Planning and Environmental Consultants

Environmental Impact Assessment Report (EIAR)

Seskin Wind Farm, Co. Carlow - EIAR

Chapter 14: Landscape & Visual

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14. LANDSCAPE AND VISUAL

14.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) includes the Landscape and Visual Impact Assessment (LVIA) of the Proposed Project. The LVIA assesses the likely significant effects of the Proposed Project on landscape and visual amenity. It covers the assessment methodology, a description of the Proposed Project and the existing landscape based on relevant guidance. The chapter also includes a description of the landscape policy of Co. Carlow, with specific reference to wind energy and the LVIA Study Area in which the Proposed Project is located, as well as relevant landscape policy for Counties Kildare, Kilkenny and Laois, in which some visibility of the Proposed Project occurs.

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 LVIA of the Proposed Project presented in this chapter applies visibility mapping, assigns representative viewpoints, and presents photomontages. The potential impacts in terms of both landscape and visual are then assessed, including cumulative impacts.

The following terminology is used throughout this chapter in relation to Seskin Wind Farm:

- **'Proposed Project'** refers to the entirety of the project for the purposes of this EIA in accordance with the EIA Directive. The Proposed Project is described in detail in Chapter 4 of this EIAR.;
- **'Proposed Project site'** or **'site'** refers to the primary study area for the EIAR, as delineated by the EIAR Site Boundary in green as shown in Figure 1-1 in Chapter 1;
- **'Proposed Grid Connection Route'** refers to the underground 38kV electrical cabling and all associated site development works connecting the Proposed Wind Farm site to the existing Kilkenny 110 kV electrical substation;
- **'Proposed Wind Farm site'** refers to turbines and associated foundations and hardstanding areas, including access roads, underground cabling, permanent meteorological mast, temporary construction compounds, carriageway strengthening works, junction accommodation works, peat and spoil management, tree felling, site drainage, operational stage signage, battery energy storage system, 38kV onsite substation, and all ancillary works and apparatus. The Proposed Wind Farm is described in detail in Chapter 4 of this EIAR.
- **'Proposed turbines'** refers to the turbine components of the Proposed Project;

A full description of the Proposed Project is provided in Chapter 4 'Description' of this EIAR.

14.1.1 Statement of Authority

MKO has developed extensive expertise and experience over the last 15 years in the LVIA of a range of projects, including multiple large-scale wind energy developments.

This EIAR chapter was written by James Crean, an Environmental Scientist and LVIA Specialist with MKO. His primary role at MKO is producing the LVIA chapter of EIAR reports. James holds an MSc. in Applied Coastal and Marine Management from University College Cork. Since joining MKO, James has worked widely on renewable energy infrastructure, commercial, recreational, and residential projects. James is a qualified Unmanned Aerial Vehicle Operator and holds an A1/A3 and A2 drone licence.

James Crean was aided by Jack Workman MSc., TMLI. Jack is the Landscape & Visual Project Director at MKO and is a Technician Member with the British Landscape Institute. He is an LVIA Specialist with an academic background in the field of Environmental Science and Geography. Jack's primary role at MKO is conducting LVIA for EIARs. Jack holds a BSc. in Psychology, and an MSc. in Coastal and Marine Environments (Physical Processes, Policy & Practice). Since joining MKO in February 2020, Jack has conducted and project managed all aspects of LVIA for a broad range of commercial infrastructure developments including wind and solar energy projects, grid infrastructure, extraction industry and Strategic Housing Developments. Jack holds a membership with the Chartered Institute of Water and Environmental Management and is also a member of the Landscape Research Group.

14.1.2 'Do-Nothing' Scenario

If the Proposed Project were not to proceed, the existing land use of coniferous forestry and agriculture would continue. This land-use will also continue if the Proposed Project does proceed.

If the Proposed Wind Farm were not to proceed, the opportunity to capture part of County Carlow's valuable renewable energy resource from a highly suitable landscape for wind energy would be lost, as would the opportunity to contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions.

14.1.3 Proposed Project Description

The Proposed Wind Farm is located approximately 3.1 km northwest of the village of Oldleighlin, Co. Carlow, 5km northwest of Leighlinbridge, Co. Carlow, and 9.9 kilometres southeast of Castlecomer, Co. Kilkenny. It is proposed to access the Proposed Wind Farm via upgrades to an existing agricultural entrance off the L3037 Local Road along the western boundary of the Proposed Wind Farm site. The Proposed Project is served by a number of existing public, forestry and agricultural roads and tracks.

The Proposed Grid Connection Route includes for underground 38kV cabling from the proposed onsite 38kV substation, in the townland of Seskinrea, Co. Carlow, to the existing Kilkenny 110kV substation in the townland of Scart, Co. Kilkenny. The underground cabling route to Kilkenny, measuring approximately 20.1 km in length, is primarily located within the public road corridor.

A full and detailed description of the Proposed Project can be found in Chapter 4 'Description' of this EIAR. Section 4.1 'Introduction' of that chapter describes the development and its component parts, including the works subject of a proposed application for planning permission to Carlow County Council and Kilkenny County Council.

14.1.3.1 Essential Aspects of the Proposed Project from a Landscape and Visual Impact Assessment (LVIA) Perspective

The Guidelines for Landscape and Visual Impact Assessment Third Edition (GLVIA3) (Landscape Institute (LI) & Institute of Environmental Management and Assessment (IEMA), 2013) states that:

> *'It is important to make sure that the project description provides all the information needed to identify its effect on particular aspects of the environment. For LVIA, it is important to understand, from the project description, the essential aspects of the scheme that will potentially give rise to its effect on the landscape and visual amenity'.*

For the Proposed Project assessed in this chapter, it is deemed that the tall, vertical nature of the Proposed turbines make them the most prominent element from a landscape and visual perspective, having the most potential to give rise to significant landscape and visual effects. In this regard, the

Proposed turbines are deemed to be the 'essential aspect' of the development which will give rise to effects on the landscape and visual amenity and therefore are the primary focus of the LVIA.

Ancillary elements of the Proposed Project are deemed to be less visually prominent than the Proposed turbines; however, these components may also potentially give rise to localised landscape and visual effects. Although not the primary focus of the LVIA, these ancillary elements are also given due consideration and assessment in this Chapter.

14.1.3.2 Range of Turbine Dimensions Assessed in this Chapter

As detailed in Section 1.7.3 in Chapter 1 of this EIAR, the Proposed turbines to be installed on the site will have a ground-to-blade tip height, hub height and blade length with the following dimensions:

- Turbine Tip Height: Maximum height 180m, Minimum height 179.5m;
- Hub Height: Maximum height 105m, Minimum height 102.5m;
- Rotor Diameter: Maximum height length 155m, Minimum height length 149m.

Primary Turbine Model used for Assessment in the LVIA and the Photomontage Booklet

Throughout this LVIA, a turbine model comprising a rotor diameter of 150m and a hub height of 105m (max tip height of 180m) is considered to be the primary representative illustration of the Proposed Project and was used for all viewpoints in the *EIAR Volume 2: Photomontage Booklet* (hereafter, *Photomontage Booklet*).

On the basis of professional judgement and on consideration of the range of turbines which could be installed, the chosen combination of rotor diameter and hub height (Maximum Hub Height and Intermediate Rotor Diameter, with 180m Maximum Tip Height) has been identified as the most representative for assessment, on the basis that the greatest extent of the entire turbine structure (blades and tower) would potentially be visible from the Viewpoints assessed in this LVIA. The turbine configuration within the proposed range selected for inclusion for all viewpoints within the photomontage booklet (and all photowires in Appendix 14-2) is termed as:

- Median (Defined as Scenario 3 in Chapter 1) - 'Maximum Tip Height, Maximum Hub Height, Intermediate Rotor Diameter':
    - Maximum Tip Height: 180m;
    - Maximum Hub Height: 105m;
    - Rotor Diameter: 150m;
    - Represented by all 15 No. photomontage viewpoints assessed.

Assessing the Range using Photomontages and Comparative Wirelines

Photomontage visualisations are the best LVIA tool to assess any likely effects arising due to differences of turbine configurations used within the proposed range.

Irrespective of which combination of hub height and blade length within the range outlined above is installed on site, the significance of residual landscape and visual effects will not be altered. However, for the avoidance of doubt, two alternative turbine configurations are presented for two selected viewpoints included in the photomontage booklet – VP14 and VP15.

As detailed in Section 1.7.3 in Chapter 1, these configurations are termed as follows:

- 'Maximum Scenario 1' - 'Maximum Tip Height, Minimum Hub Height, Maximum Rotor Diameter':
    - Maximum Tip Height: 180m;
    - Minimum Hub Height: 102.5m;

- Maximum Rotor Diameter: 155m;

- 'Minimum Scenario 2' - 'Minimum Tip Height, Maximum Hub Height, Intermediate Rotor Diameter':
  - Minimum Tip Height: 179.5m;
  - Maximum Hub Height: 105m;
  - Shortest Rotor Diameter: 149m;

The selected viewpoints (VP14 and VP15) assessed in this Chapter are representative of short-range views where the difference in scale of turbines is most likely to be perceptible. The Photomontage assessment tables for these Viewpoints, contained in Appendix 14-3 – *Photomontage Impact Assessment Tables,* include a comment addressing the alternative turbine configurations and confirm that the turbine configuration ultimately installed on site will not alter the assessment of residual visual effects.

Differences in the turbine range are only discernible through the aid of a comparative wireline view where the different model is overlain the other configuration used for all viewpoints (See Section 1.5.5 In Appendix 14-1 – LVIA Methodology for more information on comparative wireline views presented). As demonstrated by the turbine ranges presented in the *Photomontage Booklet*, irrespective of which combination of hub height and blade length within the range outlined in this application is installed on site, the significance of residual landscape and visual effects as set out below in this LVIA in Section 14.7 'Likely Significant Landscape and Visual Effects' will not be altered.

14.1.4 Mitigation by Design

Through the iterative project design process, informed by early-stage impact assessment work, landscape modelling, Zone of Theoretical Visibility (ZTV) mapping and photomontage preparation, every effort has been made to bring forward the optimum design for the Proposed Project with respect to landscape and visual factors.

As part of an upland, remote landscape, the Proposed Project site was strategically selected as a landscape highly suitable for accommodating wind energy development. Through the iterative project design process, various best practice tools used for assessing the landscape and visual impact of a wind farm development were used to bring forward the optimum design for the Proposed Project with respect to landscape and visual factors. These tools include, landscape modelling, ZTV mapping and preparation of photomontage visualisations.

The final design of the Proposed Project and strategic siting of the Proposed turbines in the landscape was informed by extensive early-stage impact assessment work conducted by the authors throughout 2023, including assessment of various turbine layouts and turbine models. The evolution of the Proposed Wind Farm layout included omission of turbines from the project and careful micro-siting of turbines aimed at preventing the potential for significant landscape and visual effects. The final design of the Proposed Project is also considered in the context of siting and design guidance stated in the 'Wind Energy Development Guidelines for Planning Authorities' published by the Department of Environment, Heritage and Local Government in 2006 – Hereafter referred to as the 'DoEHLG 2006 Guidelines' (DoEHLG, 2006)'. Siting and design guidance was also considered from 'Draft Revised Wind Energy Development Guidelines for Planning Authorities' published by the Department of Housing, Planning and Local Government in 2019 – Hereafter referred to as the 'Draft DoEHLG 2019 Guidelines' (DoHPLG, 2019).

The Proposed Wind Farm layout that is the subject of this LVIA already incorporates the following landscape and visual design considerations for good wind farm design, with a particular focus on site selection:

- The turbine layout has been designed to create a coherent cluster of turbines, contiguous and connected to each other visually and with consistent spacing in line with the guidance for design and siting of wind farms within the 'Transitional Marginal Landscape Character Type' in the DoEHLG 2006 Guidelines;
- There has been strategic siting in an upland plateau, a landscape capable of effectively absorbing a wind energy development. The Proposed turbines are inset from the primary ridgeline to the east where landform falls away to the Barrow Valley. The topographic characteristics immediately surrounding the site provide visual containment, reducing visibility and visual effects from local receptors in close proximity and generally reduce visual impacts on local receptors in the immediate landscape setting;
- As illustrated by ZTV mapping, visual containment provided by the upland plateau where the Proposed turbines are sited eliminates visibility (areas of no theoretical visibility) and therefore landscape and visual effects in a vast proportion of the LVIA Study Area, particularly to the north, west and south.
- The Proposed Project is strategically sited within a modified, upland working landscape of low landscape value and sensitivity where there is either limited visibility and/or large set-back distance from large population centres.
- The Proposed turbines have been strategically sited to ensure they are visually balanced within the landscape when they are visible, as demonstrated by most of the photomontages the visible turbines are most often arranged neatly in a linear array upon an elevated ridgeline when viewed from prominent receptors in the Barrow Valley to the east where most visibility occurs.
- Siting of Proposed turbines adheres to the minimum 500m set-back distance in the DoEHLG 2006 Guidelines and the 4-times-tip-height set-back distance explicitly set out for residential visual amenity prescribed by the Draft DoHPLG 2019 Guidelines;
- The Proposed Grid Connection Route to the national electricity grid is underground, thereby eliminating potential landscape and visual effects during the operational phase.
- The existing Kilkenny 110kV substation is sited within the 15km to 20km buffer near Kilkenny City and will connect to the onsite 38kV substation, which will be included in the assessment.
- The internal site road layout makes use of the existing forestry tracks within the site wherever possible, with 2.8km of existing road to be upgraded for construction and the delivery of wind turbine components, to minimise the requirement for new tracks within the site (2.7km of proposed new road).

14.1.5 Assessment of Alternative Turbine Layouts

The design of the Proposed Project has been an informed and collaborative process from the outset, involving the designers, developers, engineers, landowners, environmental, hydrological and geotechnical, archaeological specialists and traffic consultants. The aim being to reduce potential for environmental effects while designing a project capable of being constructed and viable.

Throughout the preparation of this EIAR, the layout of the Proposed Project has been revised and refined to take account of the findings of all site investigations, which have brought the design from its first initial layout to the current proposed layout, please see Section 3.2.6 of Chapter 3 Reasonable Alternatives for further details.

The design process has also taken account of the recommendations and comments of the relevant statutory and non-statutory organisations, the local community and local authorities as detailed in Section 2.5 of Chapter 2 (Background).

14.1.6 Scoping Replies & Pre-Planning Meetings

A scoping consultation exercise has been carried out by MKO, as detailed in Chapter 2 'Background' of this EIAR. All feedback and communications from the planning authorities on landscape and visual queries have been taken on board when compiling the chapter and assessment.

A pre-application consultation was held with Carlow County Council in August 2023 and Kilkenny County Council in September 2023. These meetings were attended by representatives of the relevant county council (i.e., Carlow County Council and Kilkenny County Council), EDF and MKO. A summary of topics relation got LVIA are noted below.

Carlow County Council Meeting: 22/08/2023

Carlow County Council highlighted that although the Proposed Project site is in an area that is 'Not Normally Permissible' according to the County Carlow Renewable Energy Strategy[1], wind farms can be open to consideration subject to comprehensive and adequate landscape visual impact assessment. Carlow County Council emphasised the need to put forward a strong justification for the Proposed Project with regard to the landscape sensitivities of the area. Carlow County Council also noted the importance of the assessment of the cumulative visual impact, due to the presence of other wind farm projects in the area.

Carlow County Council stated that LVIA needs to be detailed with a specific focus on designated Scenic Routes and Protected Views and that the visual assessment should include the cumulative impact with existing and permitted wind farm developments in the area.

The LVIA in this Chapter comprehensively addresses effects on designated scenic routes and views, as well as all potential for cumulative landscape and visual effects.

Carlow County Council – 19/02/2024 (Design Flexibility Consultation Meeting)

The prospective applicant and members of the design team met with Carlow County Council in relation to the inclusion of unconfirmed details in the planning application for the Proposed Project. This meeting was held under the provisions of section 32H of the Planning and Development Act 2000 (as amended). The design flexibility meeting took place on the 19th February 2024 via Microsoft Teams and included representatives from Carlow County Council, EDF and MKO. The discussion centred around the elements of the Proposed Project that cannot be confirmed prior to the lodgement of the planning application (i.e. the turbine dimensions) and how these elements will be adequately assessed in the EIAR.

Matters discussed included:

- The design flexibility process as set out by the legislation.
- The turbine dimension parameters and the rationale for their inclusion in the planning application.
- The assessment of the turbine parameters and its presentation in each chapter of the EIAR.

Carlow County Council issued their flexibility opinion on the 14th of March 2024. The flexibility opinion confirms that the turbine tip height, rotor diameter and hub height may be confirmed after the proposed application has been made and decided.

[1] *Carlow County Development Plan (2022) Renewable Energy Strategy* <https://consult.carlow.ie/en/consultation/carlow-county-development-plan-2022-2028/chapter/vi-renewable-energy-strategy>

Kilkenny County Council – 13/09/2023

MKO provided an overview of the landscape and visual assessments which are included in this Chapter including assessment of protected scenic amenity in County Kilkenny. Kilkenny County Council did not make any requests in relation to assessment of any specific landscape and visual receptors.

14.2 Brief Methodology and Assessment Criteria

This section briefly outlines the guidance and methodology used to undertake the LVIA of the Proposed Project; the full detailed description of the methodology is provided in *Appendix 14-1: LVIA Methodology*.

There are five main sections to this assessment:

- Visibility of the Proposed Project (e.g. ZTV mapping);
- Landscape Baseline;
- Visual Baseline;
- Cumulative Context: Other Wind Farms;
- Likely and Significant Effects – summarising all landscape, visual and cumulative effects.

14.2.1 Guidelines

Regarding legislation and general guidance on overall Environmental Impact Assessment, please refer to Chapter 1 'Introduction' of this EIAR.

The LVIA reported in this chapter was guided and informed by guidance documentation specifically pertaining to LVIA. Details of the guidance used to conduct this LVIA are outlined in *Appendix 14-1: LVIA Methodology* (Section 1.2 'Guidelines'). Meanwhile, a full list of all documents referenced in all sections of this chapter is provided in the Bibliography at the end of this document.

14.2.2 Scope and Definition of LVIA Study Area

In this chapter, 'the site' refers to the immediate environment in which the Proposed turbines of the Proposed Project are located, as the Proposed turbines are the primary essential aspect of the LVIA (recall above Section 14.1.3.1 'Essential Aspects of LVIA').

The site is delineated by a Green line labelled 'EIAR Site Boundary' in the following maps:

- Figure 14-1
- Figure 14-2
- Figure 14-6
- Figure 14-7
- *Appendix 14-4: A0 LVIA Baseline Map.*

Primarily, this LVIA considers that the tall, vertical nature of the Proposed turbines makes them the most prominent elements of the Proposed Project from a landscape and visual perspective and have the most potential to give rise to 'significant' landscape and visual effects. The landscape and visual impact of ancillary elements such as the proposed new roads, substation, battery energy storage system, met mast and the Proposed Grid Connection Route are also addressed within this chapter; however, the Proposed turbines are of primary focus in this LVIA.

In addition to the Proposed turbines, the proposed 36.5m meteorological (met) mast is also a tall vertical structure; therefore, it is included in the photomontage booklet and is fully considered

throughout this Chapter. However, given its shorter and more slender lattice form, the met mast will be substantially less visible than any of the Proposed turbines.

For this assessment, two LVIA study areas with different radii were defined with respect to the location of the Proposed turbines:

- 20km Study Area for assessment of effects on landscape and visual receptors;
- 15km Study Area for assessment of effects on designated 'Landscape Character Areas' (LCAs).

Furthermore, as prescribed by best practise guidance, the professional judgement of the assessment team, in addition to the desk studies and survey work undertaken, and experience from other relevant projects, 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 20km radius from the proposed turbines, 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 15km radius from the proposed turbines, where it is judged that potential significant effects on landscape character are unlikely to occur;
- Effects on visual receptors beyond a 20km radius from the proposed turbines, 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 character effects beyond a 15km radius and cumulative landscape & visual effects beyond a 20km radius from the proposed turbines, where it is judged that potential significant effects are unlikely to occur;

All potential effects occurring during decommissioning of the proposed turbines. The full methodology and reasoning for the 20km LVIA Study Area, 15km LCA Study Area for assessment of LCAs, and topics excluded from assessment are presented in detail in *Appendix 14-1: LVIA Methodology* (Section 1.4: 'Scope and Definition of LVIA Study Area').

14.2.3 Baseline Landscape and Visual Information

An initial desk study of baseline information was undertaken that has informed the LVIA, divided into 'Landscape' and 'Visual' baseline components, as follows:

Landscape Baseline

- Policies, objectives and designations contained in the relevant county development plans pertaining to landscape and wind energy:
    - Carlow County Development Plan 2022–2028 (CCDP);
    - CCDP Appendix VI: County Carlow Renewable Energy Strategy (CCRES);
    - Counties Kildare, Kilkenny and Laois development plans and their associated appendices.
- Landscape character and description of the Proposed Project site and its immediate surroundings, determined by site surveys throughout 2023;
- Landscape value and sensitivity of the site and its immediate surroundings, also determined in the site surveys;
- Landscape character of the site as designated in the DoEHLG 2006 Guidelines and Draft DoHPLG 2019 Guidelines under Section 6.9 in DoEHLG 2006 Guidelines and Section

6.10 in the Draft DoHPLG 2019 Guidelines as 'Landscape Character Types as a basis for Guidelines';
- Landscape character of the site and its wider setting as designated by LCAs in county-level policies for Landscape Character Assessment.

Visual Baseline

- Identification of seven categories of visual and residential receptors in the LVIA Study Area:
    - Designated Scenic Routes and Views;
    - Ordinance Survey of Ireland (OSi) Viewing Points;
    - Settlements;
    - Recreational routes (multiple types);
    - Recreational, cultural heritage and tourist destinations;
    - Transport routes;
    - Residential receptors;
- Preliminary assessments of visibility from visual and residential receptors of the Proposed Project according to ZTV mapping and on-site appraisals;
- Visibility in close proximity (within 3km) according to Route Screening Analysis (RSA).

14.2.4 Assessment of Potential Impacts

The LVIA process used in this chapter is presented in *Appendix 14-1: LVIA Methodology* and includes clearly documented methods based on guidelines of the GLVIA3 (LI & IEMA, 2013), as follows.

First, this LVIA considers landscape and visual sensitivity balanced with the magnitude of change to determine the likely significance of effects. Second, mitigating factors are then considered to arrive at residual landscape and visual effects. Third, 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, 2022).

Photomontages are used as illustrative tools to assess potential impacts, whereby the potential effects arising as a result of the Proposed Project are assessed from viewpoint locations representative of prominent landscape and visual receptors located within the LVIA Study Area. Throughout this chapter, 'theoretical visibility' is referred to, based on ZTV mapping (see below Section 14.3 'Visibility of the Proposed Project'), and is assessed to compare 'theoretical' versus 'actual' visibility. The detailed methods used to produce ZTVs, and photomontages are included in *Appendix 14-1*.

14.3 Visibility of Proposed Project

14.3.1 Zone of Theoretical Visibility (ZTV) Mapping

ZTV mapping is an important step in the LVIA process, in that it clearly shows which areas have theoretical visibility of the Proposed turbines and which areas have no theoretical visibility.

The ZTV mapping methodology outlined in Section 1.5 'Zone of Theoretical Visibility Mapping' of *Appendix 14-1: LVIA Methodology* was used to examine the theoretical visibility of the 7 No. Proposed turbines from all landscape and visual receptors within the LVIA Study Area, using the half-blade height of the wind turbines as points of reference, called the Half-Blade ZTV or ZTV, and with the associated map called the ZTV map. As noted in *Appendix 14-1*, actual visibility on the ground is significantly less than predicted by the ZTV mapping due to intervening factors including on-site screening from natural and man-made features, atmospheric weather and/or localised topography.

Generation of the Half-Blade ZTV utilises large scale topographical data (interpolation across 10m OSi contour data) and does not account for topographical variation of smaller scale (e.g. < 10m). Therefore, in reality, small, localised undulations in topography are likely to further inhibit visibility of the Proposed turbines that may not be represented in the ZTV maps. Other features of the landscape such as vegetation and man-made elements are also likely to obscure the Proposed turbines from view from many areas where the Half-Blade ZTV indicates there is full visibility. In this regard, the ZTV maps are a useful tool to indicate where there is definitely no visibility of the Proposed turbines, and thus any receptors located in these areas can be screened out from further assessment.

14.3.2 Maps: Half-Blade ZTV and Topography

The Half-Blade ZTV map of the Proposed Project and LVIA Study Area is shown in Figure 14-01. The ZTV map is used within several mapping figures included in this chapter to enable assessment of theoretical visibility from landscape and visual receptors (see Appendix 14-4: LVIA Baseline Map). Separate colour bands are used on each ZTV map to indicate the number of turbines of which the half blade will potentially be visible. The legend on each map shows the number of visible turbines for each corresponding colour, which are as follows:

- Teal: 1–2 turbines theoretically visible;
- Yellow: 3–4 turbines theoretically visible;
- Grey: 5–7 turbines theoretically visible

Landform in the LVIA Study Area

The Proposed Project is sited in an upland area called the Killeshin Hills in the west of Co. Carlow in close proximity to the county boundaries of Co. Kilkenny (west) and Co. Laois (north). The Killeshin Hills form part of the Castlecomer Plateau which is a large-scale landscape bounded to the east by the Barrow Valley, the west by the Nore Valley and dissected in the centre by the River Dinnin. As shown in Figure 14-02 above, The Barrow River Valley is a key feature of the landscape, traversing the LVIA Study Area in a North-South orientation to the east of the site. The Proposed turbines are sited on an elevated plateau, inset from the primary ridgeline which forms the steep western side of the Barrow Valley. As shown in the physical landscape features map above (Figure 14-02) the Proposed Project is sited on an undulating and elevated landform to the south of Gallows Hill at the eastern extent of the Castlecomer Plateau.

Description of Theoretical Visibility

The areas immediately North, South and West of the Proposed Project site within 5km are elevated areas comprising prominent landform features. These features provide visual containment of the Proposed turbines, reducing visual exposure to the North, South and West, which is reflected in the ZTV map above (Figure 14-01).

