13. LANDSCAPE AND VISUAL

13.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) addresses the potential landscape and visual impacts of the continued operation of the existing Carnsore Wind Farm (Proposed Development). It covers the assessment methodology, a description of the Carnsore Wind Farm development and the existing landscape based on relevant guidance. It includes a description of the landscape policy of County Wexford with specific reference to wind energy and the study area in which the Carnsore Wind Farm development site is located.

It is important to re-iterate that the Carnsore Wind Farm is an existing facility, first commissioned in 2002, and this EIAR is being prepared in support of a planning application to extend the operational lifespan of the facility beyond 2022, by a further 15 years.

The Proposed Development (all elements pre-existing) comprises:

a. *14 no. Vestas 850 kilowatt (kW) wind turbines with a maximum overall blade tip height of 75 metres (m);*
b. *1 no. 38 kilovolt (kV) permanent electrical substation and control building with total footprint of approximately 575 square metres (m^2), including welfare facilities, associated electrical plant and equipment, security fencing, associated underground cabling and a 1,000-litre septic tank;*
c. *1 no. permanent meteorological mast with a maximum height of 50m, an associated 153m^2 fenced compound containing an 18m^2 site cabin, with an air monitoring mast of 10m total height;*
d. *All associated underground electrical and communications cabling connecting the turbines to the on-site substation;*
e. *Existing site access tracks of 4.0 kilometres (km) approximate total length, 5 no. car parking spaces and 14 no. turbine hardstands.*
f. *Existing gated site entrance way from Nethertown Lane (local public road);*
g. *Site drainage; and,*
h. *Associated site fencing and signage.*

This application seeks a fifteen (15) year planning permission for extension of the operational life of the existing wind farm from the date of expiration (August 2022) of the current An Bord Pleanála (ABP) permission (ABP Ref. PL26.116487).

The landscape of the area is described in terms of its existing character, which includes a description of landscape values and the landscape's sensitivity to change. The landscape and visual impact assessment of the wind farm uses visibility mapping, representative viewpoints and visits to the site and surrounds to inform the assessment. The potential impacts in both landscape and visual terms are then assessed, including cumulative impacts.

The key component of the Carnsore Wind Farm development with the potential for landscape and visual effects are the 14 no. wind turbines which are in place. This means that the assessment is much less theoretical than usual for a project such as this and much more informed by the reality on the ground at and in the vicinity of the site. This assessment uses all of the traditional tools to compile a Landscape and Visual Impact Assessment (LVIA) as these still have relevance to the assessment process by providing context and illustrating the points that are being explained by text.

Although the turbines are in place, the Zone of Theoretical Visibility (ZTV) mapping (which will be explained in the chapter) at a minimum lets the reader know where the turbines will never be visible from. This allows interested parties to focus on the areas and visit the areas where potential visibility

may theoretically exist. The ZTV also informs the locations used to present photo locations. This again allows interested parties to visit locations where there is known visibility of the project but does not preclude anyone (including the MKO team) from visiting many more areas in order to better understand the actual landscape and visual effects.

The photomontages themselves act to inform the reader of potential effects at specific locations. In the case of this project, anyone visiting the site and the surrounding area has the ability to see the turbines, if visible, from all locations around the site. In this case, the assessment is not reliant on the photomontages to the extent that it may be for traditional projects.

A full description of the Carnsore Wind Farm development is provided in Chapter 4 of this EIAR.

13.2 Statement of Authority

This EIAR chapter was written by Audrey Williams, a Landscape Architect with McCarthy Keville O'Sullivan Ltd. (MKO). Audrey has over three years of landscape design and project management experience from Ireland, Sweden and Canada, with a focus on residential and park planning design and renewable energy projects. Audrey specialises in preparing LVIA reports for large-scale renewable energy projects including wind farms, solar farms, quarry extraction and strategic housing schemes, as well as preparing landscape masterplans for residential and commercial spaces. Audrey has extensive project management experience in landscape design and master planning and preparing landscape feasibility reports for large wind farm developments. Audrey was also aided by Michael Watson, a qualified Environmental Scientist and environmental consultant with 20 years' experience of managing Environmental Impact Assessment (EIA) and LVIA projects in Ireland.

13.2.1 Proposed Development Description

The Carnsore Wind Farm development is a constructed wind farm located in the south-east of County Wexford, 7.5 km south-west of Rosslare Harbour and 18.3 km south-east of Wexford Town. The site of the Carnsore Wind Farm development covers approximately 77.4 hectares (ha) of low-lying coastal landscape where 14 no. wind turbines have been installed. The various infrastructure elements that were required for the construction and operational phase of the Carnsore Wind Farm development are detailed in Chapter 4 of this EIAR.

13.2.2 Mitigation by Good Design

The as-built layout of the Carnsore Wind Farm development that is the subject of this LVIA, already incorporates the following landscape and visual design considerations for good wind farm design:

- The turbines have been located within a flat site surrounded by lands of similar elevations which limits open views of the project, particularly from potentially sensitive receptors such as settlements (Note the Photomontage outputs).
- The turbine layout has been designed to create a coherent cluster of turbines, contiguous and connected to each other visually and with consistent spacing.
- The connection to the national electricity grid is partially underground thereby eliminating potential landscape and visual effects during the operational phase.

Site visits and photomontage assessment show that the actual visibility of the as-built turbines is far less than the theoretical visibility shown by other assessment tools such as ZTV mapping. Where visibility does occur, the design is in accordance with best practice guidance and the wind farm is seen as a coherent project.

13.2.3 Assessments of other alternative turbine designs

Typically, various types and sizes of turbines are considered in the LVIA chapter of the EIAR to assess whether different turbine designs may give rise to landscape and visual effects. Alternative turbine specifications are presented in Chapter 3 of this EIAR, Consideration of Reasonable Alternatives. As the turbines are pre-existing and the turbine type and size is known, the various assessments throughout this chapter have been completed using the Vestas V52/850; which has a hub height of 49m, a rotor diameter of 52m and a ground to blade tip-height of 75m.

13.2.4 Scoping Replies

A scoping and consultation exercise has been carried out by MKO, as detailed in Chapter 2: Background of this EIAR. There were no scoping replies received which related to the landscape and visual impact assessment.

13.3 Brief Methodology and Assessment Criteria

This section broadly outlines the methodology and the guidance used to undertake the landscape and visual impact assessment of the Carnsore Wind Farm development; a more detailed description of the methodology is outlined in Appendix 13-1. There are five main sections to this assessment:

- Visibility of the Carnsore Wind Farm development
- Landscape Baseline
- Cumulative Baseline
- Representative Viewpoints and Photomontage Locations
- Likely and Significant Effects – outlining the assessment of landscape, visual and cumulative effects

13.3.1 Scope and Definition of Landscape and Visual Impact Assessment (LVIA) Study Area

For the purposes of this chapter, where the 'Carnsore Wind Farm development site' or 'the site' is referred to, this relates to the primary study area for the Carnsore Wind Farm development. The development site is discussed in some detail in terms of its landscape character in Section 13.5.

The landscape baseline mapping, visual receptor mapping and viewpoint selection are based on wider study areas. The geographical parameters for this LVIA was determined by desktop study, survey work undertaken, the professional judgement of the assessment team, experience from other relevant projects and best practice policy guidance or standards (Appendix 3, DoEHLG Wind Energy Development Guidelines' 2006 and GLVIA 2013). The LVIA study area was chosen as 20 kilometres for visual and landscape effects and 15 kilometres from the Carnsore Wind Farm development wind turbines for effects on landscape character. These are the study areas for which the baseline maps and viewpoint locations are produced and are referred to as the 'study area' or 'LVIA study area'. Furthermore, the following topic areas have been scoped out of the assessment:

- Effects on landscape and visual receptors that have minimal or no theoretical visibility (as predicted by the ZTV) and/or very distant visibility, and are therefore unlikely to be subject to significant effects;
- Effects on designated landscapes beyond a 15 km radius from the Carnsore Wind Farm development, from where it is judged that potential significant effects on key characteristics and/or special qualities, or views are judged unlikely to occur;

- Effects on landscape character beyond a 15 km radius from the Carnsore Wind Farm development, where it is judged that potential significant effects on landscape character are unlikely to occur;
- Effects on visual receptors beyond a 15 km radius from the Carnsore Wind Farm development, where it is judged that potential significant effects are unlikely to occur;
- Cumulative effects in relation to single turbines (except where otherwise stated);
- Cumulative landscape effects beyond a 15 km radius and cumulative visual effects beyond a 15km radius from the Carnsore Wind Farm development, where it is judged that potential significant effects on landscape character are unlikely to occur;
- Effects on visual or landscape receptors in County Wexford.

Ancillary project elements are assessed in the penultimate section of this chapter (Section 13.8.3.3.5), however, this LVIA is primarily focused on assessing the impact of the turbines of the Carnsore Wind Farm development.

13.3.2 Guidelines

While the legislation and general guidance on Environmental Impact Assessment is set out in Chapter 1 of this report, only guidance specifically pertaining to the Landscape and Visual Impact Assessment is outlined in Appendix 13-1, Landscape and Visual Impact Assessment Methodology.

13.3.3 Baseline Landscape and Visual Information

In order to carry out this assessment, an initial desk study was undertaken which identified:

- Zone of Theoretical Visibility (ZTV) mapping;
- Landscape Receptors;
- Policies and objectives contained in the county development plan pertaining to landscape and wind energy;
- Landscape designations in the study area;
- Landscape character of the study area;
- Landscape character of the Carnsore Wind Farm development site based on:
    - Site Surveys undertaken in 2021
    - Landscape Character Types identified in 'Landscape and Landscape Assessment: Consultation Draft of Guidelines for Planning Authorities' (Department of the Environment and Local Government, 2006) and 'Draft Revised Wind Energy Guidelines' (Department of Housing Planning and Local Government, 2019).
- Designated Scenic Routes/ Scenic Views.

13.3.4 Assessment of Potential Impacts

The methodology includes clearly documented methods based on the GLVIA guidelines, in order to arrive at an assessment. These include consideration of landscape and visual sensitivity balanced with the magnitude of the effect to determine the significance of effects. Mitigating factors are then taken into consideration to arrive at residual landscape and visual effects. Residual landscape and visual effects are graded upon an 'impact assessment classification of significance' scale, as defined by the Environmental Protection Agency of Ireland (EPA, 2017). For a more detailed account of the assessment methodology and the various assessment tools used during this LVIA please see Appendix 13-1.

13.4 Visibility of the Carnsore Wind Farm Development

13.4.1 ZTV Mapping: Theoretical Visibility of the Proposed Development

The ZTV mapping methodology outlined in Section 1.3 of Appendix 13-1 was used to examine the theoretical visibility of the 14 No. turbines built at the Carnsore Wind Farm from all landscape and visual receptors within the LVIA study area, using the half blade height of the wind turbines as points of reference. As noted in Appendix 13-1, actual visibility on the ground is significantly less than predicted by the ZTV mapping due to intervening factors such as: on site screening from natural and man-made features, atmospheric weather and/or localised topography. The half blade ZTV map of the Carnsore Wind Farm development and LVIA study Area is shown below in **Error! Reference source not found.**.

Separate colour bands are used on the ZTV map to indicate the number of turbines of which the half blade will potentially be visible. The legend on the map shows the number of visible turbines for each corresponding colour, which are as follows:

- Yellow: 1-4 turbines visible
- Teal: 5-8 turbines visible
- Orange: 9-11 turbines visible
- Navy: 12-14 turbines visible

Error! Reference source not found. illustrates that full theoretical visibility of the 14 turbines is available across the majority of the overall LVIA study area. Overall, concentrated areas of full theoretical visibility are limited to areas in close proximity to the Carnsore Wind Farm development, as well as pockets of visibility to the west and north-west of the wider LVIA study area.

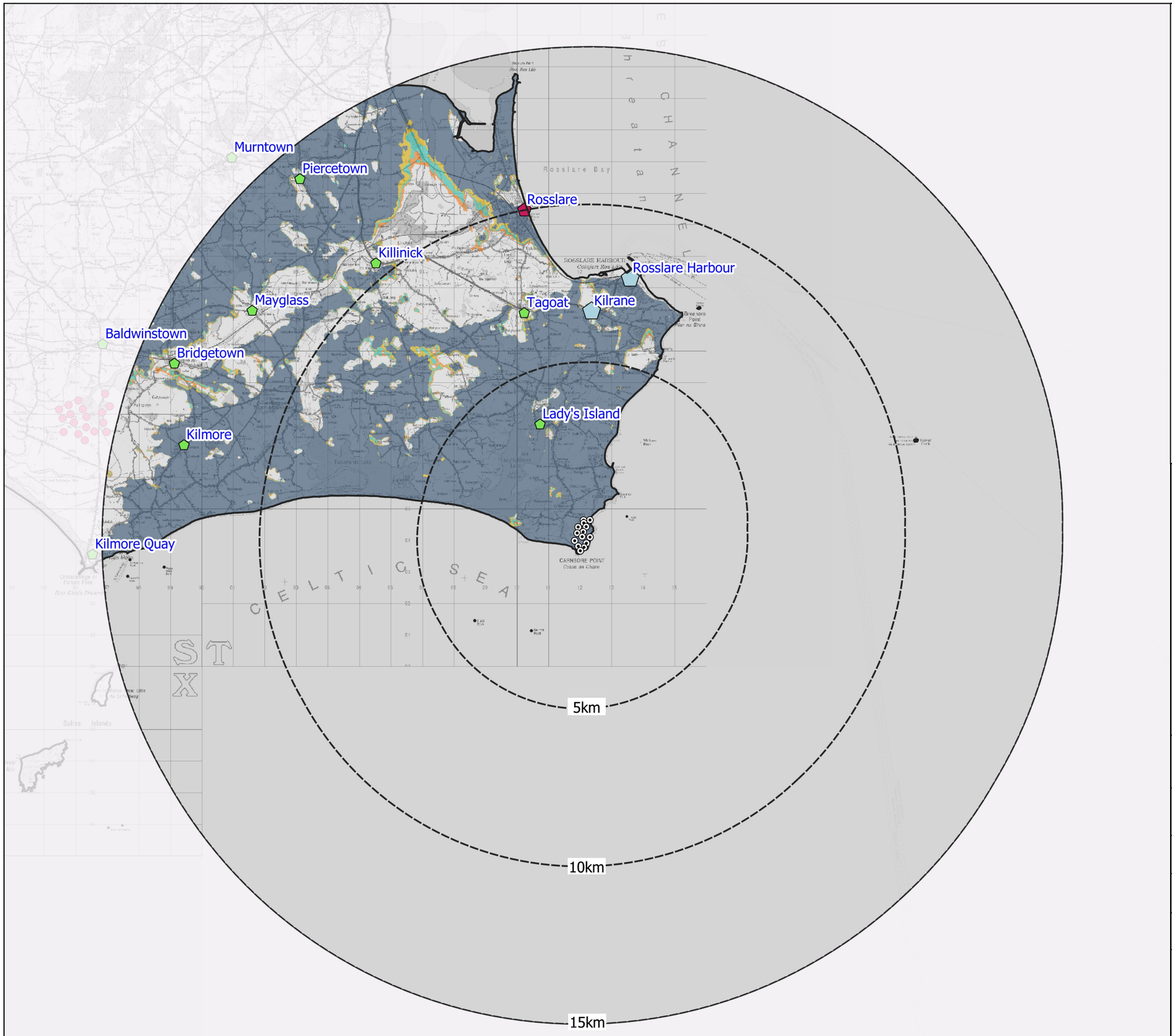
Visibility (in theory) is concentrated within a 5 km radius of the study area, where there is visibility in the immediate vicinity of the site but there are also small pockets which have no visibility.

Beyond 5km of the site boundary visibility significantly decreases, with large areas of no visibility occurring to the north-west and west. The ZTV shows a large strip of no visibility occurring north from the village of Rosslare to the south-west towards the village of Kilmore Quay. The slightly higher ground to the east of Forth Mountain near Mayglass significantly restricts visibility, therefore no visibility is recorded from Mayglass.

Landscapes of Greater Sensitivity (LGS) within 10km of the site including Lady's Island and Tacumshin Lake will have mainly full theoretical visibility. Beyond 10km, other Landscapes of Greater Sensitivity within the study boundary will have mainly partial to no theoretical visibility. Wexford Slobs-south (LGS) will have full to partial visibility, however the topography map shown in Figure 13-2 shows the area is less than 1m AOD so visibility from here is likely to be less. Theoretical visibility from LGS beyond 15km will be less than shown, as actual visibility is reduced by screening from vegetation and distance.

Furthermore, topography of the landscape in which the site is located significantly reduces visibility of the wind farm development, as shown in Figure 13-2 which uses the 5m contour digital elevation data. The majority of the study area is less than 50m AOD and is therefore considered relatively flat over a large area.

Additional ZTV mapping exercises were conducted to assess the theoretical visibility of the Carnsore Wind Farm development cumulatively with all other existing, permitted and proposed wind farm developments located within the 15 km LVIA study area. These ZTV maps are presented and discussed in Section 13.6 of this Chapter, *Cumulative Baseline.*



Map Legend

- Ext. Carnsore turbines

Half Blade ZTV

- 1-4 Turbines
- 5-8 Turbines
- 9-11 Turbines
- 12-14 Turbines

Co. Wexford Settlement Hierarchy

- District Town
- Strong Village
- Small Village

Drawing Title

Half Blade ZTV

Project Title

Carnsore Wind Farm

Drawn By	Checked By
A. Williams	M. Watson
Project No. 210202	Drawing No. Figure 13.1
Scale 1:120000	Date 2021.04.14

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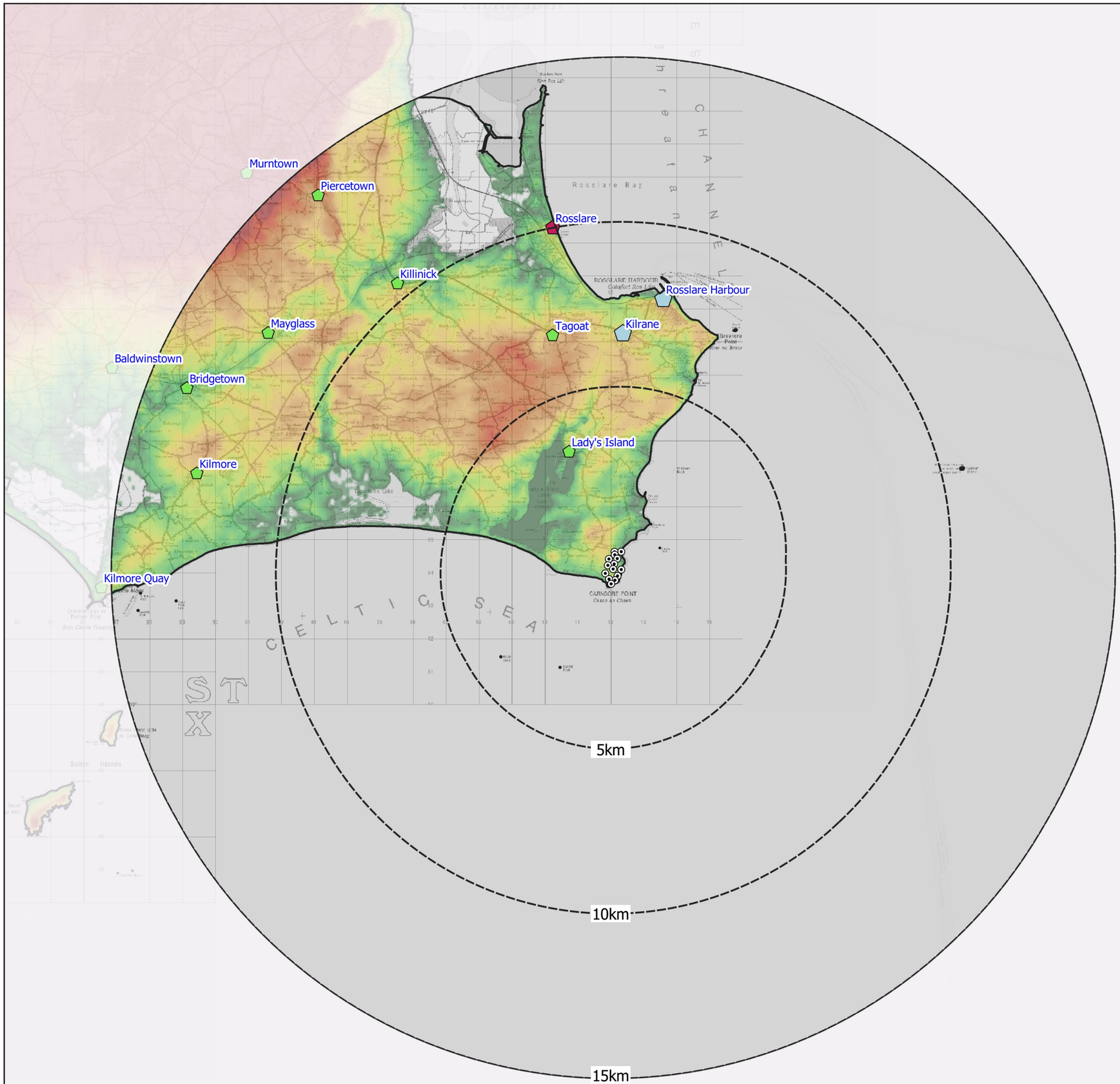

Map Legend

- Ext. Carnsore turbines

Topography Elevation Model (in meters)

- 1
- 5
- 10
- 15
- 20
- 25
- 30
- 35
- 40

WCDP Settlement Hiearchy

- District Towns
- Strong Villages
- Small Village

Drawing Title

Topography

Project Title

Carnsore Wind Farm

Drawn By	Checked By
A. Williams	M. Watson
Project No.	**Drawing No.**
210202	Figure 13.2
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13.4.2 Landscape and Site Context

This section of the LVIA chapter describes the views of the surrounding landscape that are available from the Carnsore Wind Farm development site. It also describes the existing views towards the site from the surrounding area, with particular reference to the views from roads, houses, and areas of amenity value.

13.4.2.1 Views from the Proposed Development

Views of the landscape surrounding the Carnsore Wind Farm development site comprises of relatively flat agricultural fields. Views towards the site are mainly only visible locally (i.e. within 5km) due to the flatness of the local landscape and mature vegetation screening in the study area. Views from the site include coastal panoramic views of the sea and surrounding agricultural land-use. Plate 13-1 below shows the coastal views that surround the Carnsore Wind Farm from the Carnsore Point Coastal Walking Trail.

Plate 13-1: View of the Carnsore Wind Farm, from the Carnsore Point Coastal Walking Trail.

13.4.2.2 Views towards the Proposed Development

Views towards the Carnsore Wind Farm development site are available from the surrounding local roads, some of which are recreational routes although views vary as a result of the flat landscape. During the site visit, the N25 was driven, however it was deemed that there would be no visibility of the site due to the intervening topography and screening by vegetation, as shown in Plate 13-3 below. There are a number of local roads in the vicinity which have visibility of the site and these are represented in the Photomontage Booklet. Beyond 5km of the Carnsore turbines, visibility is greatly limited with distance across the flat landscape, as shown in Figure 13-4 below from Rosslare Harbour and therefore visibility of the site is localised from nearby residential receptors.

Plate 13-2 below was taken from the Carne Beach looking towards the Carnsore Wind Farm. This view is representative of visual receptors at Carne Beach and Ballytrent Loop walk as well as nearby residents. From this viewpoint location, the turbines achieve a visual balance with the landscape, as the turbines are not domineering and do not interfere with views of special amenity value.

Plate 13-2: View towards the Carnsore Wind Farm from Carne Beach.

Plate 13-3: View towards the Carnsore Wind Farm the L-3061 and adjacent to Carne Beach.

Plate 13-4: View towards the Carnsore Wind Farm from the N25 at Rosslare Harbour.

Plate 13-5: View towards the Carnsore Wind Farm from the village of Lady's Island.

Further descriptions regarding views towards the site are presented in the photomontage descriptions in Appendix 13-3. A number of photomontages contained in the Photomontage Booklet represent views from these locations (e.g. VP1, VP3, VP4 and VP6).

13.5 Landscape Baseline

This part of the LVIA focusses on identifying the key landscape receptors that should form part of the assessment. The LVIA study area is situated in areas of County Wexford, therefore, landscape policy determined by Wexford County Council was used as the main source of reference in this section.

Baseline Landscape Receptors:

- **Landscape Designations** based on:
  - Wexford County Development Plan (Wexford County Council 2013-2019, as extended).
  - Draft Wexford County Development Plan (2021-2027).
- **Landscape Character of the Carnsore Wind Farm development Site** and its immediate environment based on:
  - Landscape Type identified using the DoEHLG Wind Energy Guidelines, 2006 and the Draft DoHPLG Wind Energy Guidelines, 2019.
  - Site Visits.
- **Landscape Character of the Study Area** based on:
  - Landscape Character Assessment, Wexford County Council (2013-2019).
  - Draft Wexford County Landscape Character Assessment, 2021-2027.

13.5.1 Landscape Designations

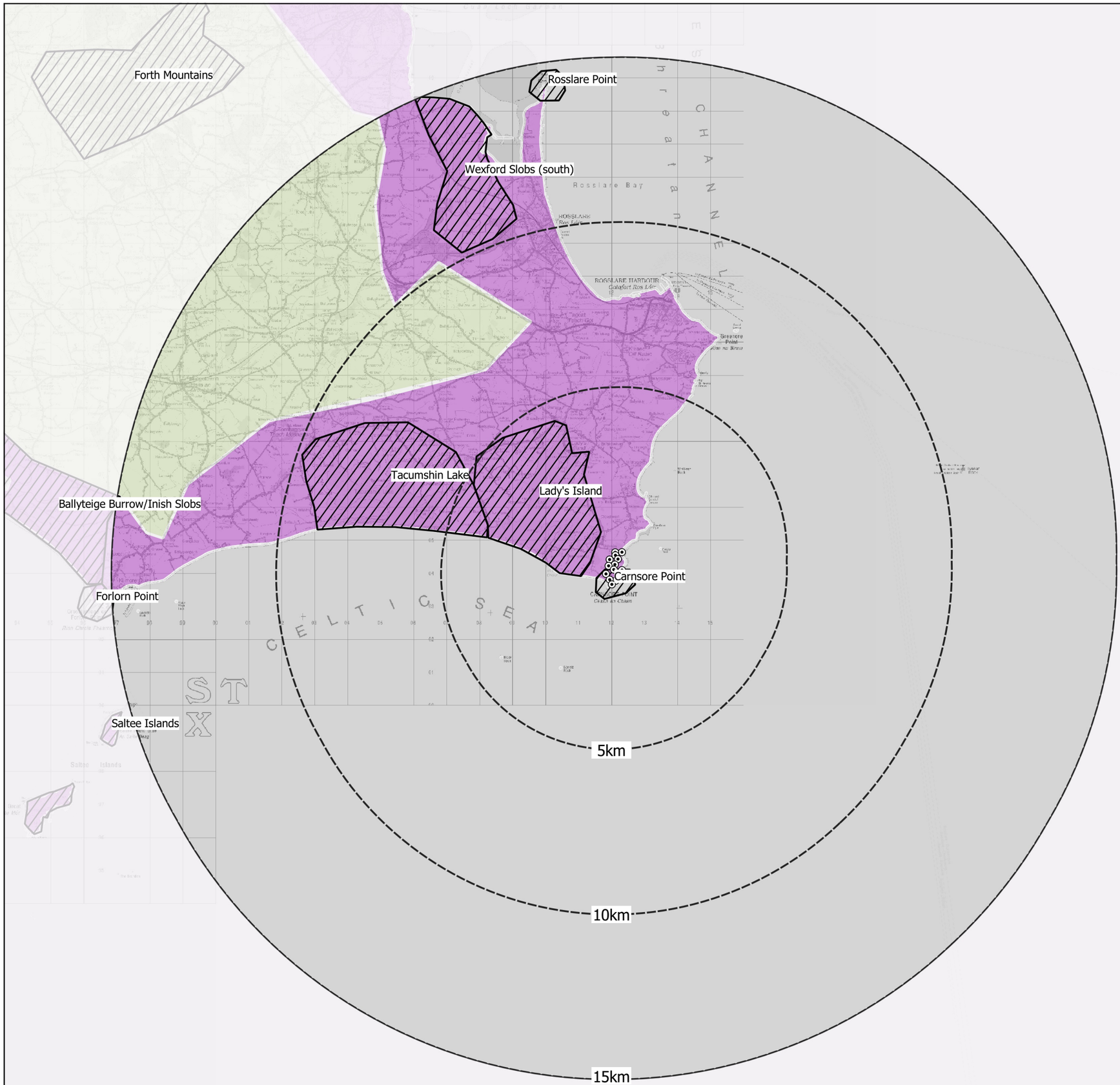
The County Development Plan of Wexford (Wexford County Development Plan 2013-2019 as well as the Draft Wexford County Development Plan 2021-2027) was consulted to identify landscape designations and relevant policy objectives relating to such designations.

13.5.1.1 County Wexford Development Plan 2013-2019 (as extended)

The Wexford County Development Plan 2013 – 2019, hereafter referred to as the WCDP, is the principal instrument that is used to manage change in land use in the County. The Plan sets out the Council's intentions for the future development of land, including measures for the improvement of the natural and physical environment and the provision of infrastructure.

The WCDP addresses a wide range of interrelated economic, social and environmental issues which share the same underlying themes of sustainable development and adapting to climate change. Within the WCDP, sustainable development has been defined as '*development which meets the needs of the present generation without compromising the ability of future generations to meet their own needs*'. Key considerations in assessing sustainable development include, but not limited to:

- The conservation of natural resources;
- Protection of the natural environment;
- Environmentally friendly patterns of development;
- Energy efficiency; and
- High quality design.



Map Legend

- Ext. Carnsore turbines
- Landscape of Greater Sensitivity

Co. Wexford Landscape Character Units

- Coastal
- Uplands
- River Valley
- Lowlands

Drawing Title

Landscape Designations

Project Title

Carnsore Wind Farm

Drawn By	Checked By
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Project No.	**Drawing No.**
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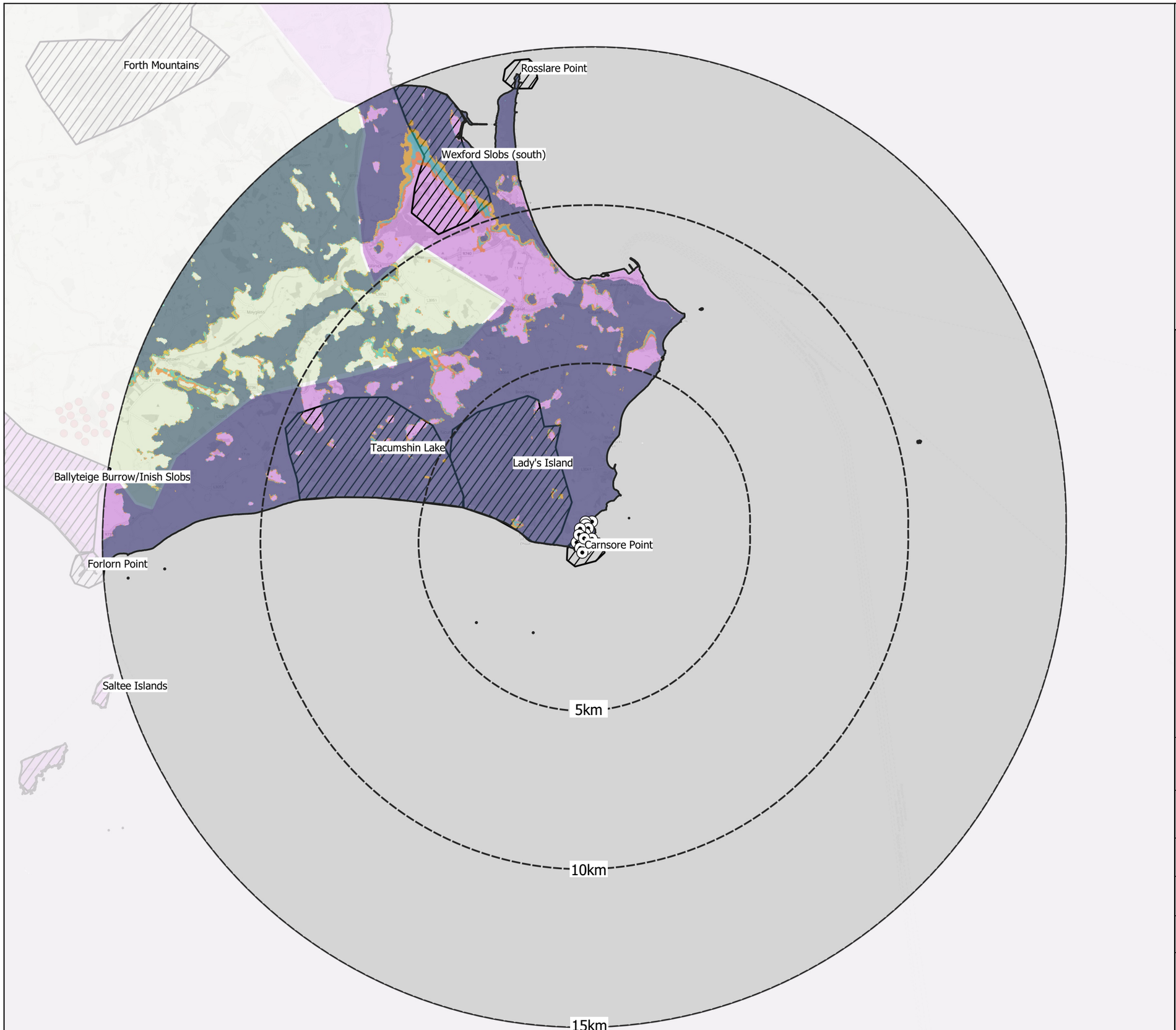

Map Legend

- Ext. Carnsore turbines
- Landscape of Greater Sensitivity

Co. Wexford Landscape Character Units

- Coastal
- Lowlands

Hlaf Blade ZTV

- 1-4 Turbines
- 5-8 Turbines
- 9-11 Turbines
- 12-14 Turbines

Drawing Title

Landscape Designations and Half Blade ZTV

Project Title

Carnsore Wind Farm

Drawn By	Checked By
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13.5.1.2 General Landscape Policy

The WCDP acknowledges that the county's landscapes offer a significant economic asset and sets out a broad aim to '*promote and enable appreciation of the county's landscapes and to minimise adverse visual impacts on these landscapes in the interests of the common good*'. However, as referenced below, the Council also appreciates that there is need for a balanced approach to ensure the future sustainable development within particular landscapes.

> *"The aim of the Strategy will be to put in place a framework to achieve a balance between active management, forward planning and the protection of Ireland's internationally renowned landscape as a physical, economic and cultural asset."*

13.5.1.3 Landscape Character Assessment

A Landscape Character Assessment 2013 – 2019 (LCA) was undertaken by the Council to ensure that change to Wexford's landscape can be sustainably managed. The existing site is located within designated Landscape Character Unit - 'Coastal'. Relevant to these classifications in the context of the development is **Objective L03**, '*To ensure that developments are not unduly obtrusive in the landscape, in particular in the Upland, River Valley and Coastal landscape units and on or in the vicinity of Landscapes of Greater Sensitivity*'. The 'Coastal' classified landscapes, as defined below, as provided within the LCA:

> *The county's coastal landscape has a character that often overlaps with the Lowland landscape. The east coast is generally characterised by long, relatively straight coasts of sand and shingle backed up by low cliffs and sand dunes. The south coast has long beaches and dune systems.*
>
> *The coastal landscape is punctuated by prominent features such as promontories, water bodies, slob lands and the Hook Peninsula which add interesting dimensions to the qualities of the landscape. It includes major urban areas such as Courtown, Wexford, Rosslare Strand and Rosslare Harbour. The coastal landscape is sensitive to development in some locations. It has experienced great pressure from tourism and residential development.*

The WCDP sets out the following objectives with regards to Landscape and Landscape Character including:

> ***Objective L04:*** *To require all developments to be appropriate in scale and sited, designed and landscaped having regard to their setting in the landscape so as to ensure that any potential adverse visual impacts are minimised.*
>
> ***Objective L05:*** *To prohibit developments which are likely to have significant adverse visual impacts, either individually or cumulatively, on the character of the Uplands, River Valley or Coastal landscape or a Landscape of Greater Sensitivity and where there is no overriding need for the development to be in that particular location.*

Wexford County Council commenced the review of the existing Wexford County Development Plan 2013-2019 (as varied) with the publishing of the Draft Wexford County Development Plan 2021-2027 ('DCDP'). The publication of the DCDP provides a significant opportunity to better understand how Wexford's landscape and designated visual amenity areas will be incorporated and planned for in the county during the lifetime of the plan. The DCDP will be used for reference in this report, however, the policies and objectives relating to Landscape and Landscape Character in the WCDP and DCDP broadly remains the same.

The draft policies and objectives set out within the DCDP have maintained strong linkages with the key aims and themes set out within the extant development plan with regards to Landscape and Landscape Character. The following policies and objectives are considered relevant to the subject site:

> ***Objective L04:*** *To require all developments to be appropriate in scale and sited, designed and landscaped having regard to their setting in the landscape, ensure that any potential adverse visual impacts are minimised, and that natural features and characteristics of the site are retained.*
>
> ***Objective L05:*** *To ensure that developments are not unduly visually obtrusive in the landscape, in particular in or adjacent to the Upland, River Valley, Coastal landscape or Distinctive Landscape Character Units.*
>
> ***Objective L06:*** *To ensure that, where a development will have a negative impact in the Upland, River Valley, Coastal, or Distinctive Landscape Character Unit, an overriding need is demonstrated for that particular development and ensure that careful consideration is given to site selection. The development should be appropriate in scale and be sited, designed and landscaped in a manner which minimises potential adverse impacts on the subject landscape.*
>
> ***Objective L09:*** *To protect views worthy of protection, including views to and from sea, river, landscape feature, mountains, tourism sites, landmark structures such a bridges and urban settlements from inappropriate development that by virtue of design, scale, character or cumulative impact would block or detract from such views.*

As demonstrated within this LVIA, the subject development will remain aligned with the future Landscape and Landscape Character objectives and policies guiding the development of Co. Wexford.

13.5.1.4 Landscapes of Greater Sensitivity

The County Development Plan (CDP) contains designations of four landscape character units that include Uplands, Lowlands, River Valley and Coastal, and the Landscapes of Greater Sensitivity (LGS). The Landscapes of Greater Sensitivity are identified in the CDP as "*landscapes that present features in the landscape and seascape which have the most visual interest and prominence, and which are generally more sensitive to development.*"

The DCDP outlines Distinctive Landscapes as part of the landscape character units within the county. Distinctive Landscapes are similar to those of the Landscapes of Greater Sensitivity and are identified as "*features in the landscape and seascape which have visual interest and prominence, and which are generally sensitive to development. Many of these landscapes also have profound historical, socio-cultural and/or religious interest.*"

The Landscapes of Greater Sensitivity are highlighted in the county's LCA and include:

- Sensitive hills and ridges;
- Water bodies; Lady's Island, Tucumshin Lake, Ballyteigue Burrow, Bannow Bay, and Wexford Harbour;
- Islands; Saltees Islands and Keeragh Islands;
- Coastal promontories; Forlom Point (Kilmore Quay), Carnsmore Point, Rosslare Point, Kimichael Point and Cahore Point;
- The Hooks Peninsula;
- Screens Hills.

The WCDP sets out the following objective with regards to tourism and landscapes of greater sensitivity:

> ***Objective TM 01:*** *To protect and sustain those natural, built and cultural features that form the basis of the county's tourism industry, including landscapes of greater sensitivity, local scenic landscapes, areas of important wildlife interest, historic buildings and structures.*

The Wexford County Development Plan outlines that "*Landscapes of Greater Sensitivity are designated under the Landscape Character Assessment contained in Volume 3 and are shown on Map No. 13. These areas are highlighted as the most sensitive and scenic areas of the county that need to be protected from inappropriate development for the benefit of future generations but also because they are the reason that many people visit Wexford and so it is important to protect them for the tourist revenue they bring.*"

Turbines of the existing Carnsore Wind Farm are located within a Landscape of Greater Sensitivity-Carnsore Point, which has a High Landscape Sensitivity Rating, as set out in the WCDP and DCDP. There are two other areas of LGS located within the 15km study boundary, as shown in The Wexford County Development Plan 2013 – 2019, hereafter referred to as the WCDP, is the principal instrument that is used to manage change in land use in the County. The Plan sets out the Council's intentions for the future development of land, including measures for the improvement of the natural and physical environment and the provision of infrastructure.

The WCDP addresses a wide range of interrelated economic, social and environmental issues which share the same underlying themes of sustainable development and adapting to climate change. Within the WCDP, sustainable development has been defined as '*development which meets the needs of the present generation without compromising the ability of future generations to meet their own needs'*. Key considerations in assessing sustainable development include, but not limited to:

- The conservation of natural resources;
- Protection of the natural environment;
- Environmentally friendly patterns of development;
- Energy efficiency; and
- High quality design.

Figure 13.3. During the site visit in May 2021, it became apparent that there was very little visibility from LGS outside the 5km boundary, therefore visibility was excluded from the vast majority of the study boundary. In general, views towards the site do not interfere with visual amenity areas as the scale, siting and design of the turbines are considered appropriate and do not detach from the costal amenity views from nearby receptors.

13.5.1.5 Scenic Routes and Views

The WCDP does not currently have any designated scenic routes or views, however, Section 14.4 of Volume 1 of the County Development Plan 2013-2019 (as extended) sets out the current objectives in relation to landscape and a Landscape Character Assessment is contained in Volume 3. Additionally, Section 11.9 of the DCDP discusses scenic routes and protected views. The DCDP states that "*all landscapes are living and changing, and therefore in principle a development on such a route would not necessarily be prohibited, but development, where permitted, should not hinder or obstruct these views and prospects, should not have significant negative impacts either individually or cumulatively and should be designed and located to minimise their impact.*"

Section 5 of the DCDP, currently under review, also states that *'the plan does not designate specific routes but notes that specific routes may fall into a number of categories including:*

- *Routes through Uplands, Coastal, River Valleys and Distinctive Landscapes;*
- *Trails such as the Eurovelo, Norman Way, Greenways and Wexford Walking Trails.*

Other scenic views might also include:

- *Views to the sea and views towards land from the sea and rivers in locations which may host tourism or amenity/journeys arrivals by boat;*
- *Views from landmark structures such a bridges and urban settlements;*
- *Planned views and vistas such as those associated with planned settlement and heritage properties and gardens.*

There are no scenic routes within or pertaining to the Carnsore site. The closest scenic trail is the Norman Way and Wexford Heritage Trail, both located in the village of Lady's Island, approximately 3km north-west from the nearest turbine.

Visual Impacts

Section 11 of the DCDP also discusses the capacity of an area to visually absorb development based on the following three factors:

1. **Topography** - development in elevated areas will usually be visible over a wide area; development in enclosed areas will not.

2. **Vegetation** - areas which support (or which have the potential to support) trees, tall hedges and woody vegetation can screen new development from view. Areas which cannot easily sustain such vegetation will be unlikely to screen new development.

3. **Development** - New development is less likely to be conspicuous in the context of existing development in the landscape.

The Carnsore wind farm has been in operation for 19 years and therefore forms part of the existing landscape setting. The proposed development will remain aligned with the future landscape and visual designations and policies guiding the development of Co. Wexford. The scale, siting and design of the

turbines is considered appropriate, as the turbines do not detract from the scenic amenity views and are readily absorbed into the flat landscape, as shown in the Photomontages in Appendix 13-3.

13.5.1.6 Walking Routes and Cycleways

There are several walking and cycling trails within 5km of the subject site. The Carnsore Point Coastal Walking Trail is a Way Marked Walking Trail that runs adjacent to the site along the southern and eastern boundary, as well as the Wexford Heritage Trail which is located within the village of Lady's Island. There is mainly full theoretical visibility from these walking trails, as shown in Figure 13-8. These trails are likely often visited by locals in the area and there is significant precedence for a wind farm and an amenity trail to coexist together. The Wexford Cycle Hub Loop, as shown in Figure 13-5 below, is the only cycle trail that is located within the 15km boundary. Walking routes including the Wexford Walking Trail, Ballytrent Loop, Rosslare Harbour Cliff Walk and the Kilmore Quay are all located within the 15km study boundary. It is anticipated that visibility will be very limited from walking and cycle routes beyond 5km of the development site. Figure 13-6 below shows the Co. Wexford Walking Trails map.

Figure 13- 5: Co. Wexford walking and cycle trails map.

13.5.1.7 Wind Energy Policy

Volume 5 of the WCDP, refers to the *Wind Energy Strategy* for County Wexford and identifies areas within the county as suitable for wind energy development. The resulting wind energy strategy is set out

in the plan and identifies three categories of areas suitable for wind energy developments. These categories are:

- Acceptable in Principle
- Open to Consideration
- Not Normally Permissible

The Carmsore Wind Farm and the study boundary is located within LCU 4- Coastal which is has a Wind Energy designation of *Not Normally Permissible* as set out in the Wexford CDP. The Wind Energy Strategy Map for County Wexford, as shown in Figure 13-6 below, suggests that there are limited areas in County Wexford suitable for wind energy developments.

The WCDP sets out the following objective related to wind energy development and the development site:

> ***Objective EN 11:***
> *To promote and facilitate wind energy development in accordance with Guidelines for Planning Authorities on Wind Energy Development (Department of Environment, Heritage and Local Government, 2006) and the Wind Energy Strategy which forms part of this Plan, subject to compliance with normal planning and environmental criteria and the development management standards contained in Chapter 18.*

The Plan notes that the cumulative effect of wind energy developments with regard to landscape and visual impacts, as well as Natura 2000 sites, will also be a consideration in these areas.

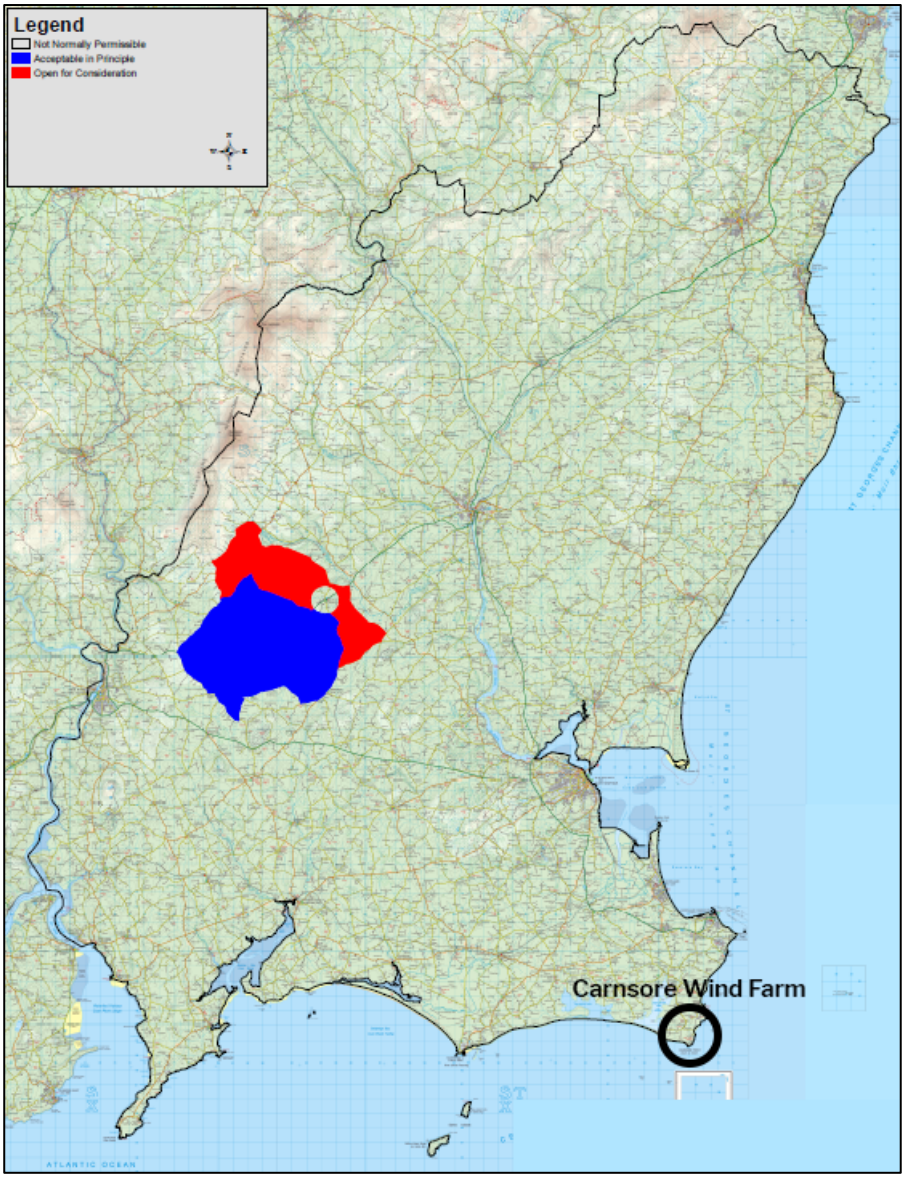
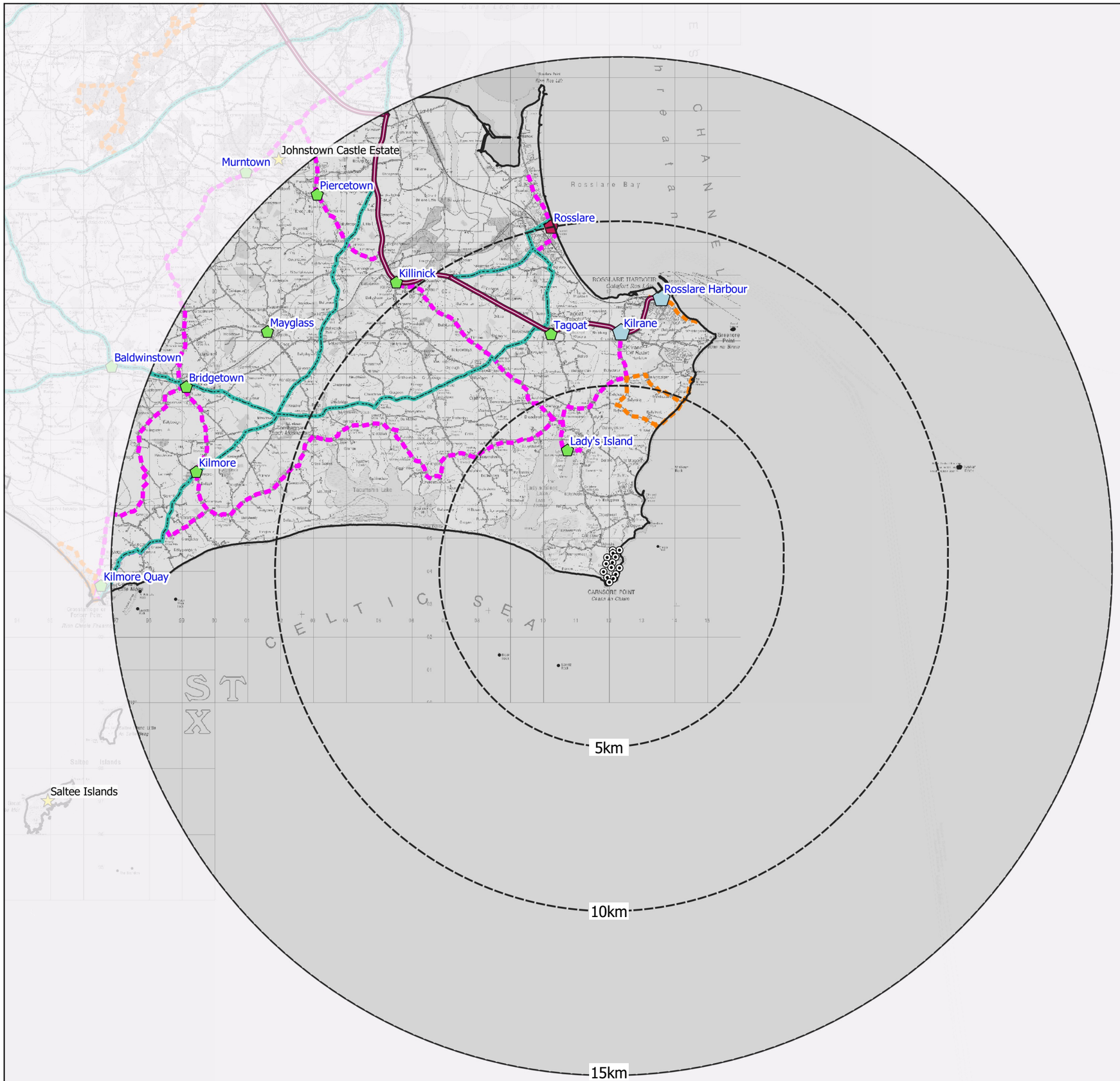


Figure 13- 6: Co. Wexford Wind Energy Strategy Map (WCDP 2013-2019).



Map Legend

- Ext. Carnsore turbines
- National Roads
- Regional Road
- Wexford Cycle Trails
- Wexford Walking Trails
- Tourism Designations

Co. Wexford Settlement Hierarchy

- District Town
- Strong Village
- Small Village

Drawing Title

Visual Baseline

Project Title

Carnsore Wind Farm

Drawn By	Checked By
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Project No. 210202	Drawing No. Figure 13.7
Scale 1:120000	Date 2021.04.14

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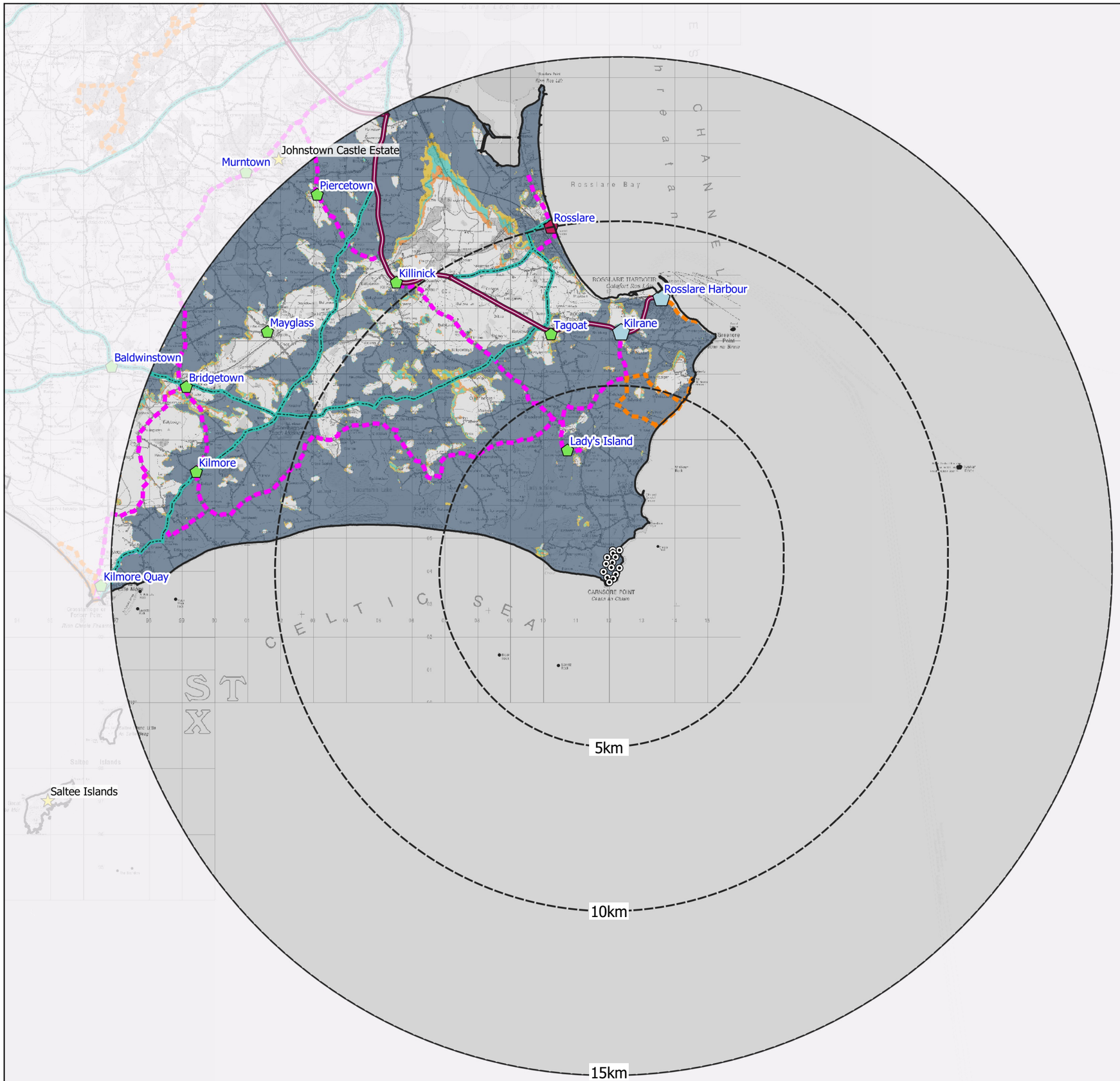

Map Legend

- Ext. Carnsore turbines
- National Roads
- Regional Road
- Wexford Cycle Trails
- Wexford Walking Trails
- Tourism Designations

Co. Wexford Settlement Hierarchy

- District Town
- Strong Village
- Small Village

Half Blade ZTV

- 1-4 Turbines
- 5-8 Turbines
- 9-11 Turbines
- 12-14 Turbines

Drawing Title

Visual Baseline and Halfblade ZTV

Project Title

Carnsore Wind Farm

Drawn By	Checked By
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Project No. 210202	Drawing No. Figure 13.8
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13.5.2 Landscape Character of the Proposed Development

13.5.2.1 DoEHLG – Wind Energy Development Guidelines (2006)

The DoEHLG Wind Energy Development Guidelines (2006) provide advice to Planning Authorities on planning for wind energy developments through the Development Plan process and in determining applications for planning permission. The guidelines are also intended to be of assistance to developers and the wider public in considering wind energy development.

These guidelines offer guidance for the siting and design of wind energy developments in various landscape contexts by defining six landscape character types that represent most situations where wind turbines may be proposed. The guidance is intended to be indicative and general and notes that it, represents the 'best fit' solutions to likely situations.

The six landscape character types include 'Mountain Moorland', 'Hilly and Flat Farmland', 'Flat Peatland', Transitional Marginal Land', 'Urban/industrial' and 'Coastal' landscape character types. The guidelines note that where a wind energy development is located in one landscape character type but is visible from another, it will be necessary to decide which might more strongly influence the approach adopted for the assessment.

The existing Carnsore Wind Farm development site is open land cover mostly comprising of arable grassland outlined by stone walls and small shrubs. The existing site conditions is mainly flat, lowering in elevation towards the ocean edge. In consideration of these factors, 'hilly and flat farmland' landscape character type is the most applicable descriptor of the Carnsore Wind Farm development site. Further details of this landscape character type is presented below.

The key characteristics of the 'Hilly and Flat Farmland' landscape type are:

- *Intensively managed farmland, whether flat, undulating or hilly;*
- *A patchwork of fields delineated by hedgerows varying in size;*
- *Farmsteads and houses are scattered throughout, as well as occasional villages and towns;*
- *Roads, and telegraph and power lines and poles are significant components; and*
- *A working and inhabited landscape type.*

The best practice siting and design guidance given for 'hilly and flat farmland' in the and DoEHLG(2006) guidelines is set out below:

Location

Location on ridges and plateaux is preferred, not only to maximise exposure, but also to ensure a reasonable distance from dwellings. Sufficient distance should be maintained from farmsteads, houses and centres of population in order to ensure that wind energy developments do not visually dominate them. Elevated locations are also more likely to achieve optimum aesthetic effect. Turbines perceived as being in close proximity to, or overlapping other landscape 105 elements, such as buildings, roads and power or telegraph poles and lines may result in visual clutter and confusion. While in practice this can be tolerated, in highly sensitive landscapes every attempt should be made to avoid it.

Spatial Extent

This can be expected to be quite limited in response to the scale of fields and such topographic features as hills and knolls. Sufficient distance from buildings, most likely to be critical at lower elevations, must be established in order to avoid dominance by the wind energy development.

Spacing

The optimum spacing pattern is likely to be regular, responding to the underlying pattern field pattern. The fields comprising the site might provide the structure for spacing of turbines. However, this may not always be the case and a balance will have to be struck between adequate spacing to achieve operability and a correspondence to field pattern.

Layout

The optimum layout is linear, and staggered linear on ridges (which are elongated) and hilltops (which are peaked), but a clustered layout would also be appropriate on a hilltop. Where a wind energy development is functionally possible on a flat landscape a grid layout would be aesthetically acceptable.

Height

Turbines should relate in terms of scale to landscape elements and will therefore tend not to be tall. However, an exception to this would be where they are on a high ridge or hilltop of relatively large scale. The more undulating the topography the greater the acceptability of an uneven profile, provided it does not result in significant visual confusion and conflict.

Cumulative Effect

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 Carnsore Wind Farm development is in accordance with the above guidance in terms of location (appropriately located along the Carnsore Point), spatial extent (moderate and well within keeping of the surrounding landscape scale) spacing (regular), layout (single cluster), height (within the landscape scale) and cumulative effect (partially obscured due to the flat nature of the landscape).

13.5.2.2 Site Visit Findings

13.5.2.2.1 *Physical Landscape Unit*

The topography, vegetation and anthropological features on the land surface in an area combine to set limits on the amount of the landscape that can be seen at any one time. These physical restrictions form individual areas or units, known as physical units, whose character can be defined by aspect, slope, scale and size. A physical unit is generally delineated by topographical boundaries and is defined by landform and land cover.

The topography of this physical landscape unit and that of the wider setting is relatively flat. Northwest of the site and towards the town of Wexford, the landscape rises in elevation to form the Forth Mountains.

There are no large settlements located within the physical landscape unit. Rosslare Harbour and Kilrane are identified as 'District Towns' in the WCDP and are the largest settlements in the study area. Settlements generally take the form of small, scattered villages, linked by the local road network which includes the settlements of Rosslare Strand, Lady's Island and several other small villages in the study area. Pastoral agriculture fields are the primary land-use within the physical unit.

Topography

The topography across the site slopes generally east-southeast towards the coastline with a maximum elevation of 16 metres Ordnance Datum (m OD) in the south-centre of the site, between turbine T4 and T5. Figure 13-2 shows the topography of the site and the landscape within the LVIA study area. No significant watercourses were recorded within or adjacent to the site boundary. Three existing shallow surface drainage crossings were recorded on the east of the site, along the access road between turbine T12 and T7.

Drainage

During the original construction of the Carnsore Wind Farm new internal site roads were constructed of consolidated gravel. The new site roads were constructed with a designed running width of 4m. Existing roads on the site were also widened to 4m. During the construction process both cross and longitudinal drainage provisions were made to enable existing drainage patterns to be maintained.

There are no ground disturbing works proposed as part of the Proposed Development. Therefore, no existing natural drainage features will be altered as part of the Proposed Development and there will be no direct or indirect discharges to natural watercourses. The Proposed Development will not result in any changes to the existing drainage within the project site.

13.5.2.2.2 *Land cover*

Landcover is the term used to describe the combinations of vegetation and land-use that cover the land surface. It comprises the more detailed constituent parts of the landscape and encompasses both natural and man-made features. The Carnsore Wind Farm development site is part of a remote, rural lowland landscape.

Current landcover within the site is mainly agricultural grass fields outlined by heath and low-lying shrubs which form field boundaries. Areas of the current site to the west comprises roughed grazed agricultural fields, as shown in Plate 13-6. The 14 no turbines have been built as well as ancillary infrastructure such as access roads and hardstands which are shown below in **Error! Reference source not found.** to 13-9 below.

Plate 13-6: View of the site showing grass fields outlined by shrub vegetation with coastal panoramic views.

Plate 13-7: Landcover comprising of grass fields outlines by heath and low-lying shrubs.

Plate 13-8: *Landcover consisting of grass fields, heath and rocky outcrops.*

The habitat map for the development site is presented in Chapter 6 of this EIAR. Chapter 6, Biodiversity notes that habitats within the site include mostly agricultural fields grazed by livestock, hedgerows forming field boundaries and areas of scattered bramble and gorse scrub throughout the site, with a larger area dominated by scrub in the west of the site. Vegetated areas of rock outcrop and heath vegetation are widely distributed throughout much of the site, as shown in Plate 13-8 above.

Land Use

Current land-use on the site comprises of land for rough grazing and the infrastructure of the Carnsore Wind Farm development.

Rough grazed agriculture occupies the majority of the site, where cattle grazing is evident on the open heath areas on the western site boundary. The existing turbines and supporting infrastructure of the Carnsore Wind Farm development contribute towards the land-use of the site. The Carnsore Point Coastal Trail is a poorly maintained public walkway which transverses the boundary of the site to the south and east along the shoreline, as shown in Plate 13-9 below.

Land uses in the wider landscape also consist of agriculture and tourism and recreation. The Richfield Wind Farm (18 turbines) and the Teagasc Single Turbine at Johnstown are the only existing or permitted wind farms in close proximity to the site. The Richfield Wind Farm, however, is located approximately 15.5km west of the site and is not within the study boundary.

Plate 13-9: View of the site showing the rough grazed agriculture that exists on the western boundary.

Plate 13-10: Carnsore Point Coastal Trail shown running adjacent to the site along the eastern boundary.

13.5.2.2.3 Visual Landscape Unit

A visual landscape unit is defined by spatial enclosure and pattern, i.e. by landform and land-cover. The limits of the views that are available from a particular area are therefore determined by the physical landscape, such as topographical and vegetation boundaries. At the site of the Carnsore Wind Farm development, topography and vegetation are the key limiting factors in defining the size of the visual landscape unit. Due to the flat nature of the site and the scale of the existing turbines, views towards the site are limiting and localised. As demonstrated in Appendix 13-3 *Assessment of Photomontages*, all photo locations were taken within 5km of the site as the flat nature of the landscape and the mature vegetation that exists within the study area significantly reduces visibility of the existing turbines.

13.5.3 Landscape Character of the LVIA Study Area

Only two LCUs included in the WCDP and Appendix 5- Landscape Character Assessment are located within the LVIA landscape character study area (within 15km of the Carnsore Wind Farm development). As demonstrated in **Error! Reference source not found.** above, these LCUs are identified as: Coastal and Lowland.

Utilising the ZTV mapping exhibited in **Error! Reference source not found.**, a preliminary assessment was conducted to screen out landscape receptors (LCUs) that have very little or no theoretical visibility of the Carnsore Wind Farm development.

ZTV mapping shown on Figure 13-4 shows that both the LCU 4-Coastal and LCU 2- Lowland will have theoretical visibility of the Carnsore Wind Farm development.

Appendix 13-2 details the key characteristics and sensitivity designations of each of these two LCUs as designated by the WCDP. Appendix 13-2 also utilises a best practice assessment methodology (detailed in Appendix 13-1) to determine the likely significant landscape and visual effects of the Carnsore Wind Farm development on each of the LCUs. The results of these assessments are summarised and discussed in Section 13.8 of this Chapter.

Landscape receptors likely to receive the most significant landscape and visual effects are evaluated further via assessment from representative viewpoints and photomontages, details of which are demonstrated in the photomontage assessment tables in Appendix 13-3.

13.6 Cumulative Baseline

In terms of cumulative landscape and visual effects for the proposed Carnsore wind farm, only other vertical man-made elements of the landscape have been considered. The following infrastructure were identified within the receiving landscape:

- Turbines of the existing Carnsore Wind Farm as well as the surrounding grid connection infrastructure and substation;
- Turbines of the existing Richfield Wind Farm (18 turbines);
- Existing Teagasc Single Turbine at Johnstown.

There are no other existing, permitted or proposed wind farms within the 15km EIAR study boundary. Beyond the 15km study boundary, the existing Richfield Wind Farm (18 turbines) and the Teagasc Single Turbine at Johnstown are the only other existing or permitted turbines, at approximately 15.5km from the nearest Carnsore turbine. Cumulative visual effects from other existing or permitted wind farms are unlikely to arise from the Carnsore development. Beyond cumulative wind farm assessment in the study area, the existing grid connection (underground and overhead line) was also assessed for visual effects. The 38kV grid connection was permitted by ABP in September 2001 (ABP Ref. PL26.124600) and is composed of approximately 1.2km of buried 38kV transmission line and approximately 11.2km of overhead line, running in a general north and northwest direction from the wind farm to the Killinick 38kV substation, located at the junction of the R740 and N25, approximately 9.4km northwest of the wind farm (straight line distance).

The overhead grid connection and utility infrastructure is an existent and vertical feature and is not a prominent landscape element. The overhead line is approximately 1.2km from the nearest Carnsore turbine, therefore breaking the visual connection with the Carnsore wind farm. As shown in Figure 13-11 below, the above ground powerline is at a significant distance from the turbines and is readily absorbed into the existing landscape.

Plate 13-11: View of the overhead line northwest of the site along the L-3061.

13.7

Representative Viewpoints and Photomontage Locations

The LVIA conducted in this chapter is part of an EIAR and the turbines of the Carnsore Wind Farm development are already built and operational. The process of selecting viewpoint locations, taking representative photos and generating wide perspective photomontages follows the regular methodology prescribed by best practice guidance for LVIA. As the turbines are already constructed, there is no requirement to super-impose the Carnsore Wind Farm development turbines within the photomontages as would be normal procedure, as the turbines are already existent within the landscape and images. Assessment of likely significant effects is based on the actual visibility of the project as determined by site visits and aided by the Photomontages.

Wireframe graphics and specialist software (See Appendix 13-1) have been used to superimpose recently permitted, proposed and under construction wind farms into the photomontages and baseline images in order to assess the cumulative effects of all other wind farms within the LVIA study area.

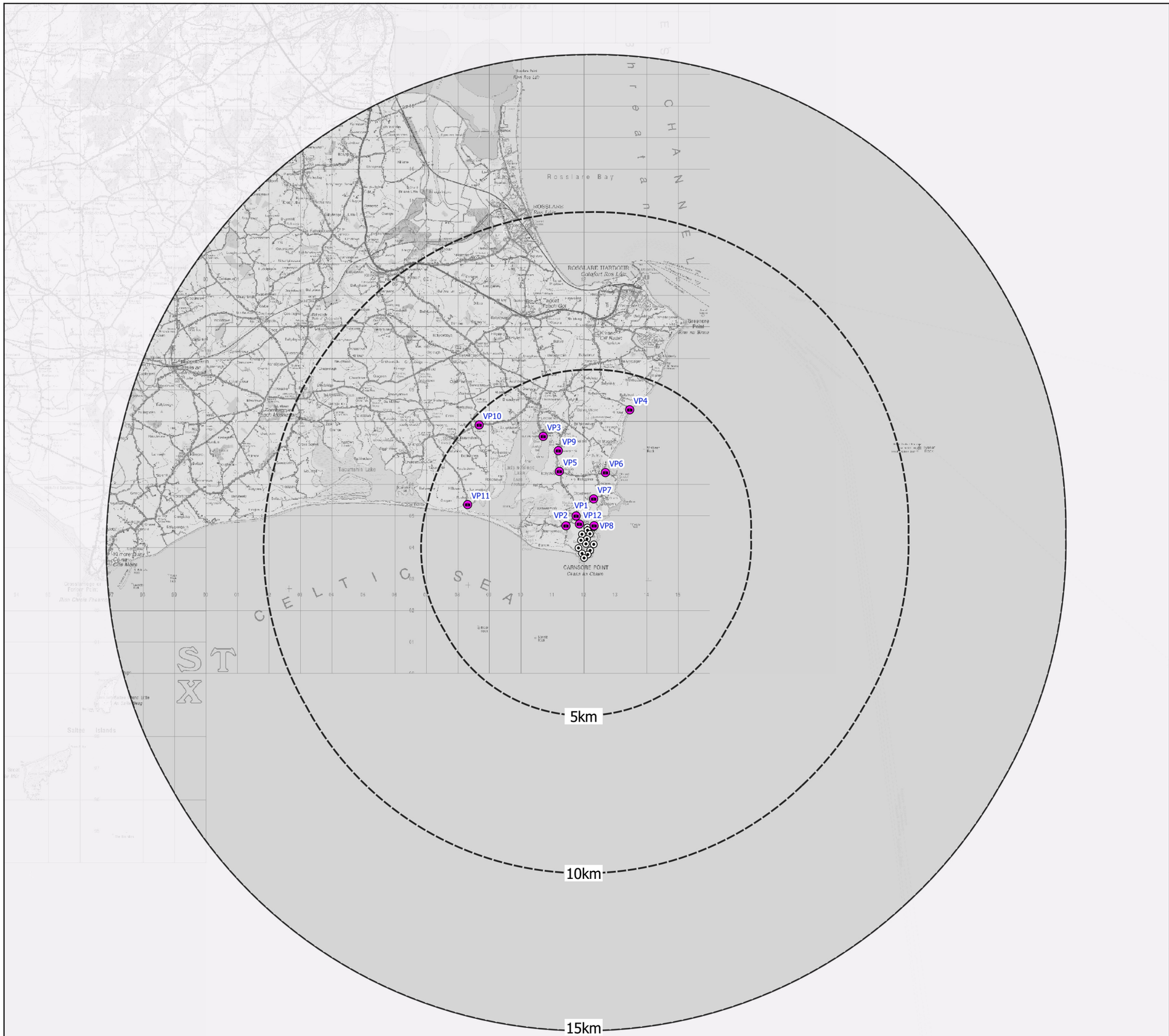
Locations within the LVIA study area were chosen to serve as representative viewpoints of the Carnsore Wind Farm development from landscape and visual receptors screened in for further assessment after multiple site visits and a desktop mapping assessment. Several other factors governed the choice of viewpoint locations:

- The methodology outlined in Appendix 13-1 based on best practice guidance for viewpoint selection and photomontage assessment.
- Landscape and Visual receptors screened in through ZTV mapping exercises and site visits, including views from local settlements, populated areas, local and regional roads and scenic routes and views.
- Viewpoint locations were chosen that incorporate the cumulative landscape effects of other wind farm developments within the LVIA study area.
- The photomontage locations are consistent with the previously permitted planning application (ABP Ref. PL26.116487), providing continuity and the capacity for direct comparison with the previous proposal and EIS documentation.

Please refer to Appendix 13-1 for a comprehensive description of the methodology deployed during the creation and assessment of the photomontages used for this LVIA, also included in Appendix 13-1 are an overview of the limitations that can inhibit the utility of the photomontage method.

12 No. viewpoint locations were selected for the preparation of photomontages in this LVIA, the location of these viewpoints are shown on Figure 13-10 and described in Table 1-1 of Appendix 13-3. The photomontages are presented in the photomontage booklet accompanying this EIAR. Assessment of likely or significant landscape and visual effects of the Carnsore Wind Farm development are demonstrated in the Photomontage Assessment tables in Appendix 13-3, photomontage assessment results are summarised in the following Section.

The locations of the 12 photomontage viewpoints taken forward for assessment in this EIAR are demonstrated in Figure 13-1 below. **Error! Reference source not found.**, Summary of Viewpoint Impact Assessment Results shows the Viewpoint numbers used for this EIAR. While some visual impacts might arise in locations where there is very little screening, the wind turbines are located in a small, isolated area and are only visible locally. They will not obscure views or vistas of the coast or sea.



Map Legend

- Ext. Carnsore turbines
- Viewpoint Locations

Drawing Title

Viewpoint Locations Map

Project Title

Carnsore Wind Farm

Drawn By	Checked By
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Project No.	**Drawing No.**
210202	Figure 13.10
Scale 1:120000	**Date** 2021.04.14

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13.8 Likely or Significant Landscape and Visual Effects

13.8.1 'Do-Nothing' Alternative

The 'Do-Nothing' alternative scenario entails the decommissioning of the existing wind farm once the current planning permission expires (2022) and restoration of the site to its original use as agricultural lands for pasture and crops. As per Condition 9 of the current planning permission (ABP Ref. PL26.116487) this scenario would involve the removal of the existing turbines and all associated wind farm infrastructure.

Should this occur, there would be no landscape and visual effects related to the turbines, once removed. This option would have no positive impact with regards to the production of renewable energy, or the offsetting of greenhouse gas (GHG) emissions and would in fact remove an existing renewable energy source. Based on the positive environmental effects arising from the Carnsore Wind Farm development, the 'do-nothing' scenario was not the chosen option. Instead, an application is being made for the continued operation of the existing wind farm as the site infrastructure including the turbines are fit for purpose and will continue to operate efficiently for an additional 15 years.

13.8.2 Construction Phase Effects

No construction activities or alterations to the existing wind farm are proposed beyond routine maintenance during the operational phase of the Proposed Development.

13.8.2.1 Landscape Effects

No construction phase effects will arise from the continued operation of the existing wind farm.

13.8.2.2 Visual Effects

No construction phase effects will arise from the continued operation existing wind farm.

13.8.3 Operational Phase Effects

The Proposed Development is expected to have a lifespan of approximately 15 years. Planning permission is being sought for a 15-year operational period commencing from the date of expiration of the existing wind farm planning permission (ABP Ref. PL26.116487). During the operational period, on a day-to-day basis the wind turbines will operate automatically, responding by means of anemometry equipment and control systems to changes in wind speed and direction.

13.8.3.1 Landscape Effects

13.8.3.1.1 *Landscape Character Areas*

An assessment of the effects on landscape character was undertaken for the seven LCTs within the LVIA study area that were identified as having significant theoretical visibility in the Landscape Receptor Preliminary Assessment. The individual assessments for each LCT are presented in Appendix 13-2 and are summarised in *Error! Reference source not found.* below.

Table 13-1 Summary of Landscape Effects of Landscape Character Types.

Landscape Character Units (LCU)	LCT Sensitivity to Wind Farm Development	Magnitude of Change	Significance of Landscape Character Effect
LCU 4 – Coastal Zone	High	Slight	Moderate
LCU 2 – Lowland Zone	Low	Slight	Not Significant

The Carnsore Wind Farm development is located in LCU 4- Coastal and the 15km boundary includes areas of LCU 2-Lowland Zone. LCU 4 in which the Carnsore development site is located in is considered to have a Moderate landscape character effect due to the moderate changes that the Carnsore Wind Farm brought in the isolated area of both LCUs. These landscape effects are only limited to areas of the LCUs in close proximity to the Carnsore Wind Farm development. Factors such as topography, vegetation screening and distance greatly mitigates the effects of the Carnsore Wind Farm development on the landscapes of these LCUs.

The assessments determined that the Carnsore Wind Farm development induces only Not Significant or Moderate effects on the landscapes of the other LCUs assessed within the LVIA study area. No significant landscape effects occur in these LCUs as a result of the Carnsore Wind Farm development.

Where Slight or Moderate landscape effects are present, they are often mitigated by several factors such as: Strategic siting and design of the Carnsore Wind Farm development; Screening from topography and vegetation; Distance from the Carnsore Wind Farm development; or they are remote areas with a lack of visual receptors.

13.8.3.2 Cumulative Landscape Effects

There are no other wind farms within the 15km study boundary for the Carnsore development, therefore cumulative effects do not arise. The closest wind farm is the existing Richfield wind farm, approximately 15.5km west from the nearest Carnsore turbine located within LCU-4 Coastal Zone.

After identifying the cumulative baseline and cumulative status for each LCU it was assessed to what extent the Carnsore Wind Farm development changes the status of the individual LCUs. The existing Carnsore Wind Farm has been in place for 19 years and has not impacted negatively on the LCU (LCU4), therefore cumulative landscape effects are considered Low.

13.8.3.3 Visual Effects

13.8.3.3.1 *Summary of Viewpoint Assessment*

An assessment of the visual effects of the Carnsore Wind Farm development was undertaken from the site visits and also informed by the twelve photomontage viewpoint locations identified in Section 13.7 and Appendix 13-3 using the assessment methodology described in Appendix 13-1. The locations of the photomontage viewpoints are shown above in Figure 13-1. The individual assessments from the eleven viewpoints are presented in Appendix 13-3 and summarised in **Error! Reference source not found.** below. Appendix 13-3 and **Error! Reference source not found.** should be read in conjunction with the photomontage booklet forming Volume 2 of the EIAR.

The visual effects of the Carnsore Wind Farm development wind turbines were assessed from each viewpoint in terms of the sensitivity of the visual receptors, along with the magnitude of change, as recommended in the GLVIA (2013) guidelines. This, in conjunction with a detailed review of the photomontages themselves and the ZTV maps, informed the visual effects assessment.

Visualisations such as photomontages are tools that can represent the likely effect of a development and are used to inform the reader's prediction of how that development will appear in the landscape. The photomontages themselves act to inform the reader of potential effects at specific locations. In the case of this project, anyone visiting the site and the areas around the site has the ability to see the turbines, if visible, from all locations around the site. In this case, the assessment is not reliant on the photomontages to the extent that it may be for traditional projects.

In terms of the visual quality of the as-built Carnsore Wind Farm development however, i.e. whether a visual effect is deemed to be positive, negative or neutral, this involves a degree of subjectivity. What appears to be a positive effect to one viewer could be deemed to be a negative effect by another viewer. All visual effects of the viewpoints below are Long Term and Direct effects.

In general, Hilly and Flat Farmland wind farm sites tend to be capable of absorbing suitably designed wind farm projects of scale. Key reasons enabling the Carnsore Wind Farm development to be effectively absorbed by the landscape of the site and surrounding area are outlined below and will be evident in the photomontages:

Flat Topography of the Site and Surrounds including the seascape in the vicinity of the site
The low-lying elevation and relatively flat topography of the Carnsore site and the surrounding landscape including the seascape, contributes to the landscape's capacity to accommodate a wind farm. The low-level terrain in which the development is sited results in an even overall height of all the wind turbines, this means that visual confusion caused by turbines at various heights does not arise. For Carnsore, most visual receptors to the north, west and north-west are also of similar elevation to the base level of the proposed turbines i.e. the turbines are not situated on elevated lands and so the potential for clear and open views of the project from receptors at lower elevations does not arise. This topographic feature of the Carnsore site and surrounds mitigates the potential for overbearing or domineering effects on the landscape and seascape. It also means that separation distances between receptors and turbines becomes important as the turbines appear smaller in scale quickly when viewed in this planar view. Due to the flat nature of the site and the surrounds, all 12 viewpoints were taken from within 5km of the Carnsore development, as it is deemed visibility beyond 5km will not occur or will be imperceptible.

Highly Vegetated Nature of the Landscape
The landscape surrounding this site is often seen as a patchwork of agricultural fields bordered by lines of trees, hedgerows and pockets of woodland shrub. In close proximity to the site, mature hedgerows and mature treelines reduce the potential for clear and open views and any associated potential domineering effects. Located between visual receptors and the proposed turbines, these vegetational elements of the landscape provide screening, obscuring large numbers of turbines or making those views of the turbines intermittent in nature. The ZTV does not take into account this screening and hence ZTV mapping can only be considered accurate where no visibility is indicated. In areas where theoretical visibility is indicated, actual visibility on the ground is diminished by screening factors, as was evident in the results of the route screening analysis.

The Carnsore Site's Wide Expanse
The site of the Carnsore development and the wider study area is considered a rural area, however, a significant human influence is evident within the landscape. This can be attributed to the agricultural and residential developments throughout southern Wexford. The scale of the turbines and number of turbines is considered modest in the context of the wide expanse of the landscape and the seascape. Also, any receptors using the sea for transport or leisure will be limited to brief views of the turbines.

Table 13-2 Viewpoint Assessment Summary

VP No	Description	Grid Ref.	Approx. distance & direction to nearest turbine	Visual Sensitivity of Receptor(s) (at viewpoint)	Magnitude of Change	Residual Significance of Visual Effect
1	View from the L-3060 local road in the townland of Loginsherd.	E 711,681 N 605,051	0.5 km NW	**High**	**Slight**	**Sight**
2	View from The Lane of Stones local road in the townland of Shilmore, which is also located within a designated Landscape of Greater Sensitivity.	E 711,359 N 604,739	0.5 km W	**High**	**Moderate**	**Moderate**
3	View from Lady's Island Castle off the L-3060 in the townland of Glanerdalliv, which is also located within a designated Landscape of Greater Sensitivity and located along the Normans Way Walking Trail.	E 710,636 N 607,575	3.2 km NW	**High**	**Slight**	**Sight**
4	View from the Carne Beach in the townland of Hilltown, which is also located along the Ballytrent Loop.	E 713,384 N 608,419	3.8 km SE	**High**	**Slight**	**Sight**
5	View from a L-3060 local road in the townland of Ballyfane, which is also located within a designated Landscape of Greater Sensitivity.	E 711,148 N 606,464	1.9 km NW	**Medium**	**Slight**	**Not Significant**
6	View from the L-3061 local road in the townland of Carna.	E 712,613 N 606,426	1.7 km N	**High**	**Slight**	**Sight**
7	View from a local road in the townland of Clougheast.	E 712,238 N 605,592	0.9 km N	**High**	**Moderate**	**Moderate**
8	View from Nethertown Lane local road in the townland of Nethertown.	E 712,253 N 604,741	49.7 meters N	**Medium**	**Substantial**	**Moderate**
9	View from Our Lady's Island GAA field off the L-3060 in the townland of Buncarrick.	E 711,116 N 607,121	2.6 km NW	**Low**	**Slight**	**Not Significant**

VP No	Description	Grid Ref.	Approx. distance & direction to nearest turbine	Visual Sensitivity of Receptor(s) (at viewpoint)	Magnitude of Change	Residual Significance of Visual Effect
10	View from the L-3065 local road in the townland of Ballytory Upper, which is also located along the Wexford Cycle Hub Loop, Normans Way Walking Trail and located within a designated Landscape of Greater Sensitivity.	E 708,602 N 607,936	4.7 km NW	**High**	**Slight**	**Sight**
11	View from a cul-de-sac off the L-3065 in the townland of Rostonstown Burrow, which is also located within a designated Landscape of Greater Sensitivity.	E 708,236 N 605,411	3.7 km W	**Medium**	**Slight**	**Not Significant**
12	View from Nethertown Lane local road in the townland of Shilmore.	E 711,785 N 604,795	273 meters NW	**Low**	**Substantial**	**Moderate**

The assessment of visual effects determined the residual significance of the visual effects to range from 'not significant' to 'moderate', with the number of findings at each level of significance listed in **Error! Reference source not found.** below.

Table 13-3 Summary of Viewpoint Impact Assessment Results

Significance of Residual Visual Effect	Description	No. of Viewpoints
Profound	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment	0
Very significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment	0
Significant	An effect, which by its character, magnitude, duration or intensity alters a sensitive aspect of the environment	0
Moderate	An effect that alters the character of the environment in a manner consistent with existing and emerging baseline trends	4
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities	5
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.	3
Imperceptible	An effect capable of measurement but without significant consequences	0

The significance of the residual visual effect was not considered to be "Profound", "Very Significant" or "Significant" at any of the 12 viewpoint locations. A residual visual effect of "Moderate" was deemed to arise at four of the 12 viewpoint locations. All other viewpoints were assessed as resulting in Slight (5) and Not Significant (3) residual visual effects.

The viewpoint assessment results will be discussed in more detail in the following sections.

13.8.3.3.2 *Visual Effects in the overall study area*

Generally, overall visual effects are strongly guided by ZTV mapping (based purely on topography, in this case 10-meter contour data) as an indication of areas that will have no visibility of proposed turbines and areas that will have theoretical visibility. The level of certainty for areas where no visibility is indicated by ZTV is very high. On the contrary, in areas where the ZTV mapping shows theoretical visibility this will not have taken account of local variations in ground levels not represented by the 10 metre contour data and more importantly vertical objects such as vegetation, buildings and other structures that will block views of the proposed turbines.

A combination of ZTV mapping, photomontage assessment and on-site visual assessments has determined that visibility of the site and likely visual effects are primarily constrained to the flat coastal plain surrounding the proposed site from the north, west and north-west (at a distance of approximately 5km). While some visual impacts might arise in locations where there is very little screening, the wind turbines are located in a small, isolated area and are only visible locally. They will not obscure views or vistas of the coast or sea. The turbines are visible from the sea however there low-lying elevation and modest scale mean that the potential for significant overbearing or domineering visual effects is sufficiently mitigated. The turbines comprise a single cluster with even spacing and read coherently in the landscape setting including view viewed form the sea.

The scale of the turbines and the flatness of the local landscape significantly mitigates likely visual effects occurring in the majority of the landscape to the north, west and north-west beyond 5km of the site. This is also important with regards mitigating for potential effects on the seascape locally. Beyond 5km, areas to the west and north where visibility of the site could potentially occur will be restricted to remote, slightly elevated locations where there is a notable absence of sensitive visual receptors and visibility is significantly mitigated by distance, therefore, resulting visual effects in these areas will be insignificant. The highly vegetated landscape in the study area significantly reduces visibility of the turbines with distance, therefore resulting in limited visibility of the turbines beyond 5km.

The visual baseline reports that visual receptors of highest sensitivity in the LVIA study area are located to the north-west around the village of Lady's Island and Lady's Island Lake and north at Carne Beach. Topographical screening and the factor of distance renders visibility of the Carnsore Wind Farm development to be highly unlikely from these receptors, resulting in insignificant visual effects.

Furthermore, visibility of the turbines is greatly restricted due to climate and atmospheric conditions of the coastal setting.

13.8.3.3.3 Visual effects within three kilometres of the Proposed Development

All 12 No viewpoint locations were chosen within 5km of the site to demonstrate the scale and visual extent of the turbines from nearby visual receptors. Where visibility does occur beyond 5km of the site, views will be restricted and limited due to the highly vegetated and flat nature of the surrounding landscape, as shown in Plate 13-4 from Rosslare Harbour.

Viewpoints 1 & 2:
Within 3km of the Carnsore Wind Farm development, there are relatively unrestricted views of the turbines from the north-west, these views are represented by Photomontage Viewpoints 1 and 2 which were deemed to have Moderate and Slight residual visual effects respectively. As demonstrated in Viewpoints 1 and 2, the open flat character of this landscape is populated with an abundance of screening elements such as mixed shrub and roadside hedgerows which mitigate the impacts of the Carnsore Wind Farm development on localised visual receptors. From Viewpoint 2, the Carnsore Wind Farm development is appropriately scaled and absorbed effectively within the landscape as the turbines are viewed behind the roadside hedgerows that populate the view in the foreground. Although both Viewpoints are in close proximity to the site and experience visual receptor sensitivity from nearby residents, the scale of the turbines and the presence of roadside hedgerows significantly reduce domineering visual effects of the turbines.

Viewpoints 5 & 9:
Viewpoints 5 and 9 are both located along the L-3060 local road. The ZTV mapping shows full widespread visibility from both of these locations. Viewpoint 5 was taken adjacent to a local restaurant, approximately 1.9km from the nearest turbine. Although the turbines are in the direct line of travel for road users from this location, visibility is greatly reduced due to roadside vegetation which mitigates visibility. Viewpoint 9 was taken from the Lady's Island GAA pitch, where the turbines appear behind the GAA pitch in the background of the view. From this location and distance, the turbines are readily absorbed into the landscape due to distance across the flat landscape and screening by vegetation between the viewpoint and the nearest turbine. Photomontages Viewpoints 5 and 9 are representative of nearby visual receptors north-west of the turbines with residual effects of Not Significant respectively.

Viewpoints 6 and 7:
Photomontages from Viewpoints 6 and 7 demonstrate the flat nature of the surrounding landscape characterised by shrubs and heath vegetation. The wide and expansive views from Viewpoints 6 and 7 show predominantly full visibility of the turbines. Vertical elements such as electrical powerlines are common vertical elements within the photomontages from both viewpoints. Viewpoints 6 and 7 are representative of visual receptors north of the site with Slight and Moderate residual visual effects respectively. Visibility from the road where Viewpoint 7was taken was predominantly lined with roadside vegetation, therefore this viewpoint was chosen due to the expansive views towards the site where vegetation screening is limited. Where the Carnsore turbines can be seen from these two viewpoint locations, visibility is greatly restricted due to the open and expansive views across the flat landscape and the intervening vegetation screening between the viewer and turbines.

Viewpoints 8 and 12:
Viewpoints 8 and 12 are located along the Nethertown Lane local road, which is the local road that joins the L-3060 to the Carnsore Wind Farm. The photomontages demonstrate that the turbines will appear relatively large from these locations due to the close proximity of being less than 1km to the site. The Nethertown Lane road is a local road and therefore is unlikely to be travelled often by visual receptors. Residential receptors are dotted along this roadway and road users are likely those visiting the Nethertown Beach or the Carnsore Point Coastal walking trail, although these are likely local recreational designations. A residual effect of Moderate was deemed to arise at both Viewpoints 8 and 12 due to the close proximity of the viewpoints and the scale and extent of the turbines from the photomontages. Also, road users in these areas typically travel in a direction perpendicular to the Carnsore Wind Farm development and the focus of their view is directed towards the sea and is not focussed towards the turbines.

13.8.3.3.4 Visual effects three to five kilometres from the Proposed Development

Viewpoint 3:
Viewpoint 3 was selected as it is representative of several sensitive visual receptors including visitors to Lady's Island Castle and Walkway, residents from the village of Lady's Island, the viewpoint is located within a Landscape of Greater Sensitivity area, and its located along the Wexford Cycle Hub Loop recreational trail. A residual effect of Slight was deemed to arise from Viewpoint 3. Views of the Carnsore Wind Farm are greatly diminished by distance and the presence of mature vegetation that exists within this landscape between the turbines and the viewer. Although this viewpoint is within 5km of the nearest turbine, strategic design and siting mitigate the visual effects, enabling the landscape to absorb the development effectively.

Viewpoint 4:
Photomontage Viewpoint 4 represents areas of full theoretical visibility to the north of the Carnsore Wind Farm development at Carne Beach. This viewpoint is representative of visual receptors at Carne Beach, as well as those travelling along the Ballytrent Loop and Carnsore Point walking trails. The Carnsore Wind Farm development is visible from this viewpoint location in the background of the view. Coastal seascape views between this viewpoint location and the turbines creates a visual diversion, thereby allowing the turbines to not be the central focus of the view and allows the turbines to be readily absorbed across this flat landscape. A residual effect of Slight was deemed to arise from this perspective.

Viewpoint 10:
This viewpoint was chosen as it is representative of several visual receptors north-west of the site including the Wexford Cycle Hub Loop and is located within a Landscape of Greater Sensitivity. ZTV mapping shows full theoretical visibility from this viewpoint location, however, beyond this location to the north-west, the ZTV shows partial visibility with areas of no theoretical visibility. A residual visual effect of Slight was deemed to arise from this viewpoint location. The flatness of the landscape and the vegetation screening between the viewpoint and the turbines greatly reduces visibility of the turbines with distance. The Carnsore Wind Farm development is suitably sited and appropriately scaled to avoid visual clutter, enabling effective absorption within the landscape.

Viewpoint 11:
Photomontage Viewpoint 11 is located 3.7km west of the Carnsore Wind Farm development within a Landscape of Greater Sensitivity at Lady's Island Lake. This viewpoint location incorporates visual receptors of medium sensitivity as its located within a Landscape of Greater Sensitivity and is in close proximity to the Carnsore Point Coastal Walking Trail. A residual effect of Not Significant is deemed to arise from this viewpoint location due to the indiscernible visibility across the flat landscape. Views of Lady's Island Lake in the foreground and the undulating topography in the background creates a visual diversion, thereby the turbines do not create any significant visual effects and are readily absorbed into background.

13.8.3.3.5 Ancillary Project Elements

For the purposes of this LVIA, a number of individual elements of the Carnsore Wind Farm development, ancillary to the wind turbines, have been grouped together for the assessment of effects, given the similar nature of the construction work that was completed. These operational project elements include the roads and turbine hardstand areas and grid connection components that give rise to similar landscape and visual effects.

Due to the topography of the Carnsore Wind Farm and surrounding areas, the lower ancillary project elements are visible in their immediate surroundings, hence, any visual effects will be localised and predominantly confined to within the Carnsore Wind Farm site.

Visual effects arising from the ancillary project elements are slight, localised and long-term where seen, but remain largely unseen from within and outside the site.

13.8.4 Decommissioning Phase

The applicant, Hibernian Wind Power (Hibernian) have determined that the existing wind turbines at the Carnsore site have a remaining lifespan of at least 15 years. Following the end of their useful life, the wind turbines may be replaced with a new set of turbines, subject to planning permission being obtained, or the Proposed Development will be decommissioned fully.

Upon decommissioning of the Proposed Development in circa 15 years, the wind turbines will be disassembled in reverse order to how they were erected. All above ground turbine components will be separated and removed off-site for reuse or recycling. It is proposed to leave turbine foundations in place underground and to cover with earth and reseeded as appropriate. Leaving the turbine foundations in-situ is considered a more environmentally prudent option, as to remove that volume of reinforced concrete from the ground could result in significant environment nuisances such as noise, dust and/or vibration.

It is proposed that site roadways will be left in situ, as appropriate, to facilitate on-going agricultural use. If it were to be confirmed that the roads were not required in the future for any other useful purpose, they could be removed where required, however, this is not envisaged at this time. It is proposed to leave underground cables in place where they are below a level likely to be impacted by typical agricultural works. A decommissioning plan will be agreed with the local authorities at least three months prior to decommissioning of the Proposed Development. Further details concerning the decommissioning phase are outlined in Chapter 4: Description of this EIA report.

13.9 Conclusion

It is important to re-iterate that the Proposed Development (the Carnsore Wind Farm) is an existing facility, first commissioned in 2002, and this EIAR is being prepared in support of a planning application to extend the operational lifespan of the facility beyond 2022, by a further 15 years.

The Proposed Development and associated infrastructure was well designed and reads coherently within its landscape setting in terms of its layout, spatial extent and scale.

The majority of landscape and visual receptors located in County Wexford, or the wider study area are not adversely affected by the Carnsore Wind Farm development. Additionally, views towards the site within the LVIA study area are localised, and it is considered that visibility beyond 5km will be indiscernible.

Landscapes of Greater Sensitivity with visibility of the Carnsore Wind Farm development were assessed based on site visits and using the photomontage methodology that follows best practice guidance for LVIA. Residual Visual Effects were recorded as Slight, Moderate and Not Significant for these sensitive visual receptors. No significant visual effects were recorded for any designated Landscape of Greater Sensitivity as a result of the Carnsore Wind Farm development.

In terms of landscape character, only County Wexford Landscape Character Unit 4- Coastal Zone, in which the Carnsore Wind Farm turbines are located, experience direct effects on landscape character as a result of the Carnsore Wind Farm. Any other effects on other LCUs are indirect, as visibility of the Carnsore Wind Farm development is limited due to the scale and siting of the turbines. Although a number of turbines are located within the Landscape of Greater Sensitivity Area- Carnsore Point, the Carnsore turbines do not impede on the character and distinctiveness of this area and the turbines are only visible within a small area.

While some visual impacts do arise in locations where there is very little screening, the siting, design and scale of the turbines is considered appropriate, as the turbines are only visible locally and they do not obscure views or vistas of the coast or sea.

There are no other existing, permitted or proposed wind farms within the 15km EIAR study boundary. The nearest wind farm from the site is the existing Richfield Wind Farm, approximately 15.5km from the nearest Carnsore turbine. Beyond cumulative wind farm assessment in the study area, the existing grid connection was also assessed for visual effects. The overhead grid connection and utility infrastructure is an existent and vertical feature and is not a prominent landscape element. The overhead line is approximately 1.2km from the nearest Carnsore turbine, therefore breaking the visual connection with the Carnsore wind farm. Therefore, cumulative landscape effects of the Carnsore turbines as well as the existing grid connection infrastructure are considered Low.

The visual assessment concluded that residual visual effects of 'Moderate' were deemed to arise at four of the 12 viewpoint locations. All other viewpoints assessed resulted in 'Slight' (5) and 'Not Significant' (3) residual visual effects.

Furthermore, it was shown that visibility is greatly restricted by the surrounding topography and actual visibility is further restricted by the effects of localised screening and changes in local topography. Therefore, the turbine locations and heights are considered appropriate for the Proposed Development and its continued operation will not have significant landscape or visual effects.