- counter rotation of blade sets will be avoided;

- the number and extent of new access tracks will be kept to a minimum and properly landscaped immediately following completion of works. Such landscaping will include reinstating original vegetation along verges and repairing any wheel ruts;

- special care will be taken to preserve any features, which contribute to the landscape character of the study area. Any damage to existing hedgerows from transporting the turbines will be rectified; and

A high standard of design will be applied to all structures associated with the substation considering not only its function but also the aesthetic quality, in order to minimise any sense of intrusion. The proposed development will provide colour harmony and adequate screening of the substation using tree species typical of the surrounding area.

11.6 RESIDUAL IMPACTS

Landscape and visual mitigation measures have been incorporated into the design of the scheme from its early stages. Therefore, the proposed wind farm presented as the subject of this application already incorporates any landscape and visual mitigation measures. Unlike for many of the other EIA topics, the residual impacts of the proposed wind farm are essentially the same as assessed in the predicted landscape and visual impacts section (11.3) above.

11.7 CONCLUSION

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

Landscape Impact		
Landscape Sensitivity	**Landscape Impact**	**Landscape impact Significance**
Low	**Low**	**Slight-imperceptible**

Visual Impact			
VRP	**Visual Receptor Sensitivity**	**Magnitude of visual impact**	**Visual Impact Significance**
KV1	Very High	Negligible	Slight
KV2	Very High	Negligible	Slight
DR1	Medium	Medium	Moderate
DR2	Medium	Negligible	Imperceptible
DR3	Medium	Negligible	Imperceptible
DR4	Medium	Negligible	Imperceptible
DR5	Medium	Negligible	Imperceptible
LC1	Low	High	Moderate-slight
LC2	Low	Medium	Slight
LC3	High	Low	Moderate-slight
LC4	Medium	High	Major-moderate
LC5	Low	High	Moderate-slight
LC6	Low	High	Moderate Slight
LC7	Medium	High	Major-moderate
CP1	Low	Low	Slight-imperceptible
CP2	Low	Low	Slight-imperceptible
CP3	Low	Negligible	Imperceptible
CP4	Low	Medium	Slight
CP4North	Low	High	Moderate-slight
CP5	Low	Negligible	Imperceptible
CP6	Low	Negligible	Imperceptible
CP7	Low	Low	Slight-imperceptible
MR1	Low	Negligible	Imperceptible
MR2	Negligible	Medium	Imperceptible
MR3	Low	High	Moderate-slight
MR4	Low	High	Moderate-slight
MR5	Low	Medium	Slight
AV1	Medium	Negligible	Imperceptible
AV2	Medium	Low	Slight

Cumulative Impact	Low

Table 11-10: Summary Impact Assessment

11.7.1 Landscape Impacts

The assessment of landscape impacts is based on a comparison of landscape sensitivity against the magnitude of effects on the physical landscape and on landscape character. In this instance the judgement of sensitivity is 'Low' on the basis

that although there are some specific landscape features of high sensitivity within the study area its overriding landscape character is a robust and anthropogenic one often based on a variety of strategic land uses and values associated with productivity.

In terms of the magnitude of landscape impacts, there will be physical impacts on the land cover of the site as a result of this development. These will be very minor in the context of already highly modified land and of a scale that is typical of other land uses in the vicinity. With regard to landscape character, the scale and nature of the development is well assimilated into this open landscape with broad land use patterns. There is also a strong thematic synergy between the cutaway peatlands and the wind turbines with respect to energy production. For these reasons the magnitude of landscape impact is deemed to be low.

On the basis of the judgements relating to landscape sensitivity and the magnitude of the landscape impact expected from this proposal, the overall significance of impact on the landscape is deemed to be 'Slight-imperceptible'.

11.7.2 Visual Impacts

Visual impacts were assessed on the basis of visual receptor sensitivity versus the magnitude of the visual impact. The magnitude itself is the function of the visual presence of the proposal and its effect on visual amenity. Visual impacts were assessed at 29 visual receptors throughout the study area.