As shown by the ZTV, a vast proportion of the LVIA Study Area has no theoretical visibility of the Proposed turbines. Most full theoretical visibility of the Proposed turbines occurs in very close proximity to the site (within 5km), the Barrow Valley to the East and in the North-West for the LVIA Study Area, in a portion of upland North and West of the Dinin River Valley and Castlecomer Town.

In the LVIA Study Area, the ZTV shows a greater spread of theoretical visibility in the Barrow Valley to the North-East, East, and South-East of the Proposed Project, although very limited theoretical visibility in the settlement hub of Carlow Town. The primary ridgeline forming the western extent of the Barrow Valley is located approximately 850m East of Proposed turbine no. 5 (T05) and includes a slightly elevated landform to the east of the local road in the townlands of Seskin Upper. Landform tapers downwards to the South-East from this ridgeline, enabling greater visual exposure of the Proposed turbines in the lowland river valley to the East, as is illustrated by the spread of theoretical visibility in the ZTV map. The ZTV map shows an area of no theoretical visibility immediately East of

the site on the downwards slope of the valley (within 5km). The Proposed turbines were strategically sited inset (to the West) from the primary ridgeline of the valley, the peak of the ridge therefore provides localised topographic screening, eliminating landscape and visual effects on most residential receptors in close proximity to the East of the site on the western side of the Barrow Valley.

The hills which form the eastern side of the Barrow River Valley are located approximately 10km to the East-South-East of the Proposed Project and have full theoretical visibility of all 7 no. Proposed turbines. These hills provide visual screening of the Proposed turbines from a large area of the LVIA Study Area to the East and South-East between 10-20km from the Proposed turbines.

Large portions of the LVIA Study Area to the North, North-East and South-West comprise areas with either no or very limited theoretical visibility given the topographical screening from the 'Gallows Hill' within 5km of the site, as well as screening by Castle Hill, located within 10km. Purcell's Hill to the South-West of the Proposed Project site completely screens theoretical visibility from Kilkenny City, including those areas located to the North, North-East and East of Kilkenny City. The areas to the South and South-West of the city have low elevation, making theoretical visibility little to none, as the more elevated areas surrounding the site tend to provide screening from receptors in these areas.

The area directly to the North of the site has little to no theoretical visibility owing to screening by Gallows Hill, Clogrennane Hill, Jakes Hill and Turra Hill. These topographical features screen views from Carlow Town to as far as Newtown.

Additional ZTV mapping exercises were conducted to assess the theoretical visibility of the Proposed turbines cumulatively with all other existing, permitted, and proposed wind farm developments located within the LVIA Study Area. These ZTV maps are presented and discussed below in Section 14.6 'Cumulative Context'.

14.3.3 ZTV versus Actual Visibility

It is important to note that, in practice, vast areas of the 20km LVIA Study Area which have an indication of 'Full' theoretical visibility (5–7 turbines) by the 'Half-Blade ZTV Map' (recall above Figure 14-01) are likely to have little to no actual visibility of the Proposed turbines, due to natural above ground screening factors existent within the landscape.

Multiple field surveys were conducted during 2023 to determine the actual visibility from locations where the ZTV has indicated full theoretical visibility. These surveys determined that screening from localised undulations in topography, vegetation and man-made elements significantly reduce the likelihood of viewing the Proposed turbines in vast areas of the LVIA Study Area. In particular from areas beyond 5km from the nearest Proposed turbine to the North, South and South-East; while at a distance to the East and North-West more visibility increases. Whilst the impact assessments and analysis of visibility in this chapter are informed by ZTV mapping and photomontage visualisations, determination of landscape and visual effects are also informed by data gathered during site visits, including visibility appraisals, capture of photos and a Route Screening Analysis exercise.

14.3.4 Visibility in Close Proximity: Route Screening Analysis (RSA)

As presented later in this chapter, on-site visibility appraisals and photomontages indicate that most visibility and the most significant visual effects are likely to arise in close proximity to the Proposed Wind Farm. Visibility of the Proposed turbines from areas in close proximity to the Proposed turbines (< 3km) is mitigated by screening from localised undulations in topography, and the vegetated nature of the landscape immediately surrounding the Proposed Wind Farm. In order to comprehensively demonstrate the varying characteristics of the roads and to record the actual visibility in comparison to

the theoretical visibility, a methodology was employed, termed RSA, and this was undertaken from all roads within a 3km radius of the Proposed turbines.

The full methodology is outlined in Section 1.5.3 'On-Site Visibility Appraisal: RSA' of *Appendix 14-1: LVIA Methodology* and the categories determined were as follows:

- **'Little/No'** roadside screening, green colour, indicates areas that are mainly open with very light vegetation (see below Plate 14-1);
- **'Intermittent/Partial'** roadside screening, blue colour, indicates areas of light deciduous roadside vegetation and short-gapped vegetation allowing intermittent or partial views (see below Plate 14-2);
- **'Dense/Full'** roadside screening, orange colour, indicates areas with vegetation dense enough to block the views (see below Plate 14-3).

Below, Figure 14-3 maps the quantified results of the RSA, showing the extent to which each screening classification is present on all public roads within 3km of the Proposed turbines.

Plate 14-1: Example of 'Little/No' Roadside Screening along the L7127 to the north of the Proposed Project.

Plate 14-2: Example of 'Intermittent/Partial' Roadside Screening along L3037 Road to the west of the Proposed Project.

Plate 14-3: Example of 'Dense/Full' Roadside Screening along local unnamed Road..

14.3.4.1 RSA Summary and Visibility Appraisal

The RSA determines the extent and density of screening present along the local road network in the immediate vicinity of the Proposed Wind Farm site. This allows the actual likely visibility of the Proposed turbines to be considered and assessed in an objective and quantitative manner reducing the level of subjectivity involved in determining how visible the Proposed turbines will be in the local landscape immediately around the Proposed Wind Farm site.

Table 14-1 shows the distribution of the screening classes on 51.1km of public road recorded during the survey within 3km of the Proposed turbines.

Table 14-1: Distribution of Roadside Screening Recorded during Route Screening Analysis

Screening Class	Length of Road Mapped in Figure 14-03	Percentage Distribution of Screening on the Surveyed Roads
'Little/No' roadside Screening	10.2km	19.9%
'Partial/Intermittent' roadside Screening	24.0km	33.0%
'Dense/Full' roadside Screening	16.9km	47.1%

An overview of the screening recorded during the RSA along prominent transport routes within 3km of the Proposed turbines is discussed below.

'Little/No roadside Screening' was recorded for approximately a fifth (19.9%) of the surveyed roads and was the least common class recorded. Some form of screening (either 'Partial/Intermittent' or 'Full roadside Screening') was recorded for approximately 80% of the roads surveyed, which suggests that the ZTV is not a true reflection of the actual likely visibility of the Proposed turbines. 'Full roadside Screening' was recorded for approximately half (47.1%) of the surveyed roads and was the most common class recorded. The large ratio of roadside screening is partly due to the dense conifer plantations surrounding the site. It is acknowledged that these plantations may be potentially felled in a future receiving environment and the quantity of roadside screening may be reduced. Irrespective of any potential felling, visibility of the Proposed turbines will be less than is indicated by the ZTV.

Multiple photomontages and photowires (early-stage photomontages) were captured from the areas where there is both theoretical visibilities indicated by the ZTV and Class 1 - No screening recorded during the RSA.

14.4 Landscape Baseline

The landscape baseline section reports relevant policy pertinent to this LVIA, as well a description of the receiving landscape of the Proposed Project site and its wider setting.

This section is divided into:

- **Landscape Designations and Policy Context** pertaining to the location and features of the site and its surrounding area based on the development plans for Counties Carlow, Kildare, Kilkenny and Laois and their relevant appendices;
- **Landscape Character of the Proposed Project site** describing the localised physical characteristics of the site and its immediate setting, based on:

- Site visit findings from 2023;

- **Landscape Value & Sensitivity** assigning 'Sensitivity' rating to the site and its surrounding area according to the 'Value' and 'Susceptibility to Change' based on the appraisal of multiple indicators:
  - Landscape designations;
  - Quality/condition of landscape elements;
  - Scenic/aesthetic qualities;
  - Rarity/conversation status;
  - Wildness/naturalness;
  - Recreational value;
  - Cultural meaning/associations.
- **Landscape Character of the site as defined in the Wind Energy Guidelines,** describing the landscape character and setting of the site and reviewing the relevant policies and siting guidance for wind energy developments in specific Landscape Character Types based on:
  - DoEHLG 2006 Guidelines;
  - Draft DoHPLG 2019 Guidelines;
- **Landscape Character of the Wider Setting** assessing the designated character areas of the site and its surrounding area based on:
  - Identification of LCAs within 15 km;
  - Preliminary assessment of LCAs based on ZTV mapping.

14.4.1 Landscape Designations and Policy Context

This sub-section reviews the policies and objectives of various planning policy documents relating to landscape, planning and the locational siting of wind farms, as they relate to the Proposed Project site.

The Proposed Wind Farm is located in Co. Carlow; therefore, the following development plan was primarily consulted to identify general landscape designations existent in the LVIA Study Area:

- Carlow County Development Plan 2022–2028 (CCDP);
- CCDP Volume VII: 'Landscape Character Assessment (CCLCA);
- CCDP Volume VI: 'County Carlow Renewable Energy Strategy' (CCRES).

As demonstrated by the Half-Blade ZTV Map (Figure 14-01), three other counties—Kildare, Kilkenny and Laois—are also located within the LVIA Study Area boundary and comprise regions with theoretical visibility of the Proposed turbines. Consequently, the following development plans were consulted to identify relevant landscape designations within the LVIA Study Area:

- Kildare County Development Plan (2023–2029) (KECDP);
- Kilkenny County Development Plan (2021–2027) (KKCDP);
- Laois County Development Plan (2021–2027) (LCDP).

14.4.1.1 Carlow County Development Plan 2022–2028 (CCDP)

This section outlines the general landscape policies for Co. Carlow, where all Proposed turbines of the Proposed Wind Farm are located. In addition, it names the types of landscape designations identified within the LVIA Study Area situated within County Carlow.

14.4.1.1.1 *Co. Carlow General Landscape Policy*

The CCDP sets out the County's aim for Landscape and Green Infrastructure in Chapter 9 and other relevant policies regarding landscape character assessment, landscape sensitivity and management. In

addition, it provides a strategy for the planning and sustainable development for the different landscape classifications and sensitivities.

The primary aim of the CCDP in relation to County Carlow's landscape and green infrastructure, detailed on *page 217* in chapter 9 of the CCDP, is stated to be:

> *'To protect, conserve and enhance the character, quality, and value of the County's landscape, in conjunction with recognition and support for the role of green infrastructure as a natural resource in the landscape, capable of delivering a wide range of environmental and quality of life benefits, including climate change adaptation'.*

Landscape policies and objectives are contained is *Section 9.8* of the CCDP. These policies establish a framework for the overall strategy of proper sustainable development planning procedures with regard developments on the landscape. Relevant policies and objectives are listed below:

> *'**LA. P1**: Protect and maintain the overall integrity of the County's landscape, by recognising its capacity to sustainably integrate and absorb appropriate development, and by ensuring that development protects, retains and, where necessary, enhances the appearance and character of the landscape, and does not unduly damage or detract from those features which contribute to its value, character, distinctiveness and sensitivity e.g. landform, habitats, scenic quality, settlement pattern, historic heritage, amenity, land use and tranquillity;*
>
> ***LA. P2:** Ensure that development will not have a disproportionate landscape or visual impact in sensitive upland areas of the County (due to siting, layout, design or excessive scale, height, and bulk) and will not significantly interfere with or detract from scenic upland vistas, when viewed from the surrounding environment, including nearby areas, scenic views, and routes, and from settlements;*
>
> ***LA. P3**: Adopt a presumption against developments which are located on elevated or visually exposed sites or areas with open exposed vistas, and where the landscape cannot accommodate such development with appropriate mitigation.*
>
> ***LA. P4**: Ensure that developments on steep slopes or ridges will not be conspicuous or have disproportionate landscape or visual impacts when viewed from the surrounding environment, including from nearby areas, scenic views, and routes, and from settlements;*
>
> ***LA. P6**: Require all developments, having regard to their landscape setting, to be appropriate in siting, layout, design, and scale, in order to ensure any potential adverse or landscape and visual impacts are minimised and/or removed where necessary, and that natural site features and characteristics are retained and maintained;*

As will be addressed and qualified throughout this chapter, the Proposed Wind Farm site is sited in an appropriate upland landscape capable of effectively accommodating a wind energy development with limited effect on key scenic and landscape sensitivities. In relation to policy LA P2, this LVIA will demonstrate that design of the Proposed Project and its strategic siting in an upland plateau comprising a modified landscape of commercial forestry (deemed to be low sensitivity) will not have a disproportionate landscape or visual impact in sensitive upland areas of County Carlow and will not significantly interfere with or detract from scenic upland vistas.

The landscape policies above (LA P1; P2; P3; P4; P5; and P6) indicate that upland landscapes are not generally suitable for development, however, it is key to note that the following policy (LA. P7 reported below) qualifies and acknowledges that developments such as wind farms have a functional and locational requirement to be sited in steep and elevated sites (upland landscapes).

- ***LA. P7**: Facilitate, where appropriate, developments that have a functional and locational requirement to be situated on steep or elevated sites (e.g. reservoir, telecommunication*

masts or wind energy structures) where residual adverse visual impacts are minimised or mitigated.

- ***LA. P8:*** *Require, where appropriate, Landscape/Visual Impact Assessments to be prepared by suitably qualified professionals, for development proposals which may have significant landscape or visual impacts, and/or which are located within or adjacent to sensitive landscapes;*
- ***LA. P10:*** *Ensure that features which contribute to local landscape character, including historic features and buildings, trees, hedgerows, shelter belts and stone walls, are retained, protected, and enhanced where appropriate, so as to preserve the appearance and local landscape character of an area, whilst supporting sustainable landscape change and development. Development proposals necessitating the removal of such features will be discouraged;*
- ***LA. P11:*** *Protect and preserve the established appearance and aesthetic attributes of views and prospects that contribute to the inherent quality of the County's landscape, including views, prospects and scenic routes listed in Tables 9.3 and 9.4, and particularly views to and from mountains, hills, river valleys and river corridors, and views of historical or cultural value (including buildings and townscapes) and views of natural beauty;*
- ***LA. 01:*** *Ensure that the management and assessment of development throughout the County takes account of the recommendations and assigned Landscape Character Areas, Landscape Types, and Landscape Sensitivity, and the Schedule of Views, Prospects and Scenic Routes, as contained in this Plan, and in accordance with Government Guidance on Landscape Character Assessment and the National Landscape Strategy;*
- ***LA. 02:*** *Ensure landscape/visual impact assessment will be a key consideration in the assessment of development proposals within the County'.*

The LVIA in this chapter takes into account the policies above in the identification and assessment of sensitive landscape and visual receptors.

14.4.1.1.2 Co. Carlow Landscape and Visual Designations

Section 9.7 of the CCDP identifies protected views, prospects, and scenic routes, stating that *"these include views to and from upland areas, views of heritage features, and views along river corridors."* These views and prospects, and scenic routes, are listed in *Table 9.3* and *Table 9.4* of the CCDP and are shown on *Map 9.4* and *Map 9.5* of the CCDP.

The CCDP goes on to state the following in relation views, prospects, and scenic routes:

> *"The identification of these views, prospects and scenic routes provides a tool for making development decisions that acknowledges the importance of protecting such assets and thus maintaining the overall integrity of the County's landscape. However, it is also acknowledged that in certain circumstances some development may be necessary, and in such cases appropriate location, siting and design criteria should strictly apply".*

CCDP Designated Scenic Amenity: Scenic Routes & Views and Prospects

For this LVIA, 8 out of 25 No. Scenic Routes in Co. Carlow were identified within the LVIA Study Area; these are listed below in Table 14-2.

Note on Map Ref. numbers: For purposes of clarity, continuity and reference to mapping figures in this chapter, Designated Scenic Routes are labelled with 'SR', and each is prefixed by the first letter of the county in which it is located, e.g. 'C' for Carlow. The last number in each label corresponds to the label or number assigned to each designation in the respective county development plan (e.g. C SR-4 = Carlow – Scenic Route No. 4).

Table 14-2: Identified Scenic Routes of Co. Carlow in the LVIA Study Area

Scenic Route No.	Map Ref.	Location and Description from County Development Plan (CCDP, table 9.4 (Schedule of Scenic Routes)
Co. Carlow		
SR-4	C-SR-4	Grangford Road - Central Plain
SR-5	C-SR-5	Ballyryan - Mixed landscape low level to west
SR-6	C-SR-6	Ridge Cross Roads - Central Plain
SR-7	C-SR-7	Road to the Butts - Panorama across central plain
SR-8	C-SR-8	Tomard Wood - Panorama to southeast
SR-9	C-SR-9	Tomard Lower - Panorama across central plain
SR-24	C-SR-24	Northwest of Borris - Views northeast to south of entire Blackstairs from Currane and Mt. Leinster to Blackstairs
SR-25	C-SR-25	Ballinkillin/Lorum Environs - Views northeast to southwest of entire Blackstairs and Barrow Valley from Mt Leinster to Brandon Hill. Currane, Mt Leinster to Brandon Hill. Views southeast towards Slievebawn. Views and vista from Lorum Old Rectory View of the mountain range is on the unnumbered road leading off the R705, opposite the entrance to Kilgraney House (behind the old Kilgreaney School House) over the Ballinkillen village. Corries Cross looking east and south towards Mt Leinster

For this LVIA, 24 out of 64 No. Views and Prospects in Co. Carlow were identified within the LVIA Study Area; these are listed below in Table 14-3.

Note on Map Ref. numbers: For purposes of clarity, continuity and reference to mapping figures in this chapter, Designated Scenic Views and Prospects are labelled 'V', along with the county-letter prefix, as explained above.

Table 14-3: Co. Carlow Designated Views and Prospects in the LVIA Study Area

View or Prospect No.	Map Ref.	Location and Description from County Development Plan (CCDP, Table 9.3 (Schedule of Views and Prospects)
Co. Carlow		
5	CV-5	Killerrig Cross – Vista 260-320°, panoramic view of KililleshinHills
19	CV19	Duckett's Grove - View southeast, of heritage site
20	CV-20	Duckett's Grove - Vista northeast, of spreading central plain and forest in distance

21	CV-21	Duckett's Grove - View on approach from west, of heritage site
22	CV-22	Palatine - Vista 90-140º, of central plain and avenue to Duckett's Grove
23	CV-23	Palatine - Vista 280-320º, panorama over central plain to Killeshin Hills
24	CV-24	Moyle - Vista 280-320º, of Burren River Valley
25	CV-25	Kellistown East - View southeast, of tree ridge and church
26	CV-26	Killyballyhue - Vista southeast, panorama of central plain to Blackstairs
27	CV-27	South of Nurney - View 280-340º, of hill with forest at Newtown/Bradley's Cross
28	CV-28	Newtown - Vista west, of Killeshin Hills
29	CV-29	Leighlinbridge - View south, of River Barrow
30	CV-30	Leighlinbridge - View north, of River Barrow and Black Church
31	CV-31	Ridge Cross - Vista east, panorama across central plain to Blackstairs
32	CV-32	Tuolcreen Cross - Vista east, panorama from Killeshin Hills across central plain to Blackstairs
33	CV-33	Milford - View east and north, of River Barrow
34	CV-34	Muine Bheag - View south, of town from point to north of entrance along River Barrow
35	CV-35	Ballymoon Castle - View south, of heritage site
36	CV-36	Swing Cross - Vista east, panorama across central plain to Blackstairs
37	CV-37	Immediate west of Ullard Bridge - Vista east, panorama from Killeshin Hills across central plain
38	CV-38	Immediate north of Shangarry Cross - View east, panorama with Killeshin Hills across central plain
50	CV-50	Borris - View southeast, of curved Main Street and Blackstairs
57	CV-57	High ground just north of Ballinkillen on the Ballinkillen to Lorum road - View northeast to southwest of entire Blackstairs and Barrow Valley from Mt. Leinster to Brandon Hill. Currane, Mt. Leinster to Brandon Hill. Views towards Slievebawn.

58	CV-58	High ground just north of Ballinkillen on the Ballinkillen to Lorum road - View northeast to southwest of entire Blackstairs and Barrow Valley from Mt. Leinster to Brandon Hill Currane, Mt. Leinster to Brandon Hill Views towards Slievebawn.
59	CV-59	On R705 from point north of the Ballyphenan T-junction - Intermittent views northeast to south of entire Blackstairs from Currane and Mt. Leinster to Blackstairs.
61	CV-61	Cashel Cross and Doyle's Cross Roads - Panoramic view southwest, from Cashel Cross looking towards Borris ACA, Borris House Demesne and Ballycoppigan

These scenic designations (Co. Carlow Scenic Routes & Views and Prospects) are of a visual nature and are representative of visual receptors; and are therefore mapped and analysed below in Section 0 'Visual Baseline' below.

14.4.1.2 Designated Landscape Character Areas and Landscape Sensitivity

14.4.1.2.1 *General Policy on Landscape Character Assessment*

Landscape Character Assessment, as carried out by the local authorities in all counties in Ireland to meet the objectives of the National Landscape Strategy Framework 2015–2025 (Department of Arts, Heritage and the Gaeltacht [DoAHG], 2015), forms an important basis of this LVIA.

The Landscape Character Assessment is intended to analyse the character, value and sensitivity of landscapes identified within a particular area (i.e. counties) as part of efforts by the DoAHG to achieve national-level consistency in terms of landscape decision-making and uphold compliance of European Landscape Convention best practices. This approach aligns with the best practise guidance (GLVIA3, 2013, p.74), which state that:

> *"Landscape Character Assessment (LCA) is the key tool for understanding the landscape and should be used for baseline studies".*

Landscape Character Assessments have been carried out by counties in Ireland, including Carlow, Kildare, Kilkenny and Laois, producing designated regions known as Landscape Character Areas (LCAs).

In this LVIA, a total of 7 No. LCAs from all four counties were identified within the LCA Study Area (see next sub-sections) and these are mapped and are analysed below in Section 14.4.5.2 'Preliminary Assessment: LCAs'. Of these, 3 No. LCAs were screened in for assessment of potential effects on landscape and visual amenity; the assessment is provided in *Appendix 14-2: LCA Assessment Tables*, taking into consideration the following county-level policy objectives based on Landscape Character Assessment.

14.4.1.2.2 *LCAs and LCTs – Differences in Local Planning Policy*

A designated Landscape Character Area (LCA) is typically a geographic area defined by its distinct and recognisable combination of natural, cultural, and visual elements that give it a unique identity and character – e.g. a specific area such as the 'Killeshin Hills'. A designated Landscape Character Type (LCT) is typically a category of landscape classification or archetype which represents a distinct subset of landscape characteristics and could be represented by multiple LCAs – e.g. 'Uplands' is a common

LCT. Each county in Ireland usually defines LCAs within the local planning policy. However, there is large variance in the naming conventions used for designated LCAs and LCT within different county development plans. In some instances, county development plans use the term LCT or LCU as the label for landscape areas which would typically be recognised as an LCA. This is important to recognise for the LVIA in this Chapter as there is variance across the naming conventions used by County Carlow, County Kilkenny and County Laois, for examples:

- Co. Carlow LCAs = Typical/Standard Definition of an LCA
- Co. Carlow LCT = Typical/Standard Definition of an LCT
- Co. Kilkenny LCAs = Typical/Standard Definition of an LCA
- Co. Kilkenny LCT = Typical/Standard Definition of an LCT
- Co. Laois LCAs = **Different to normal**, equivalent of a typical Definition of an LCT (Co. Laois does not have a typical LCA equivalent designation)

The Impact assessments in this LVIA and Appendix 14-2 focus on addressing the effects of the Proposed Project on LCAs that meet the typical/standard Definition for an LCA. Therefore, in this Chapter, the assessment focuses on Co. Carlow LCAs and Co. Kilkenny LCAs. The Co. Laois LCAs are essentially LCTs (not actually LCAs) and are therefore not included in the impact assessment of designated LCAs. County Carlow's LCAs are discussed in Section 14.4.1.2.3 below, while LCAs within other counties are discussed in Section 14.4.1.5 below.

14.4.1.2.3 County Carlow LCAs

Section 9.3 of the CCDP notes that the LCA Assessment for the County is contained within Appendix VII of the CCDP – The Carlow County Landscape Character Assessment 2022-28 (CCLCA). The CCDP identifies four distinct LCAs, and provides recommendations on their management, protection, and conservation. These can be seen on Map 9.1 of the CCDP. Two of the LCAs are located within the 15km LCA Study Area for effects on landscape character:

- Killeshin Hills
- Central Lowlands

Full descriptions of these LCAs can be found in *Section 9.4* of the CCDP. The Proposed Project is located within the Killeshin Hills LCA. This LCA is described as follows:

> *"This character area lies on the western side of the County on the border with Counties Kilkenny and Laois and a short segment of County Kildare. The area is bounded to the east by the river Barrow Valley with the R448 skirting along the east side of the valley. The lands adjoining the river valley are gently undulating hills which ascend steeply to uplands adjoining County Kilkenny: the Castlecomer Plateau. There are extensive panoramic views of the entire County to be had from the eastern slopes.*
>
> *The area is almost entirely a rural agricultural landscape with a moderate level of sensitivity and moderate potential capacity to absorb different types of development. Due to its upland character and relative exposure, it has a low potential capacity to absorb rural housing or industrial development.*
>
> *The Killeshin Hills contains the following Landscape Types: uplands, farmed ridges, farmed lowlands and broad river valley."*

These LCAs are included within the LCA preliminary analysis outlined in Section 14.4.5.2 below.

14.4.1.2.4 Co. Carlow Landscape Types & Landscape Sensitivity

The CCDP has a designation called Landscape Types (LT – equivalent of a typical Landscape Character Type), these are listed below:

- Uplands
- Rolling Farmland
- Rolling Farmland with Plantations/Woods
- Farmed Lowland Ridge
- Fertile Plain
- Narrow River Valley
- Broad River Valley
- Hilly Farmland with Rough Grazing
- Built Up Areas

The Proposed Development is located within the 'Uplands' LT. Section 9.5 of the CCDP outlines the sensitivity and capacity of the county's landscapes. The CCDP states that:

> *"Landscape sensitivity is a way of measuring the ability of the landscape to accommodate change or intervention without suffering unacceptable loss of character or value".*

Landscape sensitivity is rated from 1 to 5, with 1 being least sensitive and 5 being most sensitive. The ranking of the sensitivities of the Landscape character types are as follows (as per Table 9.1 of the CCDP):

- 1 – Least sensitive
- 2 – Decreasing sensitivity
- 3 – Moderate sensitivity
- 4 – Increasing sensitivity
- 5 – Most sensitive

The sensitivities of the LTs are shown on Map 9.3 of the CCDP. Table 9.1 of the CCDP shows that Upland LTs are all designated as '5 Most Sensitive'. The CCDP states that:

> *"Areas that may be less sensitive to change correspond to the built-up areas and farmed lowlands, while areas that may be most sensitive to change are uplands, river valleys and farmed ridges."*

The LT sensitivity ratings (*Table 9.2* of the CCDP) have been devised to consider general landscape sensitivity in the context of all development types (and land uses), where upland landscapes would potentially be more sensitive to development such as housing, transport routes or other commercial development. Whilst the Proposed Wind Farm is sited in the Upland LT with a sensitivity rating of '5-Most' in *Table 9.1* of the CCDP, it is also located in the Killeshin Hills LCA. *Table 9.2 – LandUse Capacity Matrix* is immediately below *Table 9.1* in the CCDP and considers that the Killeshin Hills LCA has a 'Moderate' capacity to the Land Use 'Wind Farming'. *Table 9.2* of the CCDP is reproduced below in Figure 14-1.

Land Use type	Mount Leinster - Blackstairs	Central lowlands	River Slaney - East Rolling Farmland	Killeshin Hills
Agriculture	Low	High	High	High
Rural housing	Low	Moderate	Low	Low
Urban development/expansion	Low	Moderate	Moderate	Low
Forestry Plantation	Moderate	Moderate	Moderate	Moderate
Tourism related activity*	High	High	High	High
Industrial development	Low	Low	Low	Low
Extractive industry	Low	Moderate	Moderate	Moderate
Wind farming	Low	Moderate	Moderate	Moderate

Figure 14-1 Carlow Land Use Capacity Matrix, Table 9.2 extracted from the CCDP.

The table above shows Land Use Capacity of different LCAs within County Carlow, which are classified as having either Low, Moderate, or High capacity to different land uses. As seen in Figure 14-1, all LCAs within County Carlow have a 'Moderate' capacity for 'Wind farming', except for Mount Leinster – Blackstairs LCA, which has a 'Low capacity for 'Wind farming'. Mount Leinster – Blackstairs LCA is not located within the 15km LCA Study Area for effects on landscape character, which means that the entirety of the LCA Study Area for effects on landscape character is designated as having a 'Moderate' capacity for 'Wind farming'. This is the most supportive classification for wind energy development within any LCA in County Carlow, with no LCA classified as having 'High' capacity.

In relation to landscape sensitivity and land use capacity designations reported above for the Uplands LT and Killeshin Hills LCA, it is important to consider policy *LPA 7* (CCDP – reported previously) where it is stated that development types such as wind energy are typically suited (functional and locational requirement) to steep or elevated areas. There are many key attributes and characteristics which make upland landscapes highly suitable for accommodating wind energy developments. These characteristics are explained in *Section 14.4.1.3* in the analysis of Co. Carlow wind energy policy in combination with the sensitivity designations above as they relate to LVIA. One key rationale for siting turbines in upland areas is to maximise the use of the wind resource.

Section 9.5 of the CCDP also states that *"The landscape sensitivity map and rating system for the County was informed by the Landscape Character Areas, Landscape Types, and the views, prospects and scenic routes."* There are several scenic routes and scenic views located within the Killeshin LCA (discussed in greater detail below in Section 14.5.1.1) and within the Uplands LT, which are likely to have influenced the designation of this LT as '5 – Most Sensitive', according to the CCDP as quoted above, and as stated on page 5 of the CCLCA contained in Appendix VII of the CCDP. The LVIA will address the suitability and sensitivity of the landscape of the Proposed Wind Farm site and its landscape setting at a project scale, considering both the impacts on key sensitivities of the landscape itself and views prospects and protected scenic routes.

Section 9.5 of the CCDP goes on to state that:

> *"The capacity of the County's landscape to visually absorb certain land uses, development, or physical change, without affecting its visual character or quality, can be influenced by one (or a combination) of the following three factors:*
>
> ***Topography:** development that is in elevated, exposed, or upland areas will usually be visible over a wide area, whereas development in more low lying and enclosed areas usually will not.*

> ***Vegetation:*** *there is greater opportunity for development to be screened from view in areas which support (or have the potential to support) woodland, trees, or tall hedges.*
>
> ***Development:*** *New development is less likely to be conspicuous in the context of existing development/built up areas in the landscape."*

Section 9.5 of the CCDP additionally lists various considerations that must be given to the nature or type of impacts when *"assessing visual impacts on the landscape"*. Potential visual impacts can:

- *"Be individual, or cumulative with existing or planned developments.*
- *Result in gradual erosion of the landscape values of an area, individually, or cumulatively over time.*
- *Be due to where a development is sited in the landscape.*
- *Arise because of the scale or design of the development.*
- *Be because a development is incongruous or alien to its landscape setting.*
- *Be significant for a small area (or local landscape setting) or for a larger more extensive area."*

The LVIA in this Chapter considers all of the criteria listed above in relation to the assessment of landscape and visual impacts.

14.4.1.3 Co. Carlow Renewable Energy Strategy

A wind energy strategy was developed for County Carlow to highlight specific areas that are targeted for future wind energy projects. This wind energy strategy separates County Carlow into seven landscape types with the 'Uplands' landscape type being the only one with an area specified for wind energy. The CCDP identifies areas that have viable wind speeds for wind development projects. For the Proposed Wind Farm, the area is designated as a location that is 'not normally permissible'. A Planning Rationale Report has been prepared as part of this EIAR in relation to the Proposed Project being sited in an area deemed 'not normally permissible'. This report can be found in Appendix 2-2 of this EIAR.

CCDP Section 7.10.3.1 'Wind Energy'

Section 7.10.3.1 of the CCDP provides a summary of wind energy policy in County Carlow, including wind energy policy guidelines in relation to landscape. This topic is covered in greater detail in the County Carlow Renewable Energy Strategy (CCRES) contained in *Appendix VI* of the CCDP. Both are referred to in this section to outline the policy context for wind energy in relation to the Proposed Project. Section 7.10.3.1 of the CCDP states that:

> *"Site suitability is an important factor in determining the suitability of wind farms, having regard to possible adverse impacts associated with, for example, residential amenities, landscape, including views and scenic routes."*

Including a number of other environmental and technical considerations, *Section 7.10.3.1* of the CCDP notes that the CCLCA included in *Appendix VII* of the CCDP identifies Landscape Types (LTs) which:

> *"Often contain more significant and sensitive landscapes that are highly valued for scenery and amenity and include a large number of protected views, prospects and scenic routes. This includes the Uplands Landscape Type as identified in Figure 6 of the LCA, where the elevated terrain is more visually sensitive and has the highest landscape sensitivity rating of 5, out of a rating scale of 1 to 5. Therefore, windfarm development in the more elevated Uplands Landscape Type will not normally be permissible."*

This is reflected in Policy WE P4 of the CCDP, which states:

> *"**WE P4**: Wind farm development will not normally be permissible in the Uplands Landscape Type as shown in Figure 6 of the Carlow County Landscape Character Assessment included as Appendix VII to this Plan. This provision shall not apply to micro energy generation and community energy projects as provided for in Section 7.10.3.5, where deemed appropriate and subject to compliance with proper planning and environmental considerations."*

The Proposed Wind Farm is located within the Upland LT and is therefore located within an area designated as 'not normally permissible'. Although the Uplands LT area is classed as an area which is not normally permissible, the CCDP places more focus on the uplands of the Blackstairs and Mount Leinster Uplands rather than the Uplands of the Killeshin Hills. The Killeshin Hills are rated as having a Moderate land use capacity for 'Wind farming' in *Table 9.2* of the CCDP which is a better location for wind farming compared to the Blackstairs and Mount Leinster LCA which has a 'Low' capacity for 'Wind farming'. The 'Moderate' rating for the Killeshin Hills is the highest available capacity rating for the land-use 'Wind farming' in County Carlow. Objective WE O1 of the CCDP further states that:

> *"**WE O1**: Increase the penetration of wind energy generation in County Carlow at appropriate locations and scale and subject to compliance with proper planning and environmental considerations."*

The Section below discusses the suitability of the site as an upland landscape capable of absorbing the Proposed Wind Farm, as well as other elements and policies of the CCRES and CCDP which highlight the inconsistencies involved in the blanket designation of Uplands LTs as 'not normally permissible' for wind energy development and the discrepancy with county and national policy relating to wind energy development. For further information on the planning rationale for the siting of the Proposed Project, please refer to Appendix 2-2 of this EIAR.

14.4.1.4 Policy Analysis & the Suitability of Upland Landscapes (The Proposed Project site) for Wind Energy Development

It is important to consider policy LPA 7 (CCDP – reported previously) where it is stated that development types such as wind energy are typically suited (functional and locational requirement) to steep or elevated areas. One key rationale for siting turbines in upland areas is to maximise the use of the wind resource. There are also several other key attributes and factors which make upland landscapes highly suitable for accommodating wind energy developments from an LVIA perspective, for example:

- Upland landscapes are typically of a large scale where commercial scale wind farms can be effectively absorbed.
- Marginal areas of upland landscapes (e.g. The Proposed Project site) regularly comprise environments that are highly modified by commercial activities such as forestry, these are large unpopulated areas of relatively low landscape sensitivity (e.g. degradation from historic human intervention) which are proven to be very suitable for accommodating all of the physical infrastructure required for a wind energy development (compared with other upland environments such as pristine peatland).
- Upland landscapes are typically areas of low population density with open expanses of unsettled land which provide adequate space for wind farms enabling appropriate set back (e.g. 4 x tip height in Draft DoHPLG 2019 Guidelines) from residential receptors and large population centres.
- Strategic geographic siting of turbines in relation to well defined landforms and topographical features existent within upland landscapes can substantially reduce the visual exposure of a wind farm development in its wider landscape setting and therefore eliminate visual effects on larger number of receptors.

It is to be noted that multiple wind energy developments of a similar scale and type have been built and consented in the upland area of the Killeshin Hills and Castlecomer Plateau where the Proposed Wind Farm site is located (See Section 14.6 - *Cumulative Context*). This planning precedent in combination with Co. Carlow Policy *LP 7* and the capacity determination in *Table 9.2* for Killeshin Hills would indicate some support for the principle of developing a wind farm in this area of upland landscape (Killeshin Hills). The LVIA in this Chapter considers and assesses the suitability of the landscape at a project scale and in the context of all other relevant landscape and visual designations and policies.

Policy Analysis: CCRES Section 6.1.5.1 'Landscape and Visual Capacity'

Section 6.1.5.1 of the CCRES which is contained in Appendix VI of the CCDP contains *Table 6-3*. This table states the following in relation to the Killeshin Hills LCA, where the Proposed Wind Farm is located.

> *"Subject to appropriate mitigation measures there may also be moderate scope to absorb extractive industry and wind farming. Overhead cables and masts would have to be selectively located, for example on farmed secondary ridges where the primary ridge would form the backdrop, or in the lowland farming area. Likewise, wind turbines could be similarly sited subject to appropriate conditions relating to mitigation measures."*

Section 6.1.5.1 of the CCRES goes on to state that:

> *"In the western area of the county, in the Killeshin Hills landscape character area, close to border with County Kilkenny, the wind speeds are favourable and* ***there are no environmental designations that preclude wind farm construction.*** *This landscape sensitivity in the area is '5', and 'moderate capacity' for wind farms is indicated in the LCA (2015). However, the* ***constraints mapping suggests that it may be difficult to meet separation distances between wind turbines and dwellings****, due to the dispersed settlement pattern in the area."*

It is noted here, as discussed further below, that the Proposed Project adheres to the mandatory four times tip height set back distance from residential buildings prescribed in the Draft DoHPLG 2019 Guidelines, as well as the 500-metre set back distance noted in the DoEHLG 2006 Guidelines. In this sense, the main concern highlighted by the CCRES in relation to the Killeshin Hills LCA is addressed. As detailed in Section 3.2.6 in Chapter 3 of this EIAR: Site Selection and Reasonable Alternatives, the Proposed Project site is located in an area with favourable wind speeds, with no environmental designations that preclude wind farm construction, and where required separation distances between wind turbines and inhabitable residential dwellings are met. As detailed in Section 3.2.6.2 of this EIAR at a project level scale, the Proposed Wind Farm site does not clash with the type of constraints identified in the above quoted paragraph form the CCRES and is thus appropriately sited according to the rationale used in that document.

The blanket designation of the Uplands LT as not normally permissible in the CCDP is discussed in *Section 6.1.5.2* of the CCRES where the inconsistency between the potential areas for new wind farms as identified in the CCRES and the land use policy is highlighted. The CCRES states that:

> *"In the south-eastern area of the county, close to the border with County Wexford and County Wicklow, where the wind speeds are favourable and where constraints mapping suggests that adequate separation distances to dwellings would be available – see area in blue on Figure 6-3. The landscape type is 'Uplands', therefore potential for new wind farms is affected by the land use policy, which identifies that wind farms are not normally permissible in the 'Uplands' Landscape Type of the Mount Leinster – Blackstairs Mountains LCA."*

It is noted here that in *Table 6-3* of the CCRES, that the Mount Leinster – Blackstairs Mountain LCA is stated to have a Low capacity for wind farms, with the Killeshin Hills LCA, where the Proposed Wind Farm is located, having a higher designated land use capacity for wind farms. In this sense, the

inconsistency highlighted in the above quote is even more relevant in relation to the Killeshin Hills LCA, which as noted previously is a suitable site for wind energy development in terms of a lack of environmental considerations that would preclude wind energy development and adherence to required set back distances. The land use policy of the blanket designation of all Uplands LTs as not normally permissible is clearly at odds with other competing policies in the CCDP, including policy LA P7, and the sieve mapping exercise undertaken in the CCRES (see *Figure 6.3* of the CCRES).

The uplands commercial forestry nature of the Proposed Project site is suitable for wind energy development in a regional and national context. In general, such sites are in general highly favourable to wind energy development and the Proposed Wind Farm layout adheres to the siting and design guidance for such landscapes set out in the DoEHLG 2006 Guidelines.

The DoEHLG 2006 Guidelines, describe specific landscapes. The landscape surrounding the Proposed Project site is a Transitional Marginal Landscape as defined in these Guideline. The characteristics for this landscape are as follows:

- Comprises something of both mountain moorland and farmland, thus involving a mix of small fields, tight hedgerows, and shelterbelts;
- May include relatively rugged and rocky terrain, and thus a reasonable degree of spatial enclosure;
- Higher ground tends to be wet and boggy. Lower areas are usually cultivated and managed as fields.
- Houses and farmsteads are usually common; and
- This landscape type bridges the organised and intensively managed farmland and the more naturalistic moorland.

The DoEHLG 2006 Guidelines state that this landscape can be very complex and a respect for scale and human activities is essential here.

Furthermore, there is also the existing Gortahile, permitted Bilboa Wind Farm and permitted White Hill Wind Farm located adjacent to the Proposed Wind Farm site in the same Killeshin Hills LCA and Uplands LT (which is also noted on *Figure 6.3* of the CCRES), demonstrating the acceptability of wind energy development within this landscape from a high-level planning perspective.

An Bord Pleanála recently granted permission for the White Hill Wind Farm adjacent to the south-east of the Proposed Wind Farm site. The inspectors report (Ref: ABP-315365-22) addresses the incongruency of the local planning policy for wind energy and landscape with respect to zoning in County Carlow, specifically the Killeshin hills. Section 5.3.7 of the inspectors report (Ref: ABP-315365-22) states the following:

> *"I consider that there may be some conflict between the landscape policies and the renewable energy strategy in the 2022 Carlow County Development Plan, which is noted to accord with regional and national policies and objectives in terms of climate action and was evaluated by the Office of the Planning Regulator for such compliance. On one hand, the subject site area is identified as an area with viable wind speeds in the RE strategy, but this does not take into account landscape or visual capacity constraints. The Plan would further advise that wind energy projects in the uplands landscape in which the site lies would not normally be permissible. While the area of Killeshin Hills is noted to be uplands, the CDP also acknowledges that subject to appropriate mitigation measures, the area is described as having a moderate capacity for wind farming. In this context, I am satisfied that the Board can conclude that the principle of the proposed development at this location does not, as suggested, materially contravene the principle of policy WE P4 of the recently adopted Carlow County Development Plan".*

The excerpt above indicates that the principal of windfarm development in the upland landscape of the Killeshin Hills is acceptable from a planning perspective.

In summary, there are numerous considerations discussed in this Section, including:

- The designated land use capacity of the Killeshin Hills LCA in the CCRES,
- The inconsistency with land use policy and the objectives of the CCRES and CCDP highlighted in the CCRES itself,
- The planning history of wind farm developments in this LCA and Uplands LT,
- The adherence to set back distance and avoidance of environmental considerations that would preclude wind energy development as set out in the CCRES.

The Proposed Wind Farm site and the landscape type and landscape character area within which it is located are not considered at this point unsuitable in relation to landscape sensitivity by virtue of the blanket designation of all Uplands LTs as not normally permissible in the CCDP. The other concerns highlighted by the CCLCA and CCDP, in particular the protection of views from scenic routes and designated viewpoints and the visual exposure of the Proposed turbines are given full, detailed and balanced consideration in terms of landscape and visual impacts in the assessments in this Chapter.

14.4.1.5 LCAs in Other Counties – Co. Kilkenny and Co. Kildare

While the Proposed Project is located in Co. Carlow; County Kildare and County Kilkenny are located within the LCA Study Area – (15km for assessment of effects on designated LCAs).

As only a small portion of partial theoretical visibility is found within the small section of County Kildare that is included in the 15km LCA Study Area, no significant effects are likely to occur on the LCAs within County Kildare. Therefore, County Kildare is excluded from further assessment and is not considered further in this Chapter. This is due to a very small area of Co. Kildare located within the 15km LCA LVIA Study Area and there is little to no theoretical visibility within Co. Kildare itself and no visibility from Site Visits.

LCAs and relevant policy designations pertinent are identified, mapped, and listed below from the following County Development Plans:

- Kilkenny County Development Plan 2021-2027 (KKCDP)

Co. Kilkenny Landscape Character Units (LCUs) and Landscape Character Types (LCTs)

The Landscape Character Assessment in the KCDP divides the county into four Landscape Character Types (LCTs), which *Section 9.2.12.1* describes as *"distinct types of landscape that are relatively homogenous in character and are generic in nature that may occur in different localities throughout the county, but share similar combinations of geology, topography, land cover and historical land use, for example, Upland Areas"*. They are as follows:

- Upland Areas
- Lowland Areas
- River Valleys, and
- Transitional Areas

These LCTs are further sub-divided into 14 no. geographically specific Landscape Character Areas (LCAs). *Section 9.2.12.3* describes these LCAs as *"units of the landscape that are geographically specific and have their own character and sense of place. Each has its own distinctive character, based upon patterns of geology, landform, land use, cultural, historical and ecological features".*

Of the 14 no. LCAs identified in the KKCDP, 5 no. are located within the 15km LCA Study Area for effects on landscape character. These are:

- LCA B – The Castlecomer Plateau

- LCA B1 – The Castlecomer Transition
- LCA F1 – The Kilkenny Basin
- LCA H _ The Nore Valley (South) (designated as being highly scenic)
- LCA I – The Barrow Valley (designated as being highly scenic)

These LCAs are included within the LCA preliminary analysis outlined in Section 14.5.2 below.

14.4.1.6 Landscape & Visual Designations in Other Counties: Kildare, Kilkenny and Laois

Counties Kildare, Kilkenny and Laois protect scenic amenity within their respective counties through the designation of scenic views, prospects and scenic routes. All counties use differing naming conventions and policy objectives pertaining to their respective designations.

In a general sense, it is a policy objective for each county to take additional care in the protection of unique and valuable scenic views which fall within the following designations:

- Co. Kildare: Scenic Routes and Protected Views;
- Co. Kilkenny: Views and Prospects;
- Co. Laois: Scenic Views and Prospects.

Scenic Routes and Protected Views in Co. Kildare are identified and mapped in Map 14.3 (*Section 13.5.2*) of the KECDP. Views and Prospects in Co. Kilkenny are identified in *Appendix H* within the third part of the KKCDP 2021-27 (3. Appendix) of the KKCDP. Scenic Views and Prospects of Co. Laois are identified and mapped in the only map within *Appendix 6* (Landscape Character Assessment) of the LCDP.

Table 14-4: Identified Scenic Amenities of Co. Kildare, Kilkenny and Laois in the LVIA Study Area

Scenic Amenity No.	Map Ref.	Location and Description in County Development Plans
Co. Kildare (KECDP, p.463/464)		
RB01	KE-V-1	Greese Bridge in the townland of Jerusalem Newtown Pilsworth
RB02	KE-V-2	Maganey Bridge in then townland of Maganey Lower
RB03	KE-V3	Tankardstown Bridge in the townland of Grangemellon
RB07	KE-V7	Mill Bridge in the townland of Levitstown
Co. Kilkenny (KKCDP, Appendix H)		
V11	KK-V-11	View east and southeast into the Barrow Valley and lowland plains on the Castlecomer/Paulstown Road, the LP2625 and LT6675 (between the junctions of road nos. LP2625/LS6671 and LT6675/L2623). Also, the view on the L6671 from the county boundary to its junction with the L2625.
V12	KK-V-12	

		Views overlooking Castlecomer and Ballyragget on the Castlecomer/Ballyragget Road (R694) between its junctions with road nos. LT5852 and LT5847.
V-13	KK-V-13	Views southwest over Kilkenny City and southeast over Carlow on Ballysallagh/Kanesbridge Road No. LP 1851 between the junctions with road nos. LT6654 and LS5886.
V-19	KK-V-19	View west towards the Slieve Bloom Mountains on road no's LS5840 and LS5839 from the junction with road nos. LS5839 and LS5846 (Ballymartin Cross Roads).
V-31	KK-V-31	Panoramic view of River Nore Valley from Bleach Road
V-32	KK-V-32	View of River Nore Valley to east from Ossory Bridge.
Co. Laois (LCDP, p.283)		
V-001	LS-V-001	Road No. L3896 in the townlands Killeshin, Rossmore with views towards lowlands of Graiguecullen/Carlow

14.4.2 Landscape Character of the Proposed Project site

This section assesses the localised landscape character specifically of the Proposed Wind Farm site and its associated Proposed Grid Connection Route, based on site visit findings from 2023.

'Landscape character' in this case refers to the distinct and recognisable pattern of elements that occurs consistently in a particular type of landscape, and how people perceive the pattern. It reflects particular combinations of geology, human settlement, land use, landform, soils and vegetation, and creates the particular sense of place found in an area.

The identification of landscape character as outlined in the 'Landscape and Landscape Assessment Consultation Draft of Guidelines for Planning Authorities' (DoEHLG, 2000) comprises the identification of primarily physical units (areas defined by landform and landcover) and, where appropriate, of visual units.

14.4.2.1 Site Visit Findings

The Proposed Project site was visited multiple times during 2023 where analysis of the following was conducted:

- Landform & drainage;
- Land use & landcover;
- Views from within the Site;
- Character and setting of the Proposed Grid Connection Route and proposed onsite 38kV substation.

Information gathered during these visits has informed the following description of the site. The landscape character of the Proposed Grid Connection Route is discussed at the end of this section.

Landform & Drainage

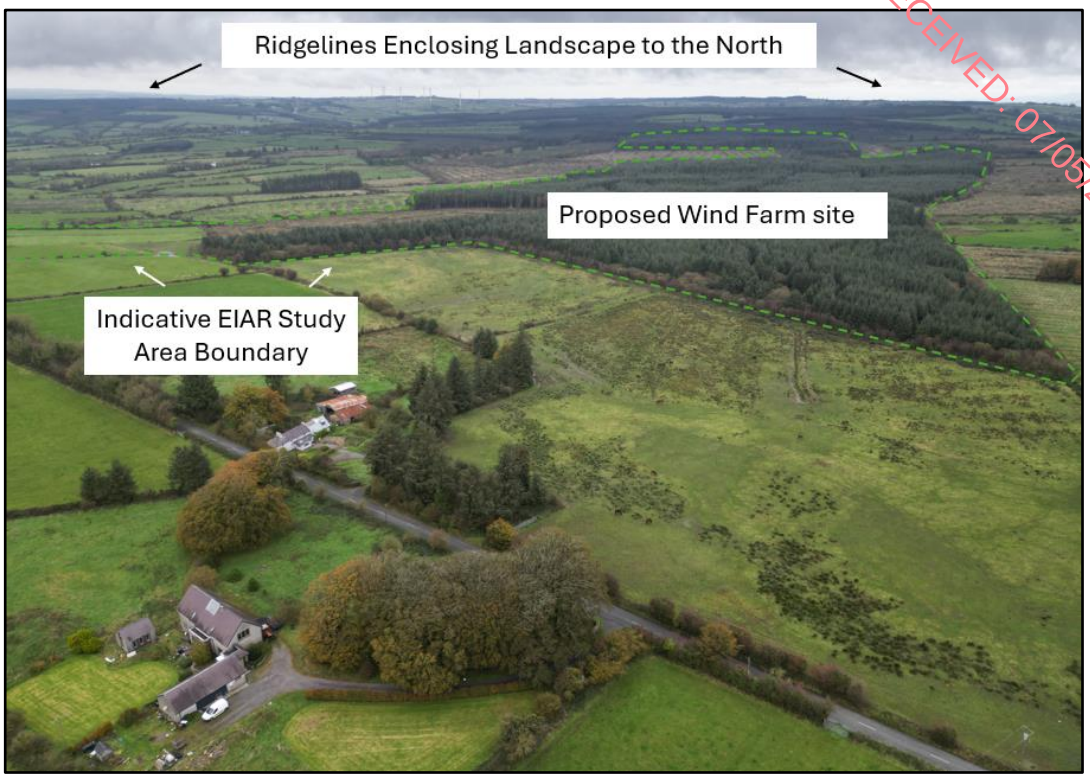

Plate 14-4 Drone Image of the Proposed Wind Farm site. View to the north from the south-west of the site.

Whilst the Proposed Wind Farm site is located in an elevated upland area of Co. Carlow, it is located on a plateau of gently undulating land which has limited topographic variation. The site is located to the south and east of the Dinin River which drains to the west and then south from this upland area. As shown by the drone image above, the site itself primarily comprises gently undulating lands of forestry and agricultural pasture and the upland river valley is relatively enclosed by ridgelines which extend around the site and its setting to the north.

In relation to the surrounding landscape within the LVIA Study Area, the Proposed Wind Farm site is very elevated, but it is surrounded by irregular undulating topography. Most of the Proposed turbines are sited at a base elevation above 250 metres AOD, except for T6 which is sited at a base elevation of 240 Metres AOD. Topography of the site and its setting within 2km is shown in Figure 14-2 below.

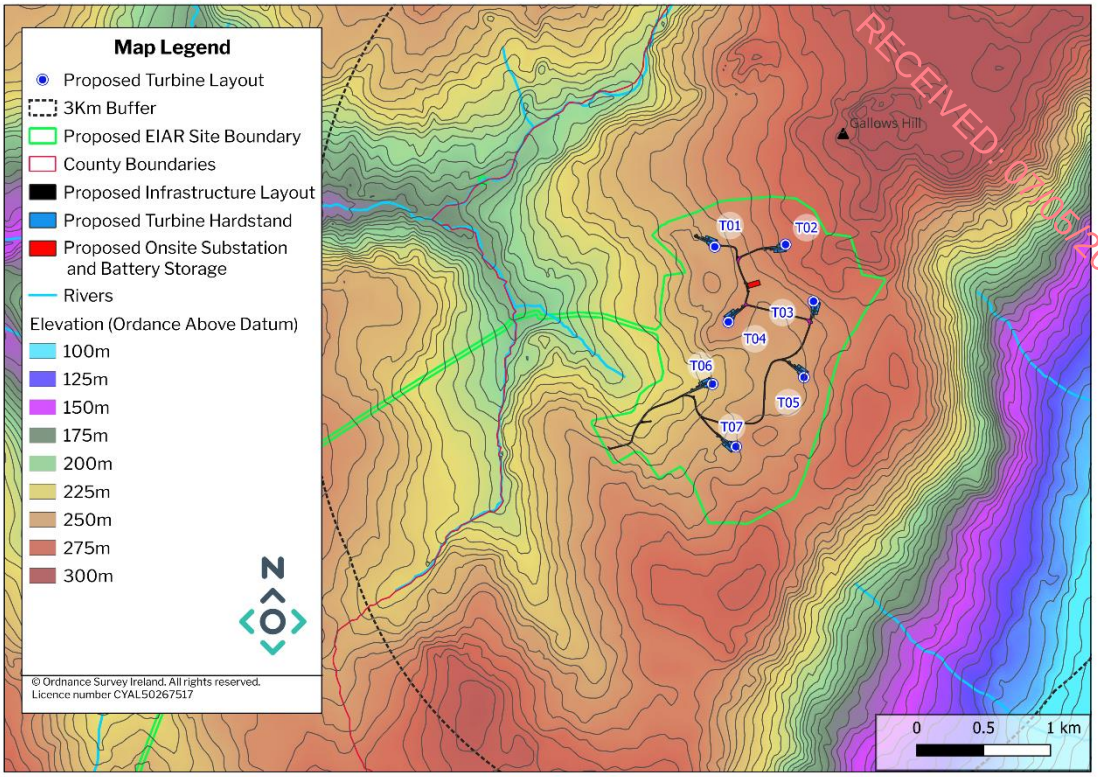

Figure 14-2 Topography of the Proposed Wind Farm site

The map above (and all drone imagery below) illustrates that the site slopes down gently to the west from the relatively prominent ridgeline along the east of the site. As shown by the drone image below, the lands of the site are elevated compared to the lowlands of the Barrow Valley to the east.

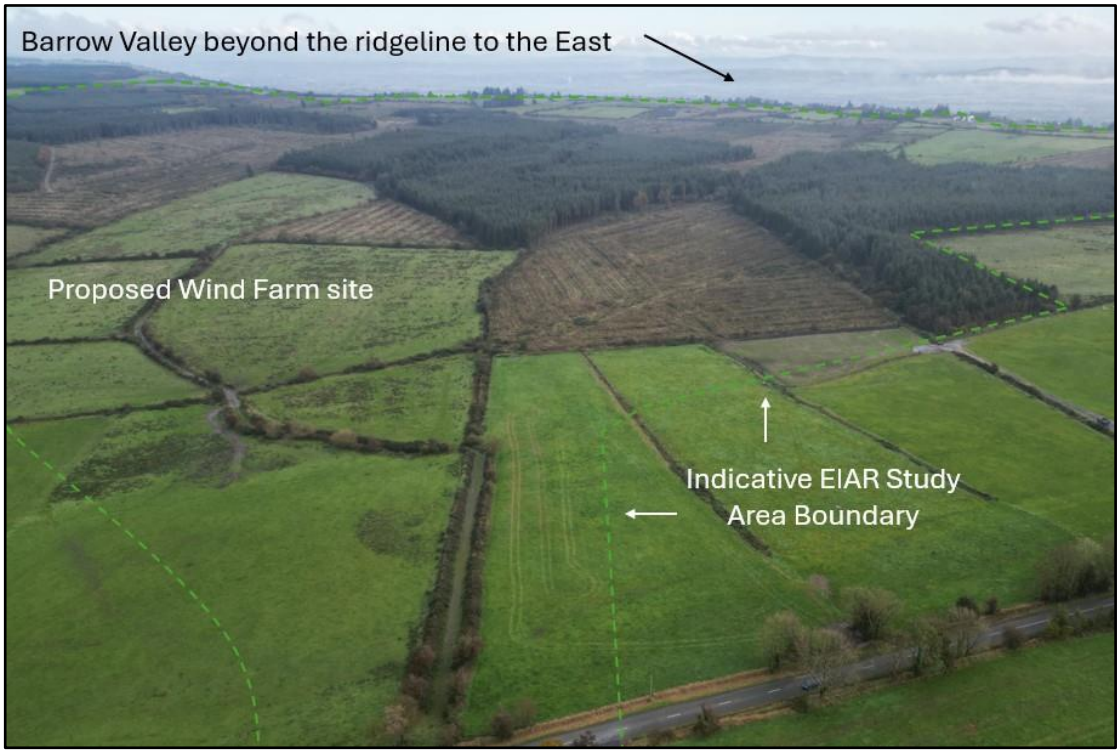

Plate 14-5 Drone View to the North-East from the west of the site adjacent to the Proposed Wind Farm site entrance.

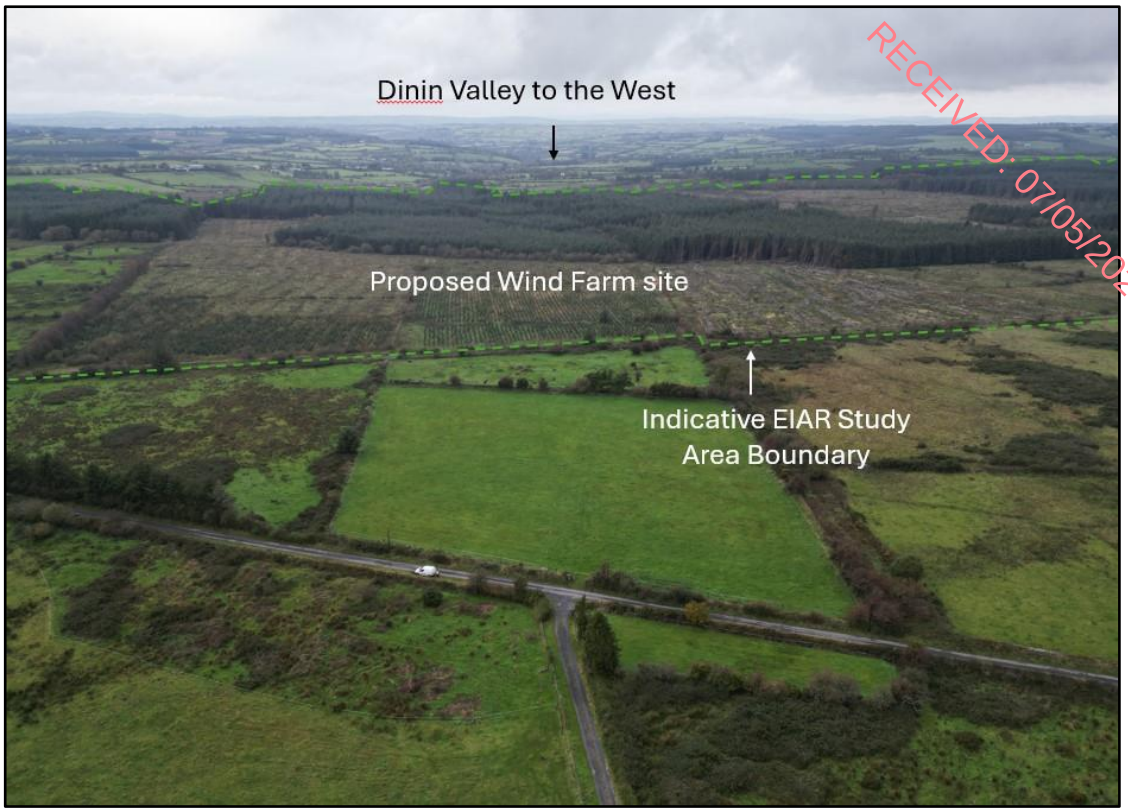

Plate 14-6 Drone View to the North-West towards the Dinin Valley from a location to the South-East of the site.

The Proposed Wind Farm site is located between two catchment areas which are the Shanragh and Castlecomer catchment areas. In general, the site drains to tributaries of the Dinin River to the west and north (Dinin to the north and Coolcullen to the west). Several drainage ditches and small watercourses run through the Proposed Wind Farm site along field boundaries as seen in the images below.

Plate 14-7 Example of drainage ditches and watercourses on the Proposed Wind Farm site

Plate 14-8 Drone View to the South-East towards the site from the townland of Agharue.

The drone images presented above illustrate how the site slopes gently from east to west and that the elevated eastern side of the site comprises a relatively prominent ridgeline. Strategic siting of the Proposed turbines inset to the west of this ridgeline limits their visibility from residential receptors immediately east of the site, beyond the ridgeline on the steeper slopes of the Barrow Valley. This strategic siting ensures there is no significant visual impacts on residential visual amenity. The full assessment of effects on residential visual amenity is reported in Section 14.7.3.2.8.

Plate 14-9: Image of Topography of the Proposed Wind Farm site from the Surrounding Roads

Plate 14-10: Image of Topography of the Proposed Wind Farm site from Inside the site

Above, Plate 14-9 and Plate 14-10 show that the elevation of the site itself is perceived to be quite flat when experiencing the landscape from the ground.

Landcover and Land Use

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 landcover of the Proposed Wind Farm site can be seen in the aerial satellite imagery comprising Figure 14-3 below and the drone view images seen previously.

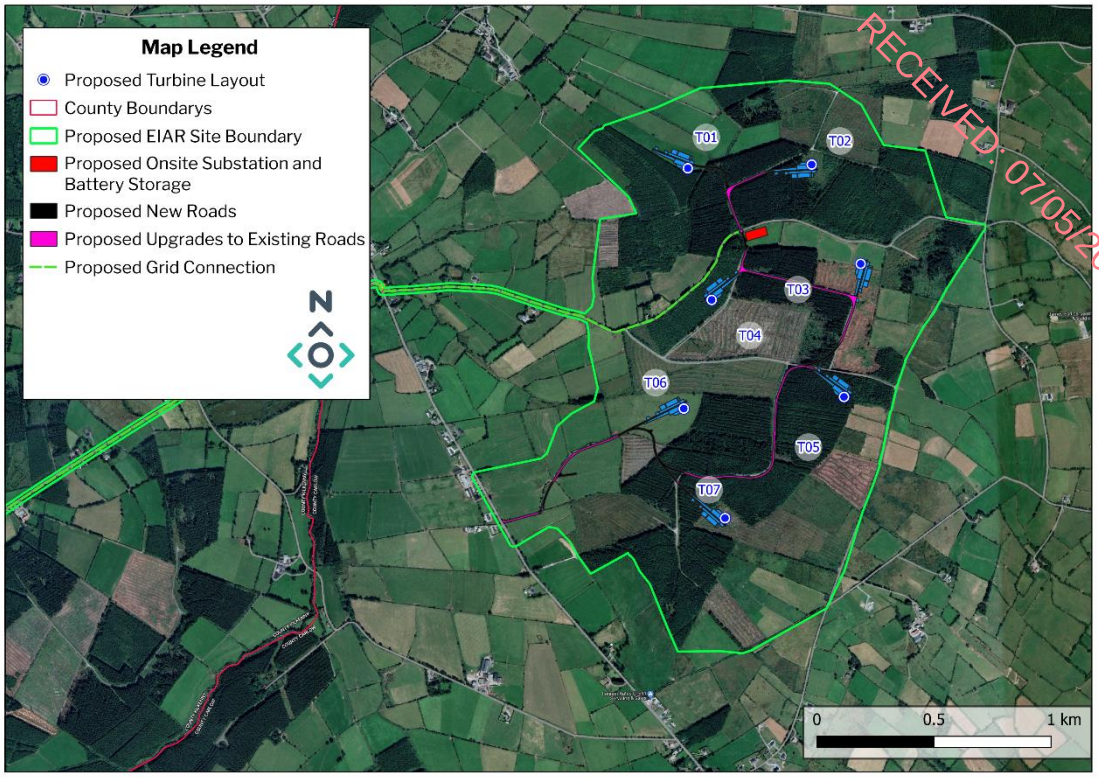

Figure 14-3 Aerial Image of Proposed Wind Farm site and Infrastructure Footprint

The Proposed Wind Farm site and surrounding area is a combination of commercial forestry and an agricultural landscape comprising fields of grazing pasture delineated by stone walls and mature hedgerows. As shown in the aerial image in Figure 14-3 above, landcover of the Proposed Wind Farm site is a combination of both dense forestry and a patchwork of agricultural fields. The Proposed turbines and hardstanding areas are predominately sited on lands of forestry, except T03 and T06 which are located in grassland areas for grazing livestock and farming. Visibility appraisals on the site and photomontage visualisations show that the existing commercial forestry will screen most proposed ground level infrastructure and the proposed onsite 38kV substation from view from receptors in the surrounding landscape. Although it is acknowledged that this could potentially change in a future receiving environment where deforestation could potentially occur.

The primary land use at the Proposed Wind Farm site is commercial forestry and agriculture. The grassland fields surrounding the Proposed Wind Farm site are primarily used as grazing pasture for the farming of livestock. As shown in Plate 14-11 to 14-14 below, there are many existing tracks/roads throughout the landscape of the site which currently facilitate forestry and agriculture operations. The Proposed Project has been designed with the aim of using all existing tracks and limiting the requirement for new paths through greenfield areas of the landscape.

Plate 14-11: Road through Forestry adjacent to Location of Proposed turbine T05

Plate 14-12: Road through Commercial Forestry adjacent to Location of Proposed turbines T01 and T02

Plate 14-13: Road through Commercial Forestry adjacent to Location of Proposed turbine T03

Plate 14-14: View of Agricultural Land where Proposed turbine T03 is sited from the north.

The images above show that whilst the site is rural and almost remote in character, it has undergone a substantial degree of human modification.

Views within the Proposed Wind Farm site

Long ranging views from within the site are generally quite restricted due to the enclosure provided by the dense forestry and mature boundary vegetation throughout the site. This is particularly the case for all views to the east, which are looking uphill, and where dense forestry obscure any distant visibility as shown in Plate 14-15 below. For the same reason, landscape views to the North and South from within the site are also generally very limited due to screening from the commercial forestry plantations.

Most open and long ranging views from within the site are directed to the west, where slightly elevated vantage points located to the west of the forestry permit open views across the agricultural field and the Dinin valley to the west.

Plate 14-15: View from Centre of the Proposed Wind Farm site facing East.

Plate 14-16: View from Centre of the Proposed Wind Farm site facing South.

Plate 14-17: View from Centre of the Proposed Wind Farm site facing West.

Plate 14-18: View from Centre of the Proposed Wind Farm site facing North.

There are very limited areas within the Proposed Wind Farm site that have long ranging views across farmland landscape as a large proportion of the site is covered by commercial forestry which is extremely dense and screens out all views to the North, South and East with the only possible direction for viewing being from the West.

Whilst there are limited views from within the site itself, there are several Co. Carlow designated scenic routes in close proximity to the site. Co. Carlow Scenic Route 6 and 8 encircle the site to the south-west (SR-6) and east (SR-8), with some open views down into the site from SR-6. The effects of the Proposed Wind Farm from these scenic routes are comprehensively assessed below in 14.5.1.1

Landscape Character and Setting of the proposed onsite 38kV Substation, Battery Energy Storage System and the Proposed Grid Connection Route

The location of the proposed onsite 38 kV Substation and Battery Energy Storage System (BESS) is slightly North of the centre of the Proposed Wind Farm site, just off an existing public access road. It is approximately 340m North-East of T04 and Plate 14-19 below shows a view of the location of the proposed onsite 38kV substation which is located in a field of grassland. The substation and BESS is completely enclosed by mature and dense forestry to the north, west and south surrounding the field. There is no forestry to the east, however landform rises and there are approximately four fields of grassland and an area of mature woodland between the substation and the local road defining the eastern perimeter of the site. The substation and BESS is not likely to be visible from any receptors in the surrounding landscape.

Plate 14-19: Location of the proposed onsite 38kV substation from the local public road immediately north of the onsite substation

Plate 14-20 View of the proposed onsite 38kV substation from the East.

Plate 14-19 and Plate 14-20 show the location of the proposed substation and BESS, enclosed by an area of dense forestry to the north, south and west.

The Proposed Grid Connection Route comprises an underground cable and is primarily located within the public road corridor. The Proposed Grid Connection Route is approximately 20.1km and connects the Proposed Wind Farm to the existing Kilkenny 110kV substation located in the townland of Scart,

Co. Kilkenny. The public road corridor generally comprises a network of rural local and regional roads. The image below shows the route of the Proposed Grid Connection Route as it exits the Proposed Wind Farm site to the west, its route through the small settlement cluster of the 'The Butts' before traversing the Coolcullen river west into Co. Kilkenny.

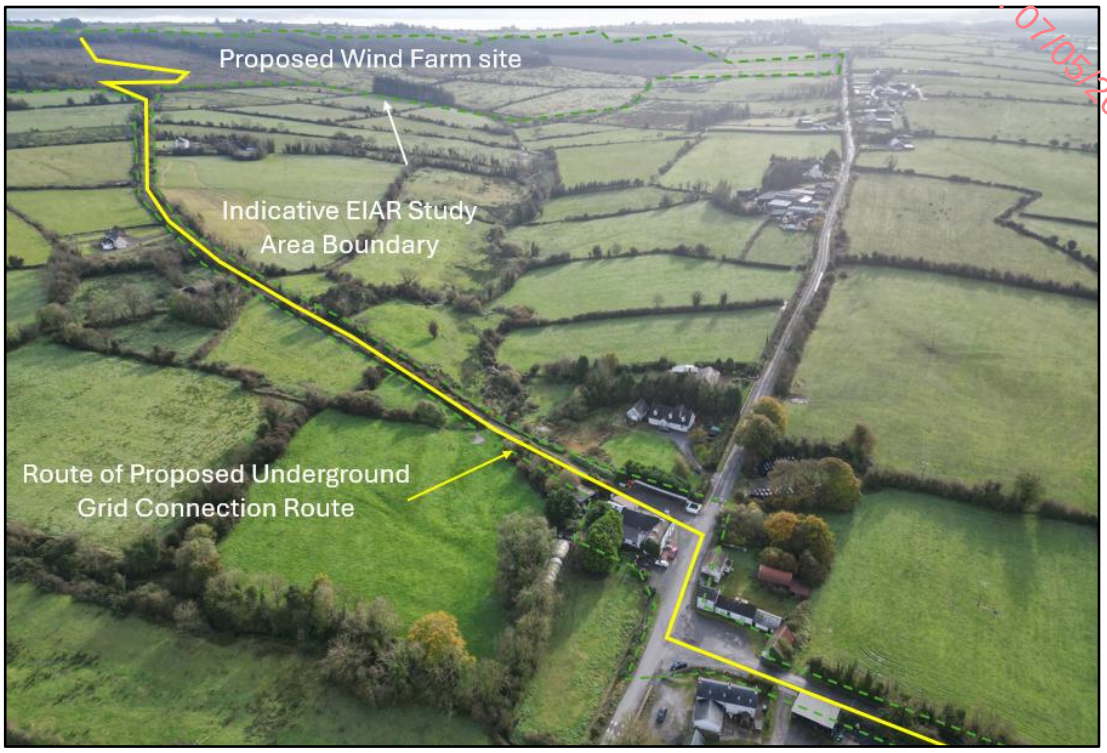

Figure 14-4 Drone View of the Proposed Grid Connection Route

14.4.3 Landscape Value & Sensitivity

This section establishes a baseline 'Value' of the landscape character of the Proposed Project site and its surrounding area, informed by rating the 'Susceptibility to Change' considering the collective appraisal of seven indicators of landscape value in the LVIA guidance (listed below). The Value and Susceptibility to Change ratings are then combined to assign an overall 'Sensitivity' rating of the site.

This is done in order to establish the capacity to wind energy development of the immediate landscape in which the Proposed Wind Farm will be built, as is prescribed by the following best practise guidance (GLVIA3, 2013, p.80):

> *'...[A]s part of the baseline description the value of the potentially affected landscape should be established'.*

Comprehension of the Landscape Value and its Susceptibility to Change enables determination of the Sensitivity of the landscape at a micro level (the site itself) as well as its capacity to absorb the infrastructure of a wind farm development.

The determination of Landscape Value takes into consideration the scenic amenity designations, the landscape sensitivity and value designations found in the local landscape policy as well as other indications of landscape value attached to undesignated landscapes.

Below, Table 14-5 describes the following seven indicators appraised collectively to establish Landscape Value and Susceptibility to Change, which were then considered in forming the overall landscape Sensitivity classification of the site:

- Landscape designations (LCA setting, Scenic Routes and Views, amenity areas, etc.).
- Quality/condition of landscape elements;
- Scenic/aesthetic qualities;
- Rarity/conversation status;
- Wildness/naturalness;
- Recreational value;
- Cultural meaning/associations.

The ratings of Value and Susceptibility range from High, Medium, or Low, while the overall Sensitivity is assigned as **Very High**, **High**, **Medium** or **Low**, following criteria outlined in the full detailed methodology, presented in Section 1.7 'Assessing Landscape Effects' of *Appendix 14-1: LVIA Methodology*.

Table 14-5: Indicators of Landscape Value and Susceptibility to Change

Indicator	Description
Landscape Designations	Designations include: Carlows Killeshin Hills LCA; Carlows Central Lowlands; Carlow's Uplands LCT; Kilkenny's Upland LCT; Kilkenny's Castlecomer Plateaux LCA; Whilst some of these designations indicate a landscape of high sensitivity, analysis of local landscape policy and planning precedent in *Section 14.4.1.4* provides a strong rationale for this upland area of County Carlow to be an appropriate and suitable landscape for the development of wind energy. Several Co. Carlow designated scenic routes are located along the local road network surrounding the site.
Landscape Elements Quality/Condition	Definition: Refers to the physical state of the landscape of the Proposed Project site and the condition of each of its individual elements. The landscape of the site is a modified working landscape due to the dominant presence of agriculture and commercial forestry and utility of the land for these purposes. The landscape is modified by artificial drainage, access tracks and agricultural and forestry infrastructure.
Scenic/Aesthetic Qualities	The Proposed Wind Farm site has some rural aesthetic qualities given the lack of buildings and infrastructure present on the site. The surrounding area, however, views of dense forestry are common throughout the local area, and it is noted that the landscape of the site has clearly been subject to human interference and modification.
Rarity or Conservation Interests	There are no designated areas of conservation within the site. Hedgerows and mature boundary vegetation along field boundaries within the site form biodiversity corridors which hold some ecological value. Conservation interests include Marsh fritillary. A comprehensive assessment of the ecology of the site is included in Chapter 6 'Biodiversity' of this EIAR and proposed enhancement measures are included in Appendix 6-4 of this EIAR: Biodiversity Management and Enhancement Plan.

Indicator	Description
Wildness/Naturalness	Definition: Refers to the present degree of human interference on the landscape of the site. The Proposed Wind Farm site is comprised of commercial forestry and agricultural land, so it is considered to be a landscape modified by human interference. The influence of commercial forestry and agriculture around the Proposed Wind Farm site have altered the perceived sense of naturalness or wildness in this landscape.
Recreational Value	The Proposed Wind Farm site comprises privately owned land and no known recreational amenities associated with the site.
Cultural Meaning/ Associations	There are no cultural heritage meanings or associations directly connected to the Proposed Wind Farm site. Assessment of the Cultural Heritage of the site and wider landscape setting is included in Chapter 13 'Cultural Heritage' of this EIAR.

Considering the collective appraisal of the indicators detailed above in Table 14-5, this LVIA determines the following ratings for the Proposed Project site:

- Landscape Value = Low
- Landscape Susceptibility to Change = Medium
- Overall Sensitivity = **Low**

Rationale: The landscape value of the site was deemed to be 'Low' considering the high degree of modification on the land, an absence of any specific landscape receptors of high sensitivity or unique or distinctive characteristics relating to the site itself.

The site is deemed to have a 'medium' susceptibility to change in mind of the land zoning in local planning policy and the protected scenic amenity designations in close proximity to the Proposed Wind Farm site. The determination of 'medium' takes into account the analysis reported previously in Section 14.4.1.4 – *Policy Analysis and Suitability of Upland Landscapes*. Overall, the sensitivity of this landscape is deemed to be '**Low**'.

14.4.4 Landscape Character from Wind Energy Development Guidelines

As there is little to no material difference between the DoEHLG 2006 Guidelines and Draft DoHPLG 2019 Guidelines, this section considers the context of the Proposed Project site based on siting and design guidance in both sets of guidelines, with respect to landscape and visual effects. The appropriate landscape character type defined by the DoEHLG 2006 Guidelines have been identified below.

Section 6.9 of the DoEHLG 2006 Guidelines *(6.10* of the Draft DoHPLG 2019 Guidelines) is called 'Landscape Character Types as a Basis for Guidelines' and offers guidance for the siting and design specifically of wind energy developments in multiple landscape contexts, defining six landscape character types representing most situations where wind turbines may be proposed. These are:

- 'Mountain Moorland'
- 'Hilly and Flat Farmland'
- 'Flat Peatland'
- **'Transitional Marginal Landscape' – category selected by this assessment.**

- 'Urban/Industrial'
- 'Coastal'

The guidance is intended to be indicative and general and notes that it represents the 'best fit' solutions to likely situations. The guidelines note that, in the case where a wind energy development is located in one landscape character type but is visible from another, it will be necessary to decide which of the landscape types more strongly influences the approach adopted for the LVIA.

Based on site visits, visual assessments presented in the second volume of the EIAR report, the *Photomontage Booklet*, as well as from other mapping and imagery present in this chapter, this LVIA selects the '**Transitional Marginal Landscape**' character type as best representative of the landscape in which the Proposed turbines are located. Therefore, the best practice siting and design strategies prescribed for this landscape character type (defined in the DoEHLG 2006 Guidelines) are presented below, to be considered for the Proposed Project.

'Transitional Marginal Landscape'

The key characteristics of Transitional Marginal Landscape as stated in the DoEHLG 2006 Guidelines (p.59) and the Draft DoHPLG 2019 Guidelines (p.110) are:

- *'Comprises something of both mountain moorland and farmland, thus involving a mix of small fields, tight hedgerows and shelterbelts;*
- *May include relatively rugged and rocky terrain, and thus a reasonable degree of spatial enclosure;*
- *Higher ground tends to be wet and boggy. Lower areas are usually cultivated and managed as fields;*
- *Houses and farmsteads are usually fairly common; and*
- *This landscape type bridges the organised and intensively managed farmland and the more naturalistic moorland'.*

All relevant siting and design guidance (including Location, Spatial Extent, Spacing, Layout, Height and Cumulative Effect) given for 'Transitional Marginal Landscape' in the DoEHLG 2006 Guidelines (p.59–61) and the Draft DoHPLG 2019 Guidelines (p.111–113) are set out below:

Location

In relation to '**location**', the siting and design guidance for Transitional Marginal Landscape Character Types guidance in the DoEHLG 2006 Guidelines (p.59–61) and the Draft DoHPLG 2019 Guidelines state:

> *'As wind energy developments, for reasons of commercial viability, will typically be located on ridges and peaks, a clear visual separation will be achieved from the complexity of lower ground. However, wind energy developments might also be located at lower levels in extensive areas of this landscape type, where they will be perceived against a relatively complex backdrop. In these situations, it is important to minimise visual confusion such as the crossing by blade sets of skylines, buildings, utility lines and varied landcover'.*

As detailed in Section 32.3 in Chapter 3 of this EIAR, in terms of location**,** site selection was at the forefront of the Proposed Project design. In accordance with the guidance quoted above, the Proposed turbines are all sited on or near peaks of elevation, do not fall along the sloping aspect of this upland area, and are clearly separated visually.

Siting for the infrastructure (including turbines) of the Proposed Project at its current location has resulted in sufficient distance from the greatest number of receptors within the nearby area. The final proposed turbine layout takes account of all site constraints and the distances to be maintained between

turbines and from houses, roads, etc. The layout is based on the results of all site investigations that have been carried out during the EIAR process. For further information on the Proposed Project layout process, please refer to Section 3.2.1.6 of Chapter 3 of this EIAR.

In terms of separation distance, the Proposed turbines are also set back a reasonable distance from dwellings, adhering to the recommended 4-times tip height set-back distance from the Draft DoHPLG 2019 Guidelines (p.129):

> *'...[A] setback distance for visual amenity purposes of 4 times the tip height should apply between a wind turbine and the nearest point of the curtilage of any residential property in the vicinity of the Proposed Project, subject to a mandatory minimum setback of 500 metres'.*

Spatial Extent

In relation to '**spatial extent'**, the siting and design guidance for Transitional Marginal Landscape Character Types guidance in the DoEHLG 2006 Guidelines (p.59–61) and the Draft DoHPLG 2019 Guidelines state:

> *'Wind energy developments in these landscapes should be relatively small in terms of spatial extent. It is important that they do not dominate but achieve a balance with their surrounds, especially considering that small fields and houses are prevalent'.*

Further, the guidance provides three examples of imagery, of which Examples 4(b) and 4(c) describe the appropriateness of irregular spacing/random layout and visual ambivalence between two landscape types:

> *'4(b) Wind energy development with irregular spacing and random layout - is more appropriate given the relative undulation of the setting.*
>
> *4(c) Large wind energy development straddling two landscape character types within the same visual unit – this creates a visual ambivalence and, thus, negative tension between the two character types involved'.*

In terms of spatial extent, the Proposed turbines are sited within a relatively small spatial extent, which aligns with the guidance stated above. They also do not appear to be dominant and will have balance with the surrounding commercial forestry and agricultural fields. The Proposed turbines appear visually connected as one cluster, perceived as one visual unit in one area of the landscape. As a whole the Proposed Wind Farm has a coherent layout and aesthetic visually balanced within this transitional marginal landscape.

Spacing

In relation to '**spacing**', the siting and design guidance for Transitional Marginal Landscape Character Types guidance in the DoEHLG 2006 Guidelines (p.59–61) and the Draft DoHPLG 2019 Guidelines state:

> *'All options are possible, depending on the actual landscape characteristics. However, irregular spacing is likely to be most appropriate, given the complexity of landform and land cover typical of these landscapes, and the absence of extensive swaths of fields of regular and rectilinear pattern'.*

In terms of spacing**,** the Proposed turbines are sited at evenly spaced locations in a single clustered layout. Furthermore, as the Proposed turbines are sited within areas of commercial forestry and agricultural land, it is considered that the spacing of the Proposed turbines responds appropriately to the landcover of the site given the clustered nature of the Proposed turbines.

Layout

In relation to '**layout**', the siting and design guidance for Transitional Marginal Landscape Character Types guidance in the DoEHLG 2006 Guidelines (p.59–61) and the Draft DoHPLG 2019 Guidelines state:

> *'The likely location of wind energy developments on ridges suggests a linear or staggered linear layout whereas on broader hilltops they could be linear or clustered. Grid layouts are less likely to succeed aesthetically unless there is an open continuity of similar landcover'.*

In terms of layout, the Proposed turbines are arranged in a staggered/clustered layout. As seen in the photomontages (and in accordance with the guidance above), when the Proposed Wind Farm is viewed from the lowlands to the east, it is most often seen as a linear array of turbines sited up beyond the ridgeline which forms the western side of the Barrow Valley.

Height

In relation to '**height**', the siting and design guidance for Transitional Marginal Landscape Character Types guidance in the DoEHLG 2006 Guidelines (p.59–61) and the Draft DoHPLG 2019 Guidelines state:

> *'In small-scaled enclosed areas, short turbines are preferred in order to avoid their spatial dominance and to ensure visual balance. However, where the upper ground is relatively open and visually extensive, taller turbines may be more appropriate'.*

In terms of height, the Proposed turbines are sited within relatively extensive upper ground, that is the Killeshin Hills, where they appear as large vertical objects within the landscape, appropriately scaled in accordance with the guidance quoted above.

Cumulative Effect

In relation to '**cumulative effect'**, the siting and design guidance for Transitional Marginal Landscape Character Types guidance in the DoEHLG 2006 Guidelines (p.59–61) and the Draft DoHPLG 2019 Guidelines state:

> *'This would have to be evaluated on a case-by-case basis, but great caution should be exercised. The spatial enclosure often found in transitional marginal landscapes is likely to preclude the possibility of seeing another wind energy development. However, should two or more wind energy developments be visible within a confined setting a critically adverse effect might result, depending on turbine height and wind energy development extent and proximity'.*

In terms of cumulative effect, this LVIA anticipates that, in a future baseline scenario, cumulative landscape and visual effects may arise owing to the known status of the following developments located in or adjacent to the Killeshin Hills:

- Existing Gortahile Wind Farm;
- Permitted Bilboa Wind Farm;
- Permitted White Hills Wind Farm;
- Proposed Freneystown Wind Farm;

The existing Gortahile Wind Farm is located approx. 3km north of the Proposed Wind Farm site, within Killeshin Hills. The permitted Bilboa Wind Farm is located approx. 1.2km north-east of the Proposed Wind Farm site, along the Killeshin Hills. The permitted White Hill Wind Farm is located approx. 2.5km southwest of the Proposed Wind Farm site, on the border of Co. Carlow and Co.

Kilkenny within the Killeshin Hills. The proposed Freneystown Wind Farm is located the furthest away from the Proposed Wind Farm at approx. 8.3km to the southwest.

A full discussion and analysis of cumulative effects is presented below in 14.6 'Cumulative Context: Other Wind Farms' of this Chapter.

14.4.5 Landscape Character of the Wider Setting

This section briefly describes and provides imagery of the landscape character of the wider LVIA Study Area, beyond the Proposed Project site and including the surrounding settlements.

Additionally, this section provides the analysis of whether or not the LCA's within the LCA Study Area are included in the LCA assessment in Appendix 14-2 by the visibility analysis of designated LCAs from the county-level policy Landscape Character Assessments outlined previously (recall above 14.4.1 'Landscape Designations and Policy Context'). Here, we map and analyse the potential landscape effects on individual LCAs in Co. Carlow, Kildare, Kilkenny and Laois within the Study Area using ZTV mapping.

14.4.5.1 Description of the Wider Landscape Setting

Landscape character refers to the distinct and recognisable pattern of elements that occur consistently in a particular type of landscape, and how people perceive this. If reflects combinations of geology, landform, soils, vegetation, land use and human settlement, creating the sense of place found in different areas.

The landscape surrounding the Proposed Wind Farm site is a rural agricultural landscape along with commercial forestry in close proximity to the Proposed Project site. It is a sparsely settled landscape with clusters of residential dwellings organised in a linear pattern along the regional and local roads to the South and towards the West of the Proposed Wind Farm site, while the residential dwellings to the North and East are more scattered and dispersed.

Plate 14-21: View to the North-West over agricultural farmland from the east side of the Barrow River Valley

Plate 14-22: View to the West from the R725 above the M9 over agricultural farmland from the east side of the Barrow Valley,

Plate 14-23: View to the South from a local unnamed road approximately 2.5km north of the nearest Proposed turbine (T01).

There are two substantial population centres within 5km of the Proposed Project, Oldleighlin and Ballinabrannagh. The closest District Town to the Proposed Project is Bagenalstown which is 9.6km to the southeast of the Proposed Wind Farm; Castlecomer is another District Town which is located 10.2km to the west of the nearest Proposed turbine (T01). Carlow Town is located 10.8km from the nearest Proposed turbine (T02).

Plate 14-24: View from the Settlement Ballinabrannagh facing West

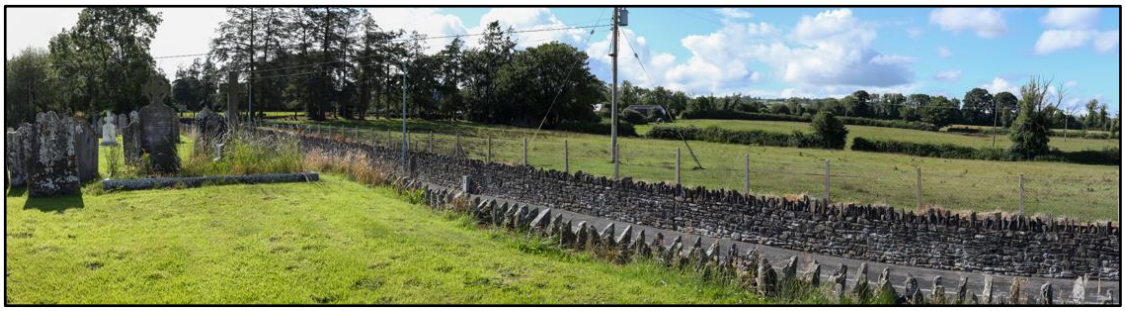

Plate 14-25: View from the Settlement Oldleighlin facing North

Historic Landscape Character and Landscape Evolution

Chapter 10 of the CCDP places value upon built heritage, including policy objectives focussed on the preservation and conservation of Architectural Conservation Areas (ACAs); Archaeological landscapes; and Historic Landscapes such as heritage gardens, demesnes, and other designated historic landscape features. These built heritage receptors are valuable contributors to the cultural character of the wider landscape of County Carlow and other counties in the LVIA Study Area. This LVIA has been cognisant of sensitive built heritage receptors identified in the LVIA Study Area, with particular attention to how they might add value to local landscapes and visual amenity fort example Brownshill Portal Dolmen and Duckets Grove to the East of Carlow Town. Further detail on the impact of the Proposed Project on historic and archaeological landscapes and monuments is detailed in Chapter 13 Cultural Heritage.

A search was conducted to identify historic gardens, demesnes, parks or designated Historic landscapes within the LVIA Study Area where value is placed upon the visual and aesthetic qualities of the outdoor landscape, and this search is included in the receptors addressed in the Visual Baseline Section of this Chapter.

14.4.5.2 Preliminary Analysis: Landscape Character Areas (LCAs)

As reported above in Section 14.4.1 'Landscape Designations and Policy Context', 7 No. designated LCAs were identified in Co. Carlow, Kildare, Kilkenny and Laois within the 15km Study Area for assessment of effects on designated LCAs.

Below, Figure 14-09 presents a map of all identified LCAs within the 15km Study Area, and the subsequent Figure 14-10 shows the same map overlain with the ZTV of the Proposed turbines.

As noted previously, the LCA Study Area for assessment of landscape character extends to 15 km from the Proposed turbines. As stated previously in Section 14.4.1.5, LCAs in County Kildare are excluded from further assessment considering the very small area of the LCAs in the LCA Study Area and limited theoretical visibility. Additionally, as detailed in Section 14.4.1.2.2, Co. Laois does not have LCAs only areas which are typically LCTs, therefore, they are also excluded from further assessment within this Chapter.

A detailed description and comprehensive assessment of each LCA included for further assessment after this preliminary analysis is outlined in *Appendix 14-2 LCA Assessment.*

Each LCA within the LCA Study Area is listed below in Table 14-6 as well as a preliminary analysis of each LCA, describing theoretical visibility of the Proposed turbines from within each LCA according to ZTV mapping, the actual visibility according to on-site visibility appraisals, and whether the LCA is included in the full assessment in Appendix 14-2. The Table below shows the results of the preliminary analysis, and the full assessment is detailed in the following later section of this Chapter and appendix:

- Section 14.7 'Likely Significant Landscape and Visual Effects';
- *Appendix 14-2: LCA Assessment Tables.*

In some instances, LCAs were excluded from further assessment in cases where a very small portion of the LCA with theoretical visibility was located within the LCA Study Area. The potential visibility of the proposed turbines was appraised during site surveys from all LCAs with very limited or partial theoretical visibility. The ZTV, on-site visibility appraisals and professional judgment of the assessor determines which LCAs are put forward for full assessment later in this chapter and also Appendix 14-2 the results of the preliminary analysis are included in the below.

Table 14-6: Preliminary Assessment of LCAs within the LVIA Study Area

Map Ref.	LCA	Theoretical Visibility (TV) from ZTV Mapping	Actual Visibility from site Visits	Included Further Assessment?
C-LCA 2	Central Lowlands	A large area of Full Theoretically Visibility in the western portion of the LCA, with large pockets of no Theoretical Visibility to the eastern portion of the LCA, beyond 10km.	Visibility is far less indicated by the ZTV, but the proposed turbines are likely to be visible in many areas of the LCA.	Yes

C-LCA 4	Killeshin Hills	Primarily full Theoretical Visibility within 5km of the Proposed turbines, with patches of no TV due to localised undulations within the landscape.	Visibility is far less indicated by the ZTV, but the proposed turbines are likely to be visible in many areas of the LCA.	Yes
KK-LCA B	Castlecomer Plateau	Patches of theoretical visibility on the eastern portion of the LCA and on the far north-western portion of the LCA, within the elevated landforms within the LCA.	Some visibility is likely to occur from the elevated vantage points of the eastern areas of the LCA.	Yes
KK-LCA B1	Castlecomer Southern Transition Zone	The majority of this LCA within the LCA Study Area has no theoretical visibility. Very limited partial theoretical visibility is present within the eastern section of the LCA, beyond 10km from the nearest proposed turbine.	On-site visibility appraisals determined there will be no or very limited visibility from the vast majority of this LCA.	No
KK - LCA F1	Kilkenny Northern Basin	The majority of this LCA within the LCA Study Area has no theoretical visibility. A very minimal pocket of TV is present within the northernmost section of the LCA.	On-site visibility appraisals determined there will be no or very limited visibility from the vast majority of this LCA.	No
KK-LCA H	Nore Valley (South)	The majority of this LCA within the LCA Study Area has no theoretical visibility. A very minimal pocket of TV is present within the northernmost section of the LCA.	On-site visibility appraisals determined there will be no or very limited visibility from the vast majority of this LCA.	No
KK-LCA I	Barrow Valley	Patches of full and partial theoretical visibility of the Proposed turbines within this LCA.	Given the distance and the on-site visibility appraisals, determined there will be no or very limited visibility from the vast majority of this LCA.	No

A detailed description of the LCAs that are included for further assessment and the likely effects on landscape character as a result of the Proposed Project are presented in the Landscape Character Assessment Tables that form *Appendix 14-2*. A summary of landscape effects on these LCAs are reported in Section 14.7.3 'Operational Phase Effects' of this Chapter.

Table 14-7: LCAs Included for further Assessment

Map Ref.	LCA Name
C-LCA 4	Killeshin Hills
C-LCA 2	Central Lowlands
KK-LCA B	Castlecomer Plateau

Table 14-8: LCAs Excluded from further Assessment

Map Ref.	LCA Name
C-LCA 1	Blackstairs and Mount Leinster Uplands
KK-LCA B1	Castlecomer Southern Transition Zone
KK-LCA F1	Kilkenny Northern Basin
KK-LCA H	Nore Valley (South)
KK-LCA I	Barrow Valley

14.5 Visual Baseline

The main purpose of establishing the 'Visual Baseline' is to identify the key visual receptors that should be considered for assessment within the LVIA Study Area. The visual baseline exercise uses ZTV mapping and on-site visibility appraisals to determine which receptors should be excluded from further assessment.

The key visual receptors identified for assessment in the visual baseline exercise are represented by 'Viewpoints'. Viewpoints are locations from which visual effects are assessed using photomontages (see Section 1.6.1 'Viewpoint Selection' in *Appendix 14-1: LVIA Methodology*). To this end, the following visual receptors have been identified within the LVIA Study Area and are presented in this section in order of priority:

- Designated Scenic Routes and Views;
- OSi Viewing Areas;
- Settlements;
- Recreational routes, including:
  - Waymarked Walking Routes;
  - Cycle Routes;
  - Scenic Drives and Tourist Routes;
- Recreational, Cultural Heritage & Tourist Destinations;
- Transport routes;

- Residential receptors:
  - See below Section 14.7.3.2.8 'Residential Visual Amenity – Discussion of Visual Effects'.

Figure 14-11 presents the 'Visual Baseline' map of all identified visual receptors within the LVIA Study Area. All identified visual receptors were subject to a theoretical visibility assessment to determine the visual impact of the Proposed turbines and whether or not further assessment was required. The results of this assessment is provided in Table 14-10, Table 14-11, and Table 14-12. Theoretical visibility and the location of each visual receptor is providing on the ZTV map provided below (Figure 14-11).

During site visits conducted in 2023, the likely visibility of the Proposed turbines was appraised from receptors where the ZTV Map indicated theoretical visibility. In the case of there being either no theoretical visibility of the Proposed turbines, or where on-site appraisal determined visibility of the Proposed turbines to be very unlikely or very limited, visual receptors were not included for further assessment.

14.5.1 Visual Receptors

The following subsections present the assessment tables for all visual receptors, including: Designated Scenic Routes and Views; OSi Viewing Areas; Settlements; Recreational routes; Recreational, Cultural Heritage & Tourist Destinations; Transport routes.

14.5.1.1 Designated Scenic Routes and Views

According to the CCDP, KECDP, KKCDP and LCDP, 39 no. designated Scenic Routes and/or Views are existent within the LVIA Study Area; these were previously identified in the above Section 14.4.1 'Landscape Designations and Policy Context'.

Below, Table 14-9 displays the assessment results of the preliminary analysis of all identified receptors, along with a description of each item, the direction of view indicated by the policy documents and whether it is directed towards the Proposed turbines, the nature of theoretical visibility, and whether the receptor was included for full assessment.

Table 14-9: Assessment of Designated Scenic Routes and Views in the LVIA Study Area

Map Ref.	Description	Direction of View	Directed to Proposed turbines?	Theoretical Visibility	Included for further assessment?
Up to 5km					
C-SR-6	Central Plain	North	Yes	Full	Yes
C-SR-7	Panorama across central plain	East	Yes	Full	Yes
C-SR-8	Panorama to southeast	South-East	No	Full	Yes
C-SR-9	Panorama across central plain	South-West	Yes	Full	Yes
C-V-31	Vista east, panorama across central plain to Blackstairs	East	No	Full	Yes

C-V-32	Vista east, panorama from Killeshin Hills across central plain to Blackstairs	East	No	Full	Yes
5–10km					
C-SR-5	Co. Clare scenic route approx. 3.4km, orientated N-S. Views in and out of Doon Lough.	West	Yes	Full	Yes
C-V-29	View south, of River Barrow	South	No	Full	No
C-V-30	View north, of River Barrow and Black Church	North	No	Full	No
C-V-33	View east and north, of River Barrow	East	No	Full	No
C-V-34	View south, of town from point to north of entrance along River Barrow	South	No	Full	No
KK-V-11	View east and southeast into the Barrow Valley and lowland plains on the Castlecomer/Paulstown Road, the LP2625 and LT6675 (between the junctions of road nos. LP2625/LS6671 and LT6675/L2623). Also, the view on the L6671 from the county boundary to its junction with the L2625.	East	No	None	No
KK-V-13	View east and southeast into the Barrow Valley and lowland plains on the Castlecomer/Paulstown Road, the LP2625 and LT6675 (between the junctions of road nos. LP2625/LS6671 and LT6675/L2623). Also, the view on the L6671 from the county boundary to its junction with the L2625.	West	Yes	Partial	Yes
10–15km					
C-SR-4	Central Plain	Not mentioned	Yes	Full	Yes
C-SR-25	Views northeast to southwest of entire Blackstairs and Barrow Valley from Mt Leinster to Brandon Hill. Currane, Mt Leinster to Brandon Hill. Views southeast towards Slievebawn.	North-east	Yes	Partial	Yes

	Views and vista from Lorum Old Rectory View of the mountain range is on the unnumbered road leading off the R705, opposite the entrance to Kilgraney House (behind the old Kilgreaney School House) over the Ballinkillen village. Corries Cross looking east and south towards Mt Leinster				
C-V-24	Vista 280-320º, of Burren River Valley	Not mentioned	Not Mentioned	None	No
C-V-25	View southeast, of tree ridge and church	South-East	No	Partial	No
C-V-26	Vista southeast, panorama of central plain to Blackstairs	South-East	No	None	No
C-V-27	View 280-340º, of hill with forest at Newtown/Bradley's Cross	Not Mentioned	Not Mentioned	Partial	No
C-V-28	Vista west, of Killeshin Hills	West	Yes	Partial	Yes
C-V-35	View south, of heritage site	South	No	Full	No
C-V-36	Vista east, panorama across central plain to Blackstairs	East	No	Partial	No
C-V-57	View northeast to southwest of entire Blackstairs and Barrow Valley from Mt. Leinster to Brandon Hill. Currane, Mt. Leinster to Brandon Hill. Views towards Slievebawn.	North-East	No	No	No
C-V-58	View northeast to southwest of entire Blackstairs and Barrow Valley from Mt. Leinster to Brandon Hill. Currane, Mt. Leinster to Brandon Hill Views towards Slievebawn.	North-East	No	No	No
KK-V-12	Views overlooking Castlecomer and Ballyragget on the Castlecomer/Ballyragget Road (R694) between its junctions with road nos. LT5852 and LT5847.	South-east	Yes	Full	Yes

15–20km					
C-SR-24	Views northeast to south of entire Blackstairs from Currane and Mt. Leinster to Blackstairs	Northeast	No	Full	No
C-V-19	View southeast, of heritage site	South-east	No	Full	No
C-V-20	Vista northeast, of spreading central plain and forest in distance	North-east	No	Full	No
C-V-21	View on approach from west, of heritage site	West	Yes	Full	Yes
C-V-22	Vista 90-140º, of central plain and avenue to Duckett's Grove	Not Mentioned	No	Full	No
C-V-23	Vista 280-320º, panorama over central plain to Killeshin Hills	Not mentioned	Yes	Full	Yes
C-V-37	Vista east, panorama from Killeshin Hills across central plain	East	No	Partial	No
C-V-38	View east, panorama with Killeshin Hills across central plain	East	No	Full	No
C-V-50	View southeast, of curved Main Street and Blackstairs	South-east	No	None	No
C-V-59	Intermittent views northeast to south of entire Blackstairs from Currane and Mt. Leinster to Blackstairs.	South	No	None	No
C-V-61	Panoramic view southwest, from Cashel Cross looking towards Borris ACA, Borris House Demesne and Ballycoppigan	South-west	No	None	No
KK-V-19	View west towards the Slieve Bloom Mountains on road no's LS5840 and LS5839 from the junction with road nos. LS5839 and LS5846 (Ballymartin Crossroads).	West	No	None	No
KK-V-31	Panoramic view of River Nore Valley from Bleach Road	Not mentioned	No	None	No
KK-V-32	View of River Nore Valley to east from Ossory Bridge.	East	No	None	No

14.5.1.2 OSi Viewing Areas

According to the Ordinance Survey of Ireland (OSi) maps, 1 no. OSi Viewing Area was identified within the LVIA Study Area.

Below, Table 14-10 displays the assessment results of the identified viewpoint, along with a description of the view, the direction of view indicated by the OSi data and whether it is directed towards the Proposed turbines, the nature of theoretical visibility, and whether the receptor was included for further assessment.

Table 14-10: Assessment of OSi Viewing Areas in the LVIA Study Area

Map Ref.	Description	Direction and Range of View	Directed to Proposed turbines?	Theoretical Visibility	Included for further assessment?
Up to 5km					
OSI Viewpoint 191	OSI Viewing Point in the townland of Raheen	South-west	No	Partial Theoretical Visibility	No, given the fact that the OSi Viewing Area is directed away from the Proposed turbines and that there is limited TV, the OSi Viewpoint is not included for further assessment.

14.5.1.3 Settlements

In order to identify which settlements within the LVIA Study Area should be considered for VP selection, the settlement strategies and hierarchy set out in the core strategies of the CCDP, KECDP, KKCDP and LCDP were consulted. Figure 14-12 outlines the CCDP, KKCDP, KECDP and LCDP Settlement Hierarchy for each County.

The settlement hierarchies of all four counties use differing classifications and naming conventions; therefore, MKO have created a standardised settlement hierarchy to enable cross-comparison of these population centres and clarity within the visual baseline mapping and throughout this assessment. Each settlement was given one of the following classifications according to its size, population density and existing designation in the relevant county development plan:

- County Hub Town
- Town
- Village
- Rural Settlement Cluster

Below, Table 14-11 lists the settlements identified from the respective county development plans within the study area, noting their county hierarchy status, standardised hierarchy status, whether there is theoretical visibility indicated by ZTV mapping, and whether the receptor was included for further assessment.

Table 14-11: Assessment of Settlements in the LVIA Study Area

Settlement	County	County Hierarchy	Standardised Hierarchy	Theoretical Visibility	Included for Further Assessment?
Up to 5km					
Ballinabrannagh	Carlow	Larger Serviced Rural Villages	Village.	Full (5–7 turbines).	Yes.
Oldleighlin	Carlow	Smaller Serviced Rural Villages	Village.	Full (5–7 turbines).	Yes.
5–10km					
Killeshin	Laois	Village	Village	None	No.
Leighlinbridge	Carlow	Small Towns	Town.	Full (5–7 turbines).	Yes.
Bagenalstown	Carlow	District Town	Town	Full (5–7 turbines).	Yes.
Paulstown	Kilkenny	Small Town/Village	Town	None	No
Johnswell	Kilkenny	Rural Node	Village	None	No
Moneenroe	Kilkenny	Small Town/Village	Village	None	No
10–15km					
Arles	Laois	Rural Village	Village	None	No
Graiguecullen	Laois	Key Town	Town	None	No
Carlow Town	Carlow	Key Town	Town	Partial	Yes
Tinryland	Carlow	Larger Serviced Rural Town	Town	Full (5–7 turbines)	Yes
Fennagh	Carlow	Larger Serviced Rural Town	Town	None	No
Gowran	Kilkenny	Small Town/Village	Town	Minimal	No, given the distance from the Proposed Project, and the vegetation and built infrastructure existent within this flat

					landscape, views of the Proposed turbines from this location are likely to be extremely limited.
Castlecomer	Kilkenny	District Town	Town	Partial	Yes
Clogh	Kilkenny	Small Town/Village	Town	Full (5–7 turbines).	Yes
Newtown	Laois	Rural Village	Village	Partial	Yes
The Swan	Laois	Rural Village	Village	Full (5–7 turbines).	Yes
15–20km					
Ballylynan	Laois	Small Town	Town	None	No
Magandy/Levitstown	Kildare	Rural Settlement	Village	None	No
Palatine	Carlow	Larger Serviced Rural Village	Village	Partial	Yes
Rathtoe	Carlow	Larger Serviced Rural Village	Village	None	No
Ballon	Carlow	Small Town	Town	None	No
Borris	Carlow	Small Town	Town	None	No
Dungarvan	Kilkenny	Rural Node	Village	None	No
Kilkenny City	Kilkenny	Significant Key Town	Town	None	No
Ballyragget	Kilkenny	Small Town/Village	Town	None	No

14.5.1.4 Recreational Routes, Cultural Heritage and Tourist Destinations

Recreational routes are sensitive receptors as people are likely to be using them in a recreational capacity where value is likely to be placed upon views and the scenic amenities of the landscape. The term recreational routes encompass the following:

- Waymarked Walking Routes;
- Cycle Routes;
- Scenic Drives and Tourist Routes (e.g., the Wild Atlantic Way).

According to sources, including OSi maps, Sport Ireland Designated Cycle Routes and Trails, Heritagemaps.ie, and Activeme.ie, 16 No. designated routes were identified within the LVIA Study

Area. In general, many such routes exist of differing scale and prominence, thus only the recreational routes of county- or national-level importance were included in this LVIA.

Popular recreational, cultural heritage and tourist destinations were identified in the LVIA Study Area through a desktop exploration of localised tourism plans as well as considering the most popular tourism destinations in Counties Carlow, Kilkenny and Laois listed on Tripadvisor.ie (and other similar websites). Prominent outdoor tourism, cultural heritage, and recreational destinations identified in the LVIA Study Area are listed below in Table 14-12 Assessment of Recreational Routes, Cultural Heritage and Tourist Destinations in the LVIA Study Area

Below, Table 14-12 displays the assessment results of all identified recreational routes, along with a description of each route, the nature of theoretical visibility indicated by ZTV mapping, the nature of the actual visibility, and whether the receptor was included for further assessment.

Table 14-12: Assessment of Recreational Routes, Cultural Heritage and Tourist Destinations in the LVIA Study Area

Route Name	Description	Theoretical Visibility	Actual Visibility	Included for Further Assessment?
Up to 5km				
1798 Monument	A monument which highlights where Wexford men slept in a field during a mist which prevented them from being found by British soldiers	Inside 5km, Full (5–7 turbines).	Inside 5km, Full (5–7 turbines).	Yes.
Clogrennane Woods	This walk follows forestry roadways and woodland tracks through the wood, zigzagging uphill to a section where there are fine views over Carlow Town and the River Barrow and descending more gently to close the loop.	Inside 5km, Full (5–7 turbines).	Within 5km, actual visibility will be limited due to the vegetative screening within the woods.	Yes.
5 to 10km				
Rossmore Gravel Walk	6.8km loop trail near Ardough, County Laois	None.	None.	No.
Oisin Park	Park with recreational activities	None	None.	No.
Barrow Way	A 120km Sport Ireland Trail	Inside 10km, Full (5–7 turbines).	Partial Visibility, with some screening from vegetation	Yes
Milford Mill	A 18th-century watermill which sits on the banks of the River Barrow at Milford, County Carlow.	Inside 10km, Full (5–7 turbines).	Partial Visibility, with some screening from vegetation	Yes

Route Name	Description	Theoretical Visibility	Actual Visibility	Included for Further Assessment?
Shankhill Castle	Shankill Castle and Gardens is set in parkland near Paulstown on the Carlow/Kilkenny border.	None	None	None
10 to 15km				
Oak Park Loop	A 4km SportIreland Trail, County Carlow	No	None	No
Arboretum Loop	A 2km SportsIreland Trail, Castlecomer, Co. Kilkenny	No	None	No
Brownshill Portal Dolmen	Brownshill Dolmen is a very large megalithic portal tomb situated 3 km east of Carlow, in County Carlow, Ireland.	Inside 15km, Full (5–7 turbines).	Minimal due to vegetative screening	Yes
Ballymoon Castle	Ballymoon Castle is a National Monument situated 2 miles (3 km) east of Bagenalstown, County Carlow, Ireland.	Partial	None	No
Ballyloughan Castle	Ballyloughan Castle is a ruined castle and National Monument in County Carlow near Bagenalstown.	Partial	None	No
Clara Castle	Clara Castle is located about 6 km (3.7 mi) east of Kilkenny City, near one of the headwaters of the Nore	No	None	No
Dunmore Cave	Dunmore Cave is a limestone solutional cave in Ballyfoyle, County Kilkenny, Ireland.	No	None	No
Castlecomer Discovery Park	Castlecomer Discovery Park is a Social Community Enterprise operating on a Not-for-Profit basis. Set in the former grounds of the Wandesforde Estate, Castlecomer Discovery Park comprises 80 acres of stunning natural woodland and lakes and began as a community project to rejuvenate the town of Castlecomer following the closure of the coal mines in 1969.	No	None	No
15 to 20km				
Jenkinstown Wood Loop	A 4km SportsIreland Trail, Co. Kilkenny	No	None	No
Duckets Grove	A ruined 19th-century great house and former estate in County Carlow, Ireland. Belonging to the Duckett family, the house was	Yes	Very minimal due to vegetation screening	Yes

Route Name	Description	Theoretical Visibility	Actual Visibility	Included for Further Assessment?
	formerly the focal point of a 12,000-acre (49 km2) estate.			
Duckett's Grove gate lodge	The Towers were designed by Sligo born Architect, John MacDuff Derick (1810-1859). The Towers Gate Lodge was built circa 1845 and served as the main entrance to Duckett's Grove from that time.	Yes	Very minimal due to vegetation screening	Yes
Ballykealey House	Located in Ireland's Ancient East nestled beneath the Blackstairs Mountains close to the picturesque village of Ballon, just 17km from Carlow town sits the enchanting 19th century Ballykealey House set in sweeping lush pastures	Yes	No view due to vegetation screening	No
Ballytiglea Bridge	Beautiful old bridge and tranquil setting on the Barrow River. The Barrow River is canalised in certain sections where locks are required. At this point the river also marks the boundary between counties Carlow and Kilkenny	No	None	No
Kilkenny Castle	Kilkenny Castle is a castle in Kilkenny, Ireland, built in 1260 to control a fording-point of the River Nore and the junction of several routeways. It was a symbol of Norman occupation, and in its original 13th-century condition, it would have formed an important element of the town's defences with four large circular corner towers and a massive ditch, part of which can still be seen today on the Parade.	No	None	No
Levitstown Mill	Levitstown Mill was built in 1791. It is a seven-story building, now derelict having burnt down on the 14th of March 1942	No	None	No

14.5.1.5 Transport Routes

Motorways, national primary roads, and national secondary roads were identified within the LVIA Study Area, via OSi map extracts. Transport routes are not typically considered to represent receptors of high sensitivity. Therefore, potential for significant effects is only likely to occur for transport routes in close proximity to the site where the magnitude change is likely to be greater. Consideration is also given to the number of receptors travelling these routes (as per GLVIA3 guidance). In mind of this,

only prominent high trafficked transport routes such as national roads and motorways are considered to 20km and only regional roads within 10km are considered in the visual baseline exercise.

In addition, regional roads and local road transport routes within 3km the Proposed turbines were also analysed as part of the previous RSA of this report (recall 14.3.4.1 'Visibility in Close Proximity: RSA' above).

On-site appraisals determined that, in most instances, where ZTV mapping has indicated full visibility from large portions of these routes, the actual visibility is quite limited due to local topography and roadside screening. Considering this, for the purpose of viewpoint selection, specific locations from which the greatest visibility is likely to occur were selected on these transport routes.

Below, Table 14-13 lists all identified transport routes, describes the geographical extent of theoretical visibility upon each route as illustrated by ZTV mapping, and indicates whether the receptor was included for further assessment. The road types are prefixed as follows: regional (R), national (N), and motorway (M).

Table 14-13: Assessment of Transport Routes in the LVIA Study Area

Transport Route	Theoretical Visibility	Included for Further Assessment?
Up to 5 km		
M9	Yes	Yes
5 to 10km	Theoretical Visibility	Included for Further Assessment?
N78	No	No
N80	No	No
R431	No	No
R430	No	No
R448	Partial	Yes
R705	Yes	Yes
R712	No	No
R723	Yes	Yes
R724	Yes	Yes
10 to 15km	Theoretical Visibility	Included for Further Assessment?
M9	Partial	Yes

Transport Route	Theoretical Visibility	Included for Further Assessment?
N80	Yes	Yes
N78	Partial	No, given the dense roadside vegetation present within the section of the road with theoretical visibility, views of the turbines is likely to be extremely visible.
15 to 20km	**Theoretical Visibility**	**Included for Further Assessment?**
M9	Partial	Yes
N10	No	No
N76	No	No
N77	No	No
N78	No	No
N80	Partial	No, given the distance from the Proposed Project, and the dense roadside vegetation, visibility of the turbines is likely to be extremely limited.

14.5.2 Preliminary Analysis: Visual Receptors

Visual Receptors Included for Further Assessment: After identifying all visual receptors in the LVIA Study Area, the tables in the previous sections report the analysis of likely visibility of the Proposed Project using ZTV mapping and on-site visibility appraisals. The tables below list all receptors that have been included for further assessment later in this chapter using representative photomontages.

Photomontage imagery was captured to represent the receptors included for further assessment (See receptors in Table 14-14 below) following this initial preliminary analysis. All photomontage imagery from all viewpoints (a total of 35 No. viewpoints) were progressed to a draft stage – 'Photowires' (See

Definition in Section 1.6.4 of Appendix 14-1, and further discussion in Section 14.5.3 below). A selection of 15 No. Viewpoints were then selected for inclusion in the Photomontage Booklet, which includes the assessment of cumulative effects with other wind energy developments. The viewpoints selected for the *Photomontage Booklet* represent the most sensitive receptors where open visibility of the proposed turbines occur and provide a good geographical spread of views surrounding the site. In many instances, viewpoints were not progressed from Photowire stage as the proposed turbines are almost entirely screened from view. Or else, photowires might not have been selected for the final *Photomontage Booklet* as another nearby viewpoint was felt to be a better representation of views from receptors in a particular area or represented a greater number of sensitive receptors. All Photowires are included in Appendix 14-5, Prefixed by the term 'PW' in the table below. All viewpoints included in the *Photomontage Booklet* are prefixed by a 'VP' in the table below.

Table 14-14: Visual Receptors Included for Further Assessment

Category	Visual Receptor	Viewpoint No.
Designated Scenic Routes & Views	C-SR-04, C-SR-05, C-SR-06, C-SR-07 C-SR-08: C-SR-09, C-SR-25	PWVP-H, VP12, PWVP-A, VP14, 05, VP01, VP11
	C-V-31, C-V-32, KK-V-12, KK-V-13	PWVP A, VP01, VP10, VP09
Settlements	Ballinabrannagh, Oldleighlin, Leighlinbridge, Bagnalstown, Carlow Town, Castlecomer, Palatine	PWVP-K, VP5, VP04, VP07, PWVP-C, VP10, PWVP-Q
Recreational Routes	Barrow Way, Milford Mill, Brownswood Portal Dolmen, Duckets Grove, Duckets Grove gate lodge	VP07, PWVP-G, VP13, PWVP-F
Cultural Heritage	None	N/A
Transport Routes	M9, N80, R430, R448, R705, R723, R694, R724, R726, R725	VP06, PWVP-C

Visual Receptors Excluded from further assessment: ZTV mapping and visibility appraisals conducted on-site during 2023 were used to inform the analysis and exclude visual receptors from further assessment. These receptors were excluded from further assessment due to the very limited visibility of the Proposed turbines, as determined by the ZTV as well as onsite appraisals of each visual receptor location. In some cases, the factor of distance to the Site as well as the directional focus of views was included in the preliminary analysis and was a contributing factor in excluding these locations from being selected as viewpoints. Visual receptors that are not mentioned above in Table 14-14 have been excluded out for further assessment.

14.5.3 Photomontages and Photowires

Imagery was captured from 35 No. viewpoints. These are presented in the following documents:

- 15 No. Viewpoints Selected for including in the Volume 2 Photomontage Booklet – which includes 'Cumulative Views' – photomontages with other existing, permitted and proposed wind energy developments rendered into photomontages and wireline views.
- 20 No. Photowires (draft, early stage photomontages) are presented in Appendix 14-5.

14.6 Cumulative Context: Other Wind Farms

The purpose of this section is to identify all wind farm developments in the LVIA Study Area which potentially contribute to assessment of cumulative and in-combination landscape and visual effects.

This chapter assesses the likely landscape and visual impacts of the Proposed Project, both independently, as well as in combination with all other existing wind farm developments in the LVIA Study Area.

This section also assesses the Proposed Project in combination with the 'likely future receiving environments' according to the EPA (2022), which includes all existing and permitted wind farm developments in the LVIA Study Area, as well as those wind farm developments under construction at the time of conducting this LVIA.

The landscapes which comprise the Proposed Project site and its wider setting constitute a highly suitable area for the development of wind energy; consequently, a variety of projects exist within differing stages of the wind farm life cycle (existing, permitted and proposed).

All wind farm developments in the LVIA Study Area are identified in this section and presented within the photomontage booklet within one of the following categories:

- **Existing:** Existing wind energy developments currently operational in the baseline landscape at the time of conducting this LVIA;
- **Permitted:** Wind energy developments either under construction or permitted (consented) at the time of conducting this LVIA. These developments have a high probability of being operational in a future receiving landscape.
- **Proposed:** All well-developed wind farm proposals with project specifications in the public domain at the time of conducting this LVIA. Cumulative effects between the Proposed Project and the development within this category is more uncertain and is reliant on an outcome of the planning and consenting system.

A description of how these various cumulative categories is presented in the photomontage booklet is comprehensively reported in Section 1.6 'Photomontage Visualisations' of *Appendix 14-1: LVIA Methodology*. These categories are a useful guide to enable understanding and structure when viewing the photomontage booklet and identification of developments in this section. However, irrespective of how a development is categorised, the assessments of cumulative landscape and visual effects includes all wind farm developments.

The effects reported both in this Chapter and within the assessment appendices (*Appendix 14-2: LCA Assessment Tables* and *Appendix 14-3: Viewpoint Assessment Tables*) uses appropriate and logical narrative to discuss cumulative interactions between the Proposed Project and all other wind energy developments irrespective of which category they occur. Whilst the categories provide clarity in presentation of visuals considering the scope of potential development in this landscape, discussion of cumulative interactions on specific landscape and visual receptors is relative to the effects on that receptor and proportionate to the likelihood of significant landscape and visual effects occurring.

In terms of cumulative landscape and visual effects, only other wind energy projects have been considered, as only these would be described as very tall vertical elements in the landscape and therefore have the most potential to give rise to significant cumulative effects. Other wind energy developments within 20km of the Proposed Project were identified by searching past planning applications lodged through the online planning portals of relevant planning authorities (i.e. Carlow County Council, Kilkenny County Council, Laois County Council, and An Bord Pleanála).

The information identified in the initial planning search was then used to verify, by means of a desk-based study and ground-truthing, whether the permitted wind energy developments had been constructed. The list of existing, permitted, and proposed wind turbines present within the study area are listed in Table 14-15 below.

Two No. existing single turbine (Joe Hughs and Ballon Meats), One No. proposed single turbine (Jerry Bolger), One No. permitted single turbine (Kilcarrig), 3 No. permitted wind farms, (White Hill, Pinewood and Bilboa), and 2 No. proposed wind farms (Coolglass, and Freneystown) are existent within the 20km radius of the Proposed turbines. The locations of the 10 No. wind farm developments can be identified below on the Cumulative Context Map (Figure 14-14). If the turbines are theoretically visible, all turbines are included within the proposed photomontage imagery in the *Photomontage Booklet*.

Table 14-15: Additional Wind Farms Identified in the LVIA Study Area

Other Wind Farms	Status	No. of Turbines	Distance from the Nearest Proposed Turbine
Up to 5km			
Bilboa	Permitted.	5	1.2km
White Hills	Proposed.	7	2.1km
Gortahile	Existing.	8	3.1km
5 to 10km			
Freneystown	Proposed.	8	8.3
10 to 15km			
Kilcarrig	Permitted.	1	10.4
Jerry Bolger	Permitted	1	10.6
Joe Hughs	Proposed.	1	11.6
15 to 20km			
Coolglass	Proposed.	6	15.5
Pinewood	Permitted.	11	16.6
Ballon Meats	Existing.	1	17.6

14.6.1 Assessment of Cumulative Landscape and Visual Effects

Figure 14-14 compares the cumulative theoretical visibility of all existing, permitted, and proposed wind farms with an additional visibility of the Proposed Wind Farm , and the Figure 14-15 shows the same map overlain with a newly calculated ZTV for cumulative effects.

The legend on Figure 14-15 shows the theoretical visibility of the Proposed turbines and cumulative turbines for each corresponding colour, as follows:

- Teal: Only turbines of the Proposed Project are theoretically visible;
- Orange: Only turbines from Existing, Permitted and Proposed Projects are theoretically visible;
- Grey: All cumulative turbines including the Proposed Project and all other Existing, Permitted and Proposed Projects are theoretically visible.

Figure 14-14 and Figure 14-15 illustrate the volume of wind developments that are proposed and/or have been constructed for the upland region along the Killeshin Hills. It should be noted that the Killeshin Hills and other areas in the wider Castlecomer Plateau are identified as one of very few efficient areas for wind energy development in Counties Carlow and Kilkenny.

The very small amount of green/teal colour on the ZTV map illustrates that the Proposed Project by itself adds very little additional theoretical visibility of turbines across the landscape of the LVIA Study Area. The total area of theoretical visibility of cumulative turbines takes up approximately half of the LVIA Study Area, with the other half being dedicated to both the Proposed Project and cumulative wind farms. This suggests that, if permitted and constructed, the Proposed Project would have similar theoretical visibility as the other cumulative turbines in the area. It therefore adds numbers of turbines to the current clusters already visible (and potentially visible in a future baseline scenario), with minimal areas where it is bringing turbines as novel elements into landscape views.

As noted previously, the ZTV does not account for localised undulations in topography and other screening factors; as such, the actual visibility in the lowland vegetated landscape is likely to be far less than is indicated by the ZTV. Whilst the cumulative ZTV is a useful tool to aid assessment of cumulative effects and screen out areas where certain cumulative impacts will not occur, its utility can be limited.

In general, photomontages are a more informative tool for assessing potential cumulative landscape and visual impacts.

As detailed in Section 1.10 'Assessing Cumulative Effects' of *Appendix 14-1: LVIA Methodology*, all other existing, permitted, and proposed wind farms are included in the visualisations in the *Photomontage Booklet* as follows:

- **Existing View, and Existing Wireline View**: Turbines of existing wind energy developments currently operational in the baseline landscape at the time of conducting this LVIA;
- **Proposed with Cumulative View and Proposed with Cumulative Wireline View**: As well as the Proposed turbines, turbines of all other existing, permitted and under construction are presented in the photomontages and wireline views. Also, well-developed wind farm proposals* with project details in the public domain are also included in this photomontage and wireline view.

**Cumulative effects between the proposed turbines and other proposed wind farms (not permitted) are more uncertain and is reliant on an outcome of the planning and consenting system.*

Detailed discussions of cumulative landscape and visual effects are included in separate sections below in 14.7 'Likely Significant Landscape and Visual Effects'. Likely cumulative landscape effects are assessed in the landscape character assessment tables in *Appendix 14-2: LCA Assessment Tables*, and likely cumulative visual effects are assessed in the photomontage assessment tables in *Appendix 14-3: Viewpoint Assessment Tables*.

14.7 Likely 'Significant' Landscape and Visual Effects

14.7.1 'Do Nothing Scenario'

The Do-Nothing option to developing a wind farm at the Proposed Project site would consist of leaving the site 'as is', with no changes made to the current land-use practices. In the absence of the Proposed Project, and without dramatic changes to policy or economic drivers in the area, the established trends in respect of land use/landcover and the baseline landscape and visual context are likely to remain largely consistent with the scenario described in the preceding sections of this Chapter.

It is considered that there would likely be future interest in developing this landscape for wind energy production, which is demonstrated given the level of existing, permitted, under-construction wind farms outlined in Table 14-15 above (these wind farms are considered to form part of the Do-Nothing Scenario). Characteristic commercial forestry operations across the Proposed Project site and adjoining areas are expected to continue. Should this occur, the impact would be neutral in the context of this EIAR.

14.7.2 Construction Phase Effects

It is estimated that the construction phase of the Proposed Wind Farm site will last between 18–24 months. Construction of the development will involve the installation of the 7 No. turbines with a blade-tip height of 180m and all associated works, as well as the onsite 38kV substation and BESS and the Proposed Grid Connection Route.

Construction phase effects will also include the associated effects resulting from the movement of construction and turbine transport vehicles into and out of the Proposed Wind Farm site, to allow for construction of the turbines, roads and associated elements.

14.7.2.1 Landscape Effects (Construction Phase)

Proposed Wind Farm

Associated earthworks, such as the cut and fill required to facilitate construction of the Proposed Wind Farm site, have the greatest potential for landscape effects. Where excavation is required, the existing landcover, vegetation and spoil will be removed during the construction phase. In most instances, groundworks and excavation trenches will be re-instated upon completion of the construction. Where peat and spoil arising from construction activities is managed within the Proposed Wind Farm site, the vegetative top-soil layer will be removed and re-instated following peat and spoil management taking place. The construction activities may potentially cause temporary impacts on the landscape such as the creation of temporary structures, dust, minor soil erosion and minor alterations to drainage. It is considered that this is a short term slight negative effect in terms of landscape effects.

Proposed Grid Connection Route

The Proposed Grid Connection Route is to be located underground; therefore, the greatest effects attributed to this element of the Proposed Project will occur during the construction phase. The majority of cable route works are to be carried out along existing public road corridors. The construction phase of the Proposed Grid Connection Route will be temporary, localised, and transient in nature, as the works move along the cable route. The works will include roadside vegetation removal, soil stripping, excavation, and other associated construction activities. These activities will

cause temporary change to the physical landscape along the Proposed Grid Connection Route; however, these changes will be localised to the immediate environment surrounding the Proposed Grid Connection Route and will not affect the character of the landscape setting or visual amenity of the wider area. The Proposed Grid Connection Route works are likely to cause temporary slight negative effects on landscape.

The Proposed Project construction works will be short-term in nature and completed as soon as practically possible.

Mitigation Measures

The following measures should be implemented to mitigate effects during the construction phase of the Proposed Project:

- In all circumstances, excavation depths and volumes will be minimised, and excavated material will be re-used where possible;
- Where the cable trench is to be located in the road verge, subsoil should be piled on site and re-used after cabling works. Should any medium planting be removed, it should be replaced with the same or similar species whenever it is not possible to salvage and reinstate. New topsoil should be provided should the existing topsoil not be of sufficient standard (to comply with BS 3882:2015);
- Any areas of bare soil remaining after the landscaping phase will be seeded as soon as possible with a grass-seed mix to minimise sediment run-off.
- In order to minimise cut and fill activities required to construct the Proposed Project, the proposed access roads and other infrastructure such as hard stands have been designed to avoid steep gradients and hilly terrain within the site.
- In all circumstances, excavation depths and volumes will be minimised, and excavated material will be re-used where possible.
- All construction activities will follow best practice methods to reduce impacts upon the environment and landscape of the Proposed Project. Further details are presented in the Construction and Environmental Management Plan (CEMP) contained in Appendix 4-4 of this EIAR

Residual Effects

With the implementation of the above, there will be a short-term imperceptible negative residual effect on landscape during the construction phase of the Proposed Project.

14.7.2.2 Visual Effects (Construction Phase)

Proposed Wind Farm

The most substantial visual effects will arise from requisite construction activities at the Proposed Wind Farm site, such as building tower sections and erecting the turbines. There shall be temporary scenarios during the construction phase in which the Proposed turbines will be partially constructed and may be seen as either stand-alone tower sections, or incomplete turbines where only one or two blades are visible. The equipment and vehicles required to transport and erect the Proposed Wind Farm components include large cranes and large haulage vehicles. These construction activities will result in a short term slight negative visual effect.

General housekeeping measures, necessary for Health & Safety requirements, will ensure that the active construction areas within the site will be kept tidy, mitigating localised visual impacts during the construction phase. A detailed description of the Proposed Project site is included in Chapter 4 ‘Description’ of this EIAR.

The following sub-sections assess the visual effects associated with the construction phase of other (non-turbine) components of the Proposed Wind Farm site.

Turbine Delivery Route (TDR) Accommodation Works. Works such as road widening are sometimes required along proposed turbine transport routes to accommodate the large vehicles used to transport turbine components to Proposed Wind Farm site. In the case of the Proposed Project, there will be some minor accommodation works are located at several locations along the TDR (detailed in Chapter 4). More significant works are located at 2 no. locations: the junction between the N78 and the L1834 will require the construction of a new temporary link road to facilitate the delivery of the turbine components and permanent carriageway strengthening works are required at the Black Bridge, where the L1835/L3037 crosses the River Dinin. Minor accommodation works will include temporary alterations to the existing streetscape and roundabout islands, temporary local road widening, overruns of roundabout island and temporary relocation of some signs and street furniture. Full details of the assessment are included as part of the traffic impact assessment set out in Section 15.1 of this EIAR 'Traffic and Transport'.

The landscape value and sensitivity of these temporary works areas are deemed to be 'Low' and the change to occur will be highly localised. These works are likely to be temporary not significant negative visual effects.

Site Access Roads and Hardstand Areas. The proposed access roads and hardstand areas are flat features and will be most visible within their immediate surroundings, within the Proposed Project site where there are no sensitive visual receptors. Every use will be made of the existing access tracks on the site. Wherever possible the existing forestry tracks within the site have been utilised; there will also be stretches of new road constructed. The impact of the construction of these flat and hard surfaces will be very localised. The site entrance road and the hardstand of turbine T06 will be visible from the road to the west of the site and will be visible from receptors during the construction phase. Visualisations and discussion of effects arising from these specific infrastructure elements (entrance access track and T06 hardstand area) on visual receptors to the west are addressed in Section 14.7.3.2.2. The visual effects arising from the access roads and hardstand areas is considered to be highly localised and will result in a short term slight negative visual effect.

Meteorological (Met) Mast. One met mast is proposed as a part of the Proposed Wind Farm site. This will be a slender structure, 36.5m in height, and will not be an imposing structure in terms of visual impact. The landscape and visual effects of the construction of the proposed met mast will be localised, considering that construction activities related to this will be most visible within the immediate surroundings. Construction of the met mast will be seen from several residential receptors and occasional instances from the local road to the south-west of the site. The met mast is visible in Photomontage Viewpoint 14 and forms part of the viewpoint impact assessments in Appendix 14-3. The landscape and visual effects arising from the construction of the met mast is considered to be highly localised and will have a short-term negative slight effect.

Proposed Onsite 38kV Substation and Battery Energy Storage System (BESS). Visual effects will occur as the proposed onsite 38kV substation and BESS compound is built due to the earthworks and requisite construction activities; these will cause a substantial but localised change to views in the immediate area. As established in the baseline investigations, the proposed onsite substation and BESS compound is located in a field in the middle of the Proposed Wind Farm site enclosed by commercial forestry on three sides. Due to screening from vegetation and local undulations in the landscape, no visibility of the proposed onsite 38kV substation and BESS compound construction is anticipated from any nearby residential receptors, with the only visibility anticipated along the local access road. Therefore, visual effects are likely to be highly localised and will have a short term slight negative effect.

Proposed Grid Connection Route

The Proposed Grid Connection Route shall be located underground; therefore, the greatest effects attributed to this element of the Proposed Project will occur during the construction phase. The

Proposed Grid Connection Route works are to be carried out along existing public road corridors. The construction phase of the Proposed Grid Connection Route will be short-term, localised, and transient in nature, as the works move along the cabling route. The works will include roadside vegetation removal, soil/road surface stripping, excavation, and other associated construction activities. Changes will be localised to the immediate environment surrounding the Proposed Grid Connection Route and will not permanently affect the character of the landscape setting or visual amenity of the wider area. The Proposed Grid Connection Route works are likely to result in temporary slight negative visual effects.

14.7.3 Operational Phase Effects

14.7.3.1 Landscape Effects (Operational Phase)

Proposed Wind Farm

The landscape character of the Proposed Wind Farm site will undergo a change in character from its current condition by the introduction of vertical man-made structures into the landscape. The footprint of the Proposed turbines and ancillary infrastructure comprises a total of 7.3ha of the area within the site. There will be a substantial magnitude of change to the landscape in localised areas within the site where the landscape is materially altered (infrastructure footprint).

In a local context, the site is located in a modified working, agricultural and commercial forestry landscape of local value. The Proposed Wind Farm site is located in the Killeshin Hills, an upland region designated as an area of high sensitivity in local planning policy. However, according to the CCDP, all focus on sensitivity within the uplands refers to the Backstairs Mountains and not the Killeshin Hills, and for multiple reasons addressed in Section 14.4.1.4, this upland site is a highly suitable landscape for wind energy development. The site itself and its immediate setting do not comprise any unique landscape receptors of county regional or national interest. A substantial magnitude of change to the landscape will occur in localised areas in the vicinity of the site where the landscape is materially altered by the introduction of tall structures.

The landscape value and sensitivity of the site was deemed to be **'Low'** in 14.4.3 'Landscape Value and Sensitivity' above. 'Low' sensitivity with a 'Substantial' magnitude of change amounts to long-term landscape effects of **'Moderate'** significance upon the fabric of the landscape of the site (refer to Section 1.6 'Assessing Landscape Effects' in *Appendix 14.1: LVIA Methodology*); however, these direct landscape effects will be highly localised to the footprint of the site and its immediate surroundings. Effects on the perceptual and aesthetic character of the site are also deemed to be of **'Moderate'** significance.

Proposed Grid Connection Route

As the Proposed Grid Connection Route is located underground, landscape and visual effects during the operational phase will be Imperceptible once vegetation has re-established along the roadway following earthworks during the construction phase. The landscape and visual effects occurring during the construction phase of the Proposed Grid Connection Route are reported previously in Section 14.7.2.2.

Mitigation Measures

A Green Infrastructure Plan has been prepared as part of the Proposed Project and is included in Appendix 4-3 of this EIAR. A Biodiversity Management and Enhancement Plan (BMEP) has also been prepared as part of this EIAR and is included in Appendix 6-4. Mitigation measures relating to the enhancement and maintenance of the site have been incorporated into the final design of the Proposed

Project layout with the aim of mitigating landscape effects of the Proposed Wind Farm; please see Appendix 6-4 (BMEP) for further details. Key mitigating factors on the site include:

- As detailed in Appendix 6-4, a BMEP for the Proposed Wind Farm has identified enhancement activities such as the planting of approx. 3,350m of native broadleaf trees, shrubs and hedgerows within the Proposed Project site.
- The spatial configuration of the proposed infrastructure footprint has been carefully designed to avoid (in most instances) and minimise the loss of valuable landscape receptors on the site, such as habitat for Marsh Fritillary; No access by construction personnel or machinery to the Marsh Fritillary habitat area, no temporary storage of materials within this area, no unnecessary tracking/ shortcuts taken across this area.
- The internal site road layout makes use of the existing informal agricultural and forestry tracks wherever possible, to minimise the requirement for new tracks within the site and, where possible, retain the integrity of existent field boundary walls, native hedgerows and trees.
- In order to minimise cut and fill activities required to construct the Proposed Project, the proposed access roads and other infrastructure such as hard stands have been designed to avoid steep gradients and hilly terrain within the site.
- The substation is sited in a location enclosed by mature forestry and localised topography, and well set back from residential receptors, reducing visibility from receptors in the surrounding landscape, therefore reducing perceptual impacts on the landscape aesthetic during the operational phase.
- In all circumstances, excavation depths and volumes will be minimised, and excavated material will be re-used where possible.
- During initial vegetation stripping, all topsoil material will be temporarily stored on site and used for "dressing" the edges of the development infrastructure during reinstatement/regrading. This will be particularly important in areas of cut and fill. The stripped topsoil will contain a natural seed source of local provenance and when spread during the operational phase, will result in the establishment of local native plant species.

Residual Effects

Once the Proposed turbines are operational and construction activity is complete, the landscape will naturally re-vegetate around the Proposed Project site with the aid of the above mitigation measures (e.g., retention of natural seedbank during soil stripping). Considering the mitigation measures above, the overall residual effects upon the landscape of the Proposed Projects site are deemed to have a 'Slight', negative and short-term effect. '

14.7.3.1.2 LCA Assessment Outcomes

An assessment of the effects on landscape character was undertaken for the 3 No. LCAs within the LCA Study Area (15km for assessment of effects on designated LCAs) that were presented above in Figure 14-09. The individual assessments for each LCA are summarised in Table 14-16 below and included in detail in *Appendix 14-2: LCA Assessment Tables*. The assessment criteria and grading scales which aided the assessment of landscape effects are detailed in Section 1.6 'Assessing Landscape Effects' of *Appendix 14-1: LVIA Methodology*.

The largest magnitude of change will occur in the Co. Carlow 'Kileshin Hills' LCA-4, which contains all Proposed turbines, as the installation of turbines will materially alter the landscape of this LCA. The Proposed turbines are likely to be most visible from areas within 5km of the Proposed Wind Farm site, particularly in the upland plateau to the west of the LCA. The Proposed turbines will be seen from a distance from areas in the lowlands of the Barrow Valley to the east of this LCA. Due to the elevated location of the site, the intervening vegetation, and ridges throughout the landscape, views of the Proposed turbines shall be effectively screened from many areas within this LCA, far less than is indicated by the ZTV mapping. The Proposed turbines will change the visual and perceptual aesthetic

qualities of some areas in this LCA. The magnitude of change is deemed to be 'Moderate', as the addition of uncharacteristic new features (i.e., the Proposed turbines) shall cause localised changes in landscape character and will alter a sensitive aspect of the environment within this LCA. For the reasons comprehensively outlined in Section 14.4.1.4 the sensitivity of this LCA is deemed to be 'Medium'. The likely effects on this LCA are deemed to be 'Moderate'.

The Proposed turbines will not materially alter other LCAs in Co. Carlow but may materially alter the 'Castlecomer Plateau' LCA in Co. Kilkenny, due to the construction work relating to the underground grid connection. However, as the Proposed turbines will be visible only from within a different LCA, they will likely only cause a 'Slight' impact on landscape character in Kilkenny. Full discussion and assessment of the Landscape Character Areas are included in *Appendix 14-2 LCA Assessment Tables*.

Table 14-16: LCA Assessment Summary

LCA Ref.	Name	LCA Sensitivity	Magnitude of Change in LCA	Significance of Effect
C-LCA 4	Carlow Killeshin Hills	Medium	Moderate	**Moderate**
C-LCA 2	Carlow Central Lowlands	Medium	Slight	**Slight**
KK-LCA B	Kilkenny Castlecomer Plateau	Medium	Slight	**Slight**

14.7.3.2 Visual Effects (Operational Phase)

This section provides the assessment of likely significant visual effects on visual receptors during the operational phase. As stated previously in Section 14.7 the key focus is of the visual impact assessment are the effects arising from the Proposed turbines. However, specific visual effects arising from other ancillary infrastructure of the Proposed Project (e.g. onsite substation, met mast, Proposed Grid Connection Route, upgrades to and new roads, the turbine delivery route, etc.) are addressed at the end of this section, although where appropriate discussion of their effects in relation to specific receptors are discussed in-text of general visual effects. This section is structured in the following way:

- A summary of the visual impact assessment outcomes for each photomontage as is comprehensively reported in Appendix 14-3.
- Discussion of visual effects on the specific visual receptors included for further assessment within the visual baseline exercise (Section 14.5) with reference to photomontages and photowires;
- Discussion of visual effects of the non-turbine infrastructure of the Proposed Project

The assessment of cumulative landscape and visual effects are specifically addressed and discussed in Section 14.7.3.3. However, where appropriate cumulative visual effects are included in the discussion of visual effects on specific visual receptors in this section.

14.7.3.2.1 *Summary of Assessment of Photomontage Viewpoints*

An assessment of the visual effects arising as a result of the Proposed turbines was undertaken using photomontage visualisations from 15 no. viewpoint locations. The locations chosen for photomontages follow a detailed and extensive process including review of baseline information, site visits and high-quality photo taking at multiple locations within the LVIA study area. Many locations, which based on a desktop review had the potential for views of the Proposed Wind Farm site, had complete intervening screening or were screened to such an extent that the development of photomontages was not

considered useful in terms of the assessment process i.e. little or no visibility towards the Proposed Wind Farm site.

An assessment of the visual effects of the Proposed turbines was undertaken from the 15 viewpoint locations identified in Section 14.5.3 above using the assessment methodology described in Appendix 14-1. The locations of these viewpoints are shown below in Table 14-17. The individual assessments of the 15 viewpoints are presented in Appendix 14-3 and summarised in Table 14-17 below. Appendix 14-3 and Table 14-17 should be read in conjunction with the photomontage booklet forming Volume 2 of this EIAR.

Regarding the Proposed turbines, 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 predicted visual effects of the viewpoints below are Long Term and Direct effects.

Alternative Photomontage Viewpoints – Photowires

Photomontage imagery was captured from many locations in the LVIA Study Area other than the 15 no. Photomontage viewpoints that were selected for the EIAR Volume 2: Photomontage Booklet. Photowires are early-stage photomontage visualisations comprising panoramic photos with overlaid wirelines (Classified as Type 3 Visualisations in the Landscape Institute Technical Guidance Note, 2019). Photowires were produced from 20 other viewpoint locations in the LVIA Study Area. These viewpoints were not selected for inclusion in the EIAR Volume 2: Photomontage Booklet due to limited visibility of the Proposed turbines or a more appropriate nearby location being included in Volume 2 instead. These Photowires do not form part of the assessment of visual effects included in Appendix 14-3. However, 20 no. Photowires are presented within Appendix 14-5, and they are discussed later in this section of the Chapter to illustrate certain points relating to visual effects on specific receptors. The location of Photowire viewpoints in Appendix 14-5 are marked as orange icons in 14-16 below and are discussed throughout the chapter as Photowire Viewpoint Locations (referred to as PWVPs (e.g., PWVP-A, etc.)).

The Volume 2 photomontage booklet includes modelling and visuals of other existing, permitted and proposed wind energy developments within the 20km study area. The impact assessment of photomontages in Appendix 14-3 incorporates assessment of cumulative visual effects with other wind energy developments. The photowires in Appendix 14-5 are draft and do not include modelling of other existing, permitted and proposed developments.

Table 14-17: Viewpoint (Photomontage) Assessment Summary

VP No.	Description	Grid Ref.	Visual Sensitivity of Receptor(s) (at viewpoint)	Magnitude of Change	Residual Significance of Visual Effect
VP1	Open view from the north-east that is approximately 1.2km from the nearest Proposed turbine (T02) that is located at scenic route 8 in the townland of Coolnakisha.	E 665,150 N 670,149	High	Moderate	**Moderate**
VP2	Residential Receptor approximately 900m from the nearest Proposed turbine (T01) at Agharue	E 663,054 N 670,410	High	Moderate	**Moderate**
VP3	Along the road towards the substation approximately 2km from the nearest Proposed turbine (T06) in the townland of Coolcullen.	E 661,359 N 668,690	Medium	Moderate	**Moderate**
VP4	Representing Leighlinbridge.	E 669,304 N 665,434	Medium	Slight	**Not Significant**
VP5	Representing Oldleighlin Village.	E 665,843 N 665,486	Medium	Slight	**Not Significant**
VP6	View from the M9 approximately 9.3km from the nearest Proposed turbine (T03) in the townland of Ballybar Upper.	E 673,259 N 671512	Low	Slight	**Not Significant**
VP7	Representing Bagenalstown and the River Barrow.	E 670,589 N 662,774	Medium	Slight	**Slight**

VP8	Residential receptor approximately 3.6km from the nearest Proposed turbine (T1) in the townland of Ardough or Huntspark.	E 663,906 N 673,265	Medium	Moderate	**Moderate**
VP9	Along Kilkenny scenic view approximately 6.2km from the nearest Proposed turbine (T7) in the townland of Reevanagh.	E 658,714 N 664,245	High	Moderate	**Moderate**
VP10	Along Kilkenny scenic view approximately 13.2km from the nearest Proposed turbine (T1) in the townland of Glenmagoo or Firoda Lower.	E 650,825 N 673,695	High	Slight	**Slight**
VP11	Along scenic route 25 of Carlow approximately 13.8km from the nearest Proposed turbine (T7) in the townland of Kilgraney.	E 670,878 N 656,327	High	Slight	**Slight**
VP12	Along scenic route 5 of Carlow approximately 9.3km from the nearest Proposed turbine (T3) in the townland of Ballyryan.	E 673,455 N 668,088	High	Slight	**Slight**
VP13	Representing Brownhill Portal Dolmen.	E 675,398 N 676,870	High	Negligible	**Not Significant**
VP14	Receptor along scenic route 7 approximately 900m from the nearest Proposed turbine (T06), west of the Proposed Project in the townland of Ridge.	E 662,670 N 668,141	High	Moderate	**Moderate**
VP15	Receptor along scenic route 7 approximately 850m from the nearest Proposed turbine (T07) in the townland of Ridge.	E 663,282 N 667,367	High	Moderate	**Moderate**

The assessment of visual effects determined the residual significance of the visual effects to range from 'Moderate' to 'Not Significant', with the number of findings at each level of significance listed in Table 14-18 below.

The significance of the residual visual effect was not considered to be 'Profound', 'Very Significant' or 'Significant' at any of the 15 viewpoint locations. A residual effect of 'Moderate' was deemed to arise at 7 of the viewpoint locations. Viewpoints 02, 03, and 05 and other viewpoints in close proximity to the site are discussed in detail below in the Local Residential Visual Amenity section (Section 14.7.6.2). All other viewpoints were assessed as resulting in 'Slight' (4) or 'Not Significant' (4) residual visual effects Photowire.

Table 14-18 Summary of Viewpoint Impact Assessment Results

Visual Effect Significance Category	Definition (EPA, 2022)	No. of Viewpoints with this Rating
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	7
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities	4
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.	4
Imperceptible	An effect capable of measurement but without significant consequences	0

14.7.3.2.2 Co. Carlow Designated Scenic Amenity within 5km of the site: Discussion of Visual Effects

Eight No. designated scenic routes are located within the LVIA Study Area and were included for further assessment in the visual baseline exercise. Four No. of these routes (Scenic Routes (SR) 6, 7, 8 and –9) follow the same local road, including two protected views and prospects, 31 and 32. The location of the four designated scenic routes and two prospects are illustrated in the map below (Figure 14-5) as red and white dashed lines and are labelled accordingly.

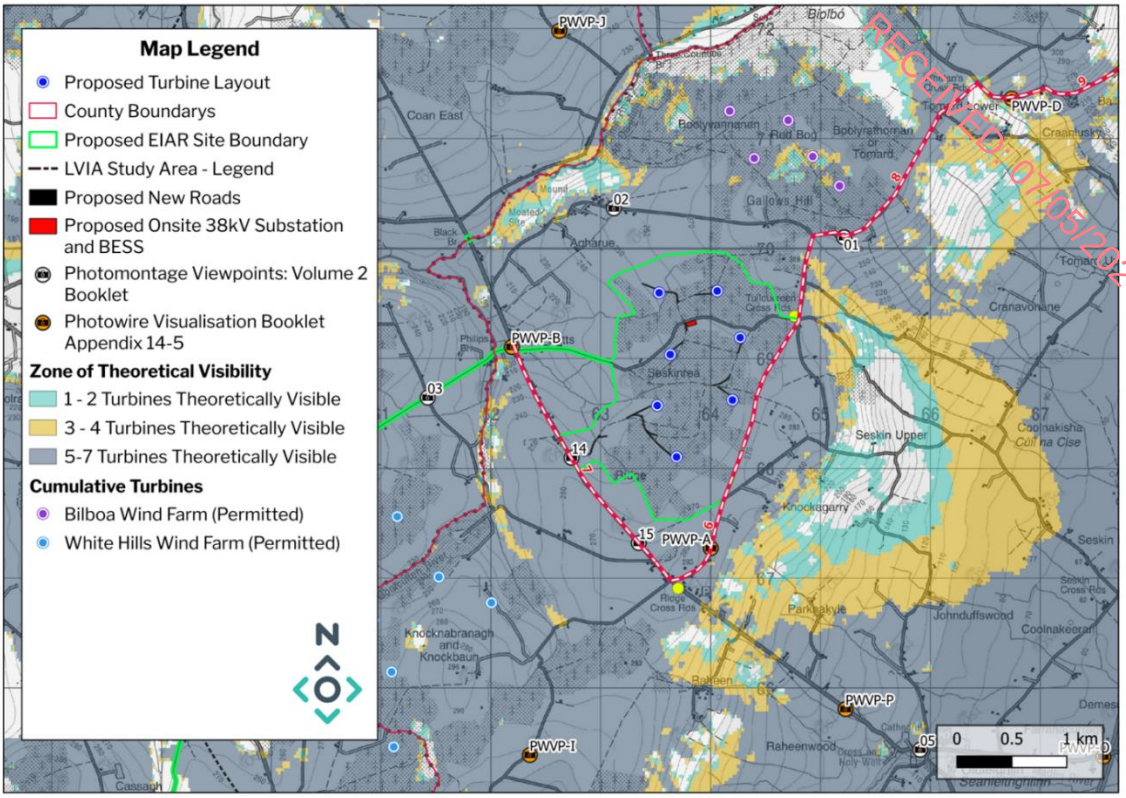

Figure 14-5 Co. Carlow designated Scenic Routes and Views

The map above shows that most of the protected scenic amenity (excepting SR-7) is located on the eastern side of the Proposed Project site. SR 6, 8 and 9 follow the local road that follows the prominent ridgeline that forms the most elevated western side of the Barrow Valley. All of these roads were driven, and the protected viewpoints were visited during site visits. From this local road and these viewpoints, there are open panoramic views across the 'Central Plains' (as per the CCDP) to the east and south, which are deemed to be of high scenic quality. Due to the siting of the Proposed turbines inset from the primary ridgeline and the extension of commercial forestry up to this road, there will be very limited visibility of the Proposed Project from these scenic routes and protected scenic views and prospects. It is also clearly evident that the Proposed Project will not impact the key sensitivities of these amenity designations which are the expansive views to the south-east, in the opposite direction to the Proposed Project. Discussion of visual effects from Scenic Route 6, 8 and 9 and prospects 31 and 32 are discussed below, followed by discussion of effects from scenic route 7 which is located to the west of the site.

Carlow Scenic Route 6 & Scenic View and Prospect 31: A photowire (early-stage photomontage) was produced from Co. Carlow Scenic Route 6 – PWVP-A presented in Appendix 14-5. PWVP-A shows a view towards the site as northbound users of the local road (SR-6) exit the settlement cluster at the Ridge Crossroads. The Proposed turbines will not be seen from the location of Scenic View 31 or any residents within the enclosed area around the Ridge Cross-Roads, nor will it affect the key scenic sensitivities of SR-6. 'No Significant' visual effects will occur on these scenic amenity designations – SR-6 and prospect 31.

Plate 14-26 VWVP-A Proposed turbines will be screened from view by mature vegetation on Co. Carlow SR-7. Full photowire presented in A3 in Appendix 14-5

Carlow Scenic View and Prospect 32: The protected scenic amenity from Scenic View Prospect 32 is clearly directed to the east as is described in the CCDP ('*Vista east, panorama from Killeshin Hills across central plain to Blackstairs*'), in the opposite direction of the Proposed Project site. Site visits determined that views to the west in the direction of the Proposed Project (shown below in Plate 14-27) comprise short range views up a slight hill and the Proposed turbines are likely to be mostly obscured by localised landform in the intervening landscape. The Proposed Project will have 'No Significant' effect on the protections and key scenic sensitivities of Prospect 32.

Plate 14-27 View West toward the Proposed Project from Co. Carlow Protected Scenic View and Prospect 32

Carlow Scenic Route 8: The protected scenic amenity from SR-8 is clearly directed to the south-east as is described in the CCDP ('*Panorama to the south-east*'), in the opposite direction of the Proposed project site. One open view towards the Proposed Project was identified at a section of the local road which follows the valley contours just south of Gallows Hill, permitting open views of the Proposed turbines for southbound receptors on the scenic route. Photomontage Viewpoint VP2 was captured here. VP2 is presented in the photomontage booklet and is comprehensively assessed in Appendix 14-3, including and accounting for cumulative visual effects with other wind farms. 'Moderate' residual visual effects were deemed to arise as the proposed project does not impact the key scenic sensitivities of the scenic route.

Carlow Scenic Route 9: There will be limited visibility of the Proposed Project from SR-9, this was determined by visibility appraisals and verified by a photowire captured on the route PWVP-D, as shown below in Plate 14-28. No Significant visual effects are likely to occur from this scenic route.

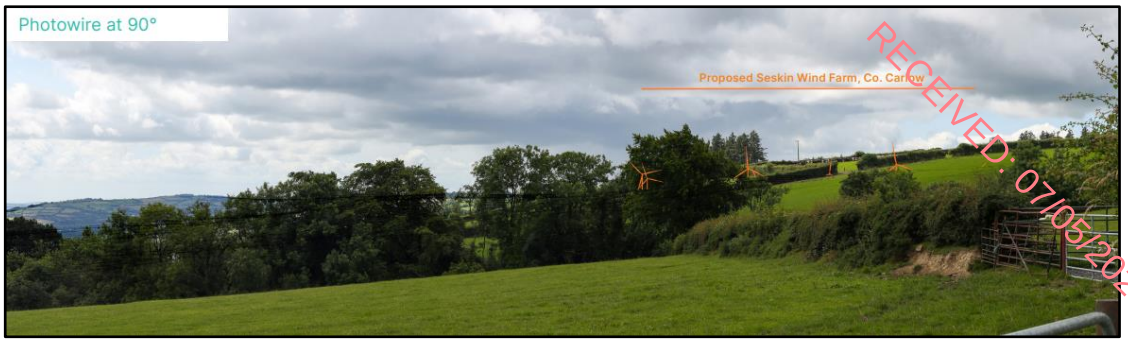

Plate 14-28 VPPW-D Proposed turbines will be screened from view by localised landform and mature vegetation on Co. Carlow SR-9. Full photowire presented in A3 in Appendix 14-5

Carlow Scenic Route 7: This designated scenic route follows the local road immediately west of the Proposed Project site. SR-7 comprises a 2.5km stretch of road between an intersection in the townland of Ridge or Seskinrea to the north, and Ridge Crossroads to the south. The description in the CCDP of this route and scenic amenity is '*Road to the Butts – Panorama across central plain'.* The 'Central Plain' is considered to be the lowlands of the Barrow Valley to the East, as would be consistent with other scenic view descriptions in the CCDP (e.g. SR-6, 8 and 9 above) and the naming of the LCA2 – Central Lowlands. No panoramic views of the 'Central Plains' were found on SR-7 during site visits.

This route is immediately adjacent to the Proposed Wind Farm site. The southern portion of the route is slightly elevated and permits occasional open short-range views to the east, across the small valley to the Proposed Wind Farm site. As demonstrated by the drone imagery in the Landscape Baseline Section and the photomontages, the prominent ridgeline to the east of the site does not permit longer ranging views to the central plains of the Barrow valley beyond. The Route Screening Analysis (reported previously in Section 14.3.4.1) and visibility appraisals determined that there is a lot of mature vegetation along the scenic route which inhibit views east towards the site.

Photomontage imagery was captured from the crossroad at The Butts to the north of the route and a photowire was produced – PWVP-B. This photowire (PWVP-B) is presented in Appendix 14-5 and shows there will be very limited visibility of the Proposed turbines from receptors in this location due to its slightly lower elevation adjacent to the river and the mature woodland to the east. Photomontages were produced from 2 No. locations along the southern section of the scenic route where open views were found – Viewpoint 14 and Viewpoint 15 in the Volume 2 Booklet (see map above). The visual impact of the Proposed turbines from both viewpoints are comprehensively assessed in Appendix 14-3, including cumulative effects with other existing, permitted and proposed wind energy developments. A summary and discussion of visual effects are provided below.

This route is considered 'High' Sensitivity on account of the designation in the CCDP. On-site appraisals, and photomontages show that the scenic amenity primarily comprises medium to short-range views across a modified working landscape of commercial forestry and agricultural fields, essentially the upland plateau where the Proposed Wind Farm site is located. In a county, regional or national context, the scenic amenity from this route is not particularly unique, distinctive or sensitive. The road is of low traffic density and is not considered to provide any valuable tourism amenity.

In both instances, the 'Magnitude of Change' from Viewpoint 14 and 15 were both deemed to be 'Moderate' considering the turbines are large features altering the character and composition of the view. In both photomontages the spacing and turbine layout enable the Proposed Project to read coherently in the landscape. The Proposed turbines do not comprise a large horizontal extent of the landscape views and the intervening valley provides a sense of separation from the viewpoints, reducing the perceived prominence and bearing of the Proposed turbines on receptors in the area. Figure 14-6 below is a visualisation (not a verified photomontage – Indicative visual) illustrating some of the non-turbine components of the Proposed Project will be visible from Viewpoint 14 and Scenic Route-7.

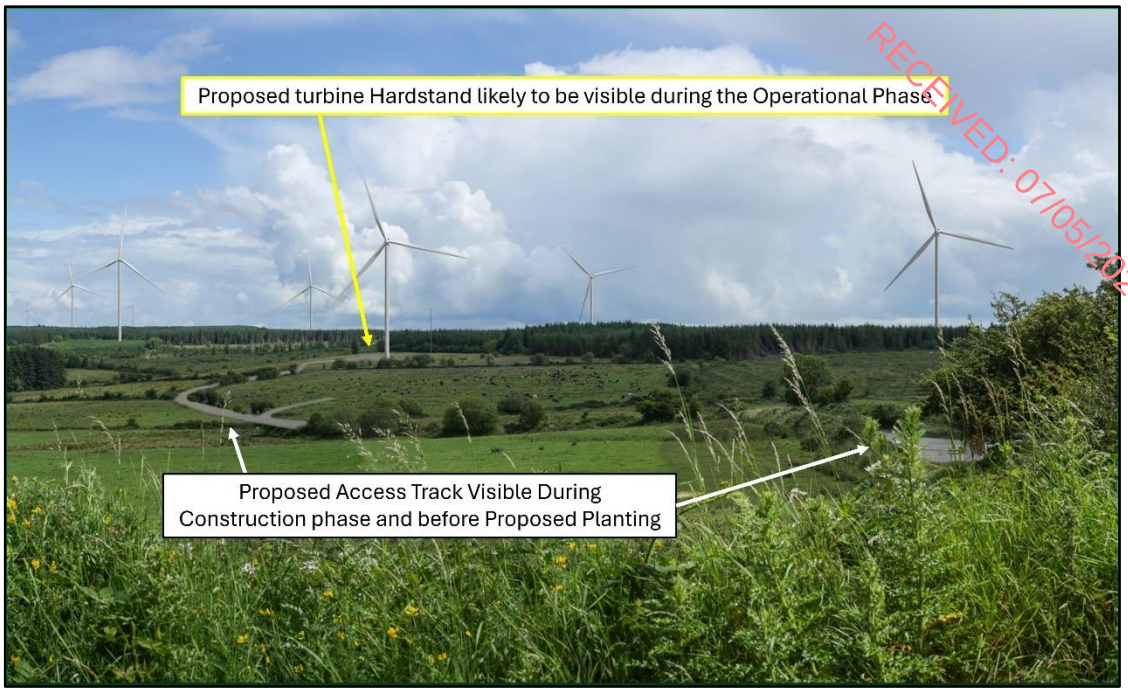

Figure 14-6 Illustration of the proposed access roads and hardstand area of Proposed turbine T06 as seen in the photomontage captured from VP14.

The Figure above shows that the hardstand area of Proposed turbine T06 will be visible as well as the site access track from Viewpoint 14. The illustration above shows that hedgerows will be removed to facilitate the upgrade works to existing tracks and that the site access tracks will be visible in some areas of the landscape. Visual effects will occur during the construction phase and then also upon completion of construction. The BMEP in Appendix 6-4 of this EIAR includes for planting and replacement of hedgerows and woodland that will be lost in order to facilitate construction of the Proposed Project. In the case of the roads seen in Viewpoint 14 above, hedgerows are proposed to the west of the new access road. Once the planting establishes and matures it will provide visual screening and a large portion of the non-turbine infrastructure such as the access road will have reduced visibility. Figure 14-7 below is a visualisation (not a verified photomontage – Indicative visual) illustrating the view from viewpoint 14 once the planting has been implemented and has matured.

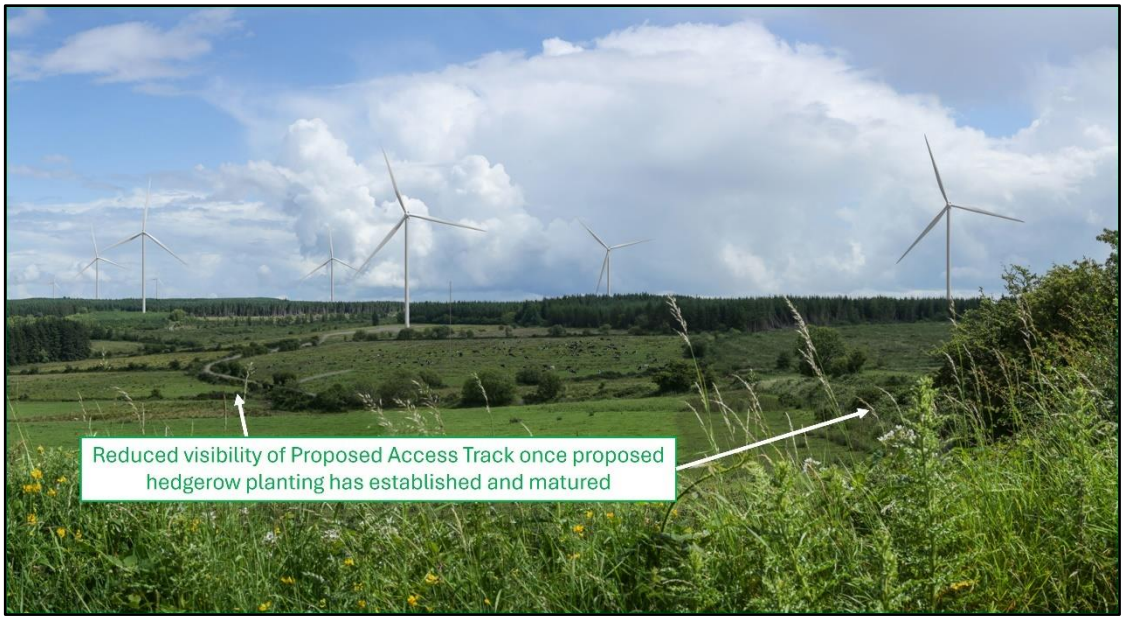

Figure 14-7 Illustration of the proposed access roads after proposed hedgerow planting has matured as seen in the photomontage captured from VP14.

Residual visual effects from Viewpoints 2 and 3 were deemed to be 'Moderate' which account for cumulative visual effects with other wind energy developments. The following factors are incorporated into the detailed impact assessment in Appendix 14-3 and reason why significant impacts are not deemed to occur on receptors travelling the designated scenic route:

- All turbine components are viewed above the horizon and do not obstruct any valuable landscape views of high scenic quality from this location;
- Although this is a designated scenic route, this is a short-range view of a working landscape comprising fields and commercial forestry and does not include distinctive or unique landscape features;
- Whilst SR-7 is a designated scenic route, it is a local road of low traffic density and it is unlikely this route is highly valued for its tourism amenity.
- The Proposed turbines read coherently within the landscape and are of acceptable scale with the intervening valley providing a sense of set back and separation from the road and residential receptors.
- The Proposed Project does not significantly impact on any highly sensitive scenic or landscape sensitivities from the designated scenic route.
- Several photomontages were captured on SR-7 in order to determine a location where the Proposed Wind Farm is likely to be visible. It was found that visibility is localised to areas around the viewpoints 2 and 3; The limited visibility in the direction of the Proposed turbines from SR-7 due to roadside screening is demonstrated and illustrated by mapping in the RSA presented in Section 14.3.3.1.

14.7.3.2.3 *Co. Carlow Designated Scenic Amenity in the Barrow Valley and Central Plains to the East: Discussion of Visual Effects*

Several Co. Carlow designated scenic routes are located in the Central Plains of the Barrow Valley to the east of the LVIA Study Area. Photomontage imagery was captured from all routes (SR-4, SR-5 and SR-25) where there was theoretical visibility of the Proposed turbines indicated by ZTV mapping. As illustrated by the photomontages and photowires from the lowlands in the Barrow Valley, when the Proposed Wind Farm is visible, it is generally seen upon the elevated ridgeline of the Killeshin Hills. A summary of the visual effects arising from the scenic routes to the east of the site are discussed below. A full assessment of each viewpoint is included in Appendix 14-3 including comprehensive analysis of cumulative visual effects with other existing, permitted and proposed wind energy developments which are factored into the determination of likely significant residual visual effects.

Visual Characteristics of the Proposed Project when viewed from the East

The Proposed Project was strategically designed to comprise a staggered linear layout adjacent and inset to the primary ridgeline forming the eastern perimeter of the Proposed Wind Farm site. The staggered linear form of the turbine layout is aligned with the north-south orientation of this primary ridgeline which is seen from within the central lowland plain of the Barrow Valley. Siting and design guidance in the DoEHLG 2006 Guidelines for Transitional Marginal landscape types recommends the following in terms of layout:

> *"The likely location of wind energy developments on ridges suggests a linear or staggered linear layout."*

The staggered linear layout (in accordance with the DoEHLG 2006 Guidelines) and alignment with the ridgeline ensures that the Proposed turbines read coherently within the landscape when viewed from the east. As illustrated by photomontages and photowires in this direction, the Proposed turbines are generally seen as a linear array with relatively ordered and even spacing, with very limited instances of visual stacking. As a group, the Proposed turbines all have a similar vertical profile (little difference in the base elevation of the Proposed turbines) and are consequently seen to correspond well with the defined linear ridgeline where they are seen. The Proposed turbines are always viewed above the

horizon from the central lowlands in the east and do not obscure landscape views. The Proposed Wind Farm is generally well balanced within the landscape with a layout and profile is sympathetic to the well-defined linear landform of the Killeshin Hills.

Carlow Scenic Route 4. SR-4 is located approximately 14.3km north-east from the nearest proposed turbine (T3). This scenic route faces the South of the Killeshin Hills and also looks over the M9 motorway. A photowire was captured form this scenic route and is shown below - PWVP-H, full version is shown in Appendix 14-5. The Proposed Project is visible on the distant hillside and located at a sufficient distance where the magnitude of change would be 'Negligible' while the sensitivity was deemed to be 'High'. Residual visual effects are deemed to be 'Not Significant'.

Plate 14-29: View from the Location of Photowire PWVP-H; extracted from Appendix 14-5

Plate 14-30: Enlargement of the Previous Plate, showing Proposed turbines from PWVP-H

Carlow Scenic Route 5. SR-5 looks across the Barrow Valley towards the Killeshin Hills. This scenic route travels along a local road with few settlements along the route. Visual effects from this Scenic route are represented by Viewpoint 12 - Ballyryan. The sensitivity of this viewpoint was deemed to be 'High' while the magnitude of change was 'Slight' and a residual visual effect of 'Slight'.

Carlow Scenic Route 25. SR-25 overlooks the Barrow Valley and Killeshin Hills. Viewpoint 11 - Kilgraney is located 13.8km from the nearest Proposed turbine (T07). Sensitivity was deemed to be 'High' while the magnitude of change was 'Slight' and residual visual effects were deemed to be 'Slight'.

Summary of visual effects on Co. Carlow Protected Scenic Amenity

No significant residual visual effects are deemed to arise from any of the protected scenic amenity designations in County Carlow. Whilst the Proposed turbines may be visible from some areas of the designated scenic routes and n and prospects, they will not fundamentally impact the key scenic and landscape sensitivities of the designations. As reported previously, policy in the CCDP states.

"The identification of these views, prospects and scenic routes provides a tool for making development decisions that acknowledges the importance of protecting such assets and thus maintaining the overall integrity of the County's landscape. However, it is also acknowledged that in certain circumstances some development may be necessary, and in such cases appropriate location, siting and design criteria should strictly apply".

The assessments in this LVIA have determined that by means of strategic design and locational siting of the Proposed Project, it will not significantly impact on the integrity of County Carlow's landscape, protected scenic views or any unique and distinctive upland vistas.

14.7.3.2.4 Co. Kilkenny Designated Scenic Views

Two No. designated scenic views from the KKCDP have open views towards the Proposed Wind Farm, Kilkenny V13 and V45; photomontage imagery was captured from VP9 and VP10 respectively. These are comprehensively assessed in Appendix 14-3, including assessment of cumulative visual effects.

Kilkenny View 13: VP9 – Reevanagh; overlooks a landscape characterised by agricultural and commercial forestry; these land uses make up the Proposed Wind Farm site and are visible in the background of the photomontage. The residual visual effect was considered to be 'Moderate'. Whilst the Proposed turbines are well set back from this viewpoint and they do not impact the key scenic sensitivities of protected view, a moderate visual effect was determined on account of cumulative effects with other existing and permitted wind energy developments in the area.

Kilkenny View 19: VP10 – Firoda Lower; represents an elevated view from the west where the Proposed Project can be seen, yet at a substantial distance of 13.2km from the nearest Proposed turbine (T01). The sensitivity of this designated scenic view was deemed to be 'High' while the magnitude of change was considered 'Slight', residual visual effects were deemed to be 'Slight'.

14.7.3.2.5 Settlements – Discussion of Visual Effects

Carlow Town. The majority of Carlow Town will have no views of the Proposed Project; this finding is supported by ZTV mapping which indicates that only the outskirts will have any theoretical visibility view. Plate 14-31 below shows a photowire with a view in the direction of the Proposed Project from the Wexford Road Business Park. This is the main road from Carlow Town to Wexford (N80) and is well trafficked being a key transport link for the largest population centre in Co. Carlow. Views along that road will not be directed towards the Proposed Project. From photowire PWVP-C, it can be seen that the landscape consists of agricultural fields with mature boundary vegetation which limit views towards the Killeshin Hills and the Proposed Project. The sensitivity of this photowire viewpoint was deemed to be 'Low', the magnitude of change is deemed to be 'Negligible', therefore visual effects are 'Not Significant'.

Plate 14-31: View from Photowire PWVP-C; extracted from Appendix 14-5

Leighlinbridge – Viewpoint 4. This settlement is located approximately 5.8km South-East of the nearest Proposed turbine (T07). The town itself is located at a lower elevation than the Proposed turbines as it is situated along the banks of the River Barrow. From within the town, there will be no visibility of the Proposed turbines due to the screening from buildings. The Proposed turbines will be visible from one area within Leighlinbridge of slightly higher elevation, residual visual effects were deemed to be 'Not Significant'; see VP4 in the photomontage booklet and the assessment in Appendix 14-3.

Photowire PWVP-E is shown in the image below. It represents a similar view from The Black Castle, which is a protected structure within the town. The sensitivity of the viewpoint was deemed to be 'Medium', and the magnitude of change was found to be 'Negligible'.

Plate 14-32: View from Photowire PWVP-E; extracted from Appendix 14-5 – No Visibility of the Proposed Project

Oldleighlin (Graveyard and Oldleighlin Church/Cathedral) - Viewpoint 5: The village of Oldleighlin is the closest settlement to the Proposed Wind Farm site (3.3km South of the nearest Proposed turbine (T07). Views towards the Proposed Wind Farm site are limited within the village due to screening from the townscape of the village itself, localised landform and mature vegetation in the intervening landscape. Viewpoint 5 was given a 'Medium' sensitivity on account of local residents and visitors to the church and graveyard. The photomontage shows limited visibility as the prominent ridgeline forming the eastern perimeter of the site substantially obscures most of the Proposed turbines from view and the magnitude of change is deemed to be 'Slight'. Viewpoint 5 was captured on an elevated embankment at the eastern side of the cemetery. Visibility elsewhere within the cemetery and the grounds of the church will be extremely limited due to the enclosed nature of views from mature woodland to the north-west and the embankment where the photomontage was captured. Residual visual effects were deemed to be 'Slight', and there will be no significant effects on the setting of the church and graveyard.

Photowire PWVP-P was captured from a location near to the national school on the local road which exits Oldleighlin to the north. The image below shows that very limited impacts will occur from this location, the photowires shows that the Proposed turbines will be screened from view by the mature woodland, as well as the intervening landform. Visibility of some blades may be visible in winter months when vegetation has lost its foliage.

Plate 14-33 View from Photowire PWVP-P; extracted from Appendix 14-5 – No/Limited Visibility of the Proposed Project

Ballinabrannagh. This settlement is located approximately 4.8km north-east of the nearest Proposed turbine (T03). Views from within Ballinabrannagh will be very limited due to screening from the infrastructure within the area and also from vegetation throughout the village. Photowire PWVP-K is located at a lower elevation point compared to the Proposed turbines, but the elevation of the landscape gradually increases from this photowire viewpoint up towards the Proposed Project. The sensitivity of PWVP-K was considered to be 'Medium' due to its population and proximity to the Proposed Project, while the magnitude of change was considered 'Slight'. Overall 'Slight' visual effects are deemed to arise.

Plate 14-34: View from Photowire PWVP-K; extracted from Appendix 14-5

14.7.3.2.6 Tourism, Heritage and Recreational Destinations: Discussion of Visual Effects

Duckets Grove. This destination is located approximately 18.6km north-east if the nearest Proposed turbine (T02) and can be viewed in photowire PWVP-F in Appendix 14 - *Photowire Visualisation Booklet*. From the ZTV, this tourist destination shows full theoretical visibility; however, the photowire reveals that there will be no visibility of the Proposed turbines from this location. The view is screened by mature treeline which blocks the horizon. Some minor distant visibility may occur in winter months

when the trees have lost their foliage. From the top of Duckets Grove, there may be a possible view, but it will not be significant due to the distance from the Proposed turbines.

Plate 14-35: View of Photowire PWVP-F; extracted from Appendix 14-5

The River Barrow. This river is an important recreational element for Co. Carlow as it is the second longest river in Ireland, flowing for 192km from its source in the Slieve Bloom Mountains. The CCDP (section 11.5.8) states that:

'Some of the most attractive visual stretches of this waterway flow through County Carlow. The River Barrow constitutes one of the most significant industrial heritage monuments in the country with bridges, corn-mills, locks and lock-houses and its history alone is an important tourism resource. The Barrow remains a bustling river accommodating many activities including walking, cycling, fishing, boating, and canoeing'.

Viewpoint 7 was captured from a riverside location near to Bagnalstown, north of the local swimming pool. This specific photomontage viewpoint was chosen as its specific orientation permits long ranging views to the north-west along the unobstructed form of the river in the exact direction of the Proposed Project. Sensitivity is deemed to be 'High' and a 'Slight' magnitude of change. Residual visual effects were deemed to be 'Slight' – A full comprehensive assessment of this photomontage including assessment of cumulative effects are included in Appendix 14-3.

Visibility of the Proposed turbines as shown in photomontage VP7 does not occur in most other low-lying areas within the river corridor where the mature woodland lining either side of the river will greatly restrict visibility.

Two No. photowire viewpoints provide views representative of the River Barrow: PWVP-G and PWVP-L. PWVP-G is located approximately 5.5km east-north-east from the nearest Proposed turbine (T03) and is adjacent to the Milford Mill. There is no clear view from the Mill and the river itself due to enclosure and screening by vegetation; however, from the main road there is a clear view of the Proposed turbines along with a view of a signpost which states 'Barrow Way'. The sensitivity of this viewpoint is considered to be 'Medium' while the magnitude of change is considered 'Slight' and the and an overall 'Slight' visual effect. The Proposed Project will not impact upon the sensitivities of the river, the walking trail or the Mill in this area.

Plate 14-36: View from Photowire PWVP-G; extracted from Appendix 14-5

The second River Barrow photowire, PWVP-L, is located approximately 9km south-east of the nearest proposed turbine (T5), in Bagnalstown, adjacent to the River Barrow (close proximity to viewpoint 7). There is frequent screening by mature vegetation along the riverbanks which creates a sense of enclosure and largely prevents clear views of the Proposed turbines, as demonstrated below in Plate 14-37 below.

Plate 14-37 Extract from PWVP-L within Appendix 14-5.

Brownshill Portal Dolmen – Viewpoint 13: A photomontage was captured from this Dolmen which is the largest in Europe. Receptors are deemed to be of 'High' sensitivity on account of the visitors coming to this location in a recreational capacity to visit the monument. Magnitude of change is deemed to be negligible considering the distance and limited visibility, and residual visual effects are deemed to be 'Not Significant'.

1798 Monument. This destination is located approximately 3km south of the nearest Proposed turbine (T07). The view looks upon a forestry site with a gap for the local road. As shown in the photowire below (PWVP-I) there will be partial visibility of the Proposed Project as there will be some screening from the forestry. The sensitivity of this Photowire viewpoint is 'Medium' while the magnitude of change is considered to be 'Slight' and overall visual effects are deemed to be 'Slight'.

Plate 14-38 Extract from PWVP-I within Appendix 14-5.

14.7.3.2.7 Major Transport Routes

M9 Motorway. The M9 is the closest major motorway to the site, located approximately 4.2km to the south-east at its closest point from T5.. This route runs in a north-south orientation connecting Newbridge, Co. Kildare to Waterford and beyond. The ZTV shows approximately half of the M9 motorway having full theoretical visibility within the LVIA Study Area. VP06 and PWVP-M are located along this route representing views of the Proposed turbines from the East and North-East orientations. Residual visual effects on receptors on the motorway are deemed to be 'Not Significant'. A full assessment of Viewpoint 06 including assessment of cumulative effects is included in Appendix 14-3.

Plate 14-39 Extract from PWVP-M within Appendix 14-5.

N80 National Road. The N80 is a key transport route from Carlow to Wexford and approximately half of this route within the LVIA Study Area has theoretical visibility. It is approximately 13.8km from the nearest Proposed turbine (T03). PWVP-C represents the N80 in plate 14-41. The Proposed turbines are screened by the vegetation within the landscape. From site visits it was determined that there would be limited visibility of the Proposed turbines