As can be seen from the summary table above, visual receptor sensitivity ranges considerably from Very High to Negligible, but with the vast majority (26 of the 29) in the range of medium to low. This reflects the strongly anthropogenic nature of the study area generally as well as the rarity of iconic visual receptors or vast elevated views. The main exception being the view from Croghan Hill (LC3), which is deemed to be of high sensitivity. This level of sensitivity relates mostly to the vast nature of the view and the cultural heritage values associated with this feature rather than any sense of the naturalistic. Views from Sliabh na Callaighe and the Hill of Tara were also considered at the request of Meath County Council. Although these are considered to be receptors of very high sensitivity they are both approximately twice the distance of the principle study area boundary.

The visual presence of the development varies widely across the range of viewpoints, and is strongly dictated by distance from the development, but not in the traditional sense. For most wind farms in upland areas scale in relation to distance has a more linear relationship with visual presence. In this instance a third factor comes into play and this is how the scale of the turbines in relation to viewing distance is affected by the relative distance of screening elements, particularlyhedgerows. The pattern that emerges is that within the flat rural landscape (the majority of the study area) the proposed turbines become almost completely screened from view beyond approximately 3-5km. The visual presence judgments from VRP's within this range tends to be in the order of highly dominant to co-dominant, whereas, immediately beyond this threshold the visual presence falls away abruptly to sub-dominant and minimal. Finding VRP locations in the outer half of the study area with even potential views of the proposed wind farm was one of the more challenging aspects of this assessment.

In many cases the effect of the proposal on visual amenity has an inverse relationship to its visual presence and is also related to screening. From close or elevated locations where the full height of the turbines and the spatial characteristics of the layout are revealed to the viewer, there is a high degree of visual legibility. The complimentary relationship between the turbines and the cutaway bog in terms of both scale and function is also most apparent from these locations. The best example of this is the view from Croghan Hill (LC3). Conversely, from VRP locations where substantial portions of the turbines are screened by vegetation, visual ambiguity arises in relation to the relative scale of turbines and the undulating profile of the scheme within the flat landscape. Instances of turbine blades rotating in an irritant manner against intervening tree tops also become much more frequent within such views. These effects are typified by the view from LC1, but as illustrated above, they are limited to a fairly narrow concentric band before the turbines become fully screened.

On the basis of the factors of visual presence and visual amenity described above, the magnitude of visual impacts ranges between High and Negligible, but with all of the high level impacts occurring within 3km of the site.

11.7.3 Cumulative Impacts

There is currently only one other wind energy development within the study area and this is the 28 turbine Mount Lucas development that is currently under construction

10km to the south of the proposal site in a similar landscape context. There is likely to be a 'succession' view (opposite directions) of both developments afforded from some elevated locations around Croghan Hill, but from almost nowhere else. There will also be a delayed 'sequential' view of both developments for people travelling along the R400 regional road between Rochfortbridge and Portarlington. Overall, the cumulative effect is deemed to be Low.

11.7.4 Overall Significance of Impact

The highest significance of impact is judged to be Major-moderate and this occurs at LC4 and LC7 due to the combination of a medium level of receptor sensitivity and a high magnitude of visual impact. This is not considered to be a critical level of impact in this instance as the value of the views relates to their vastness, whereas the context of the views is largely cutaway bog and productive rural landscape. The proposed wind farm is, therefore, well assimilated in the vista in regards to its scale and function. In all other instances that a high visual impact magnitude is attributed the overall significance is diminished by the low level of sensitivity at that receptor. Likewise, at the only visual receptor within the study area considered to have a high level of sensitivity (LC3 at Croghan Hill), the low order magnitude of impact balances the overall significance. This is due to the remarkable assimilation of the proposed wind farm within the view and the landscape context coupled with few adverse aesthetic considerations. It is notable that 19 of the 29 VRP's register an impact significance of slight or imperceptible.

Based on the assessment contained herein, the overall significance of impact for the proposed Yellow River Wind Farm is considered to be consistent with a Moderate impact as defined in the EPA Guidelines. That is; *"An impact that alters the character of the environment in a manner that is consistent with existing and emerging trends".*

11.8 REFERENCES

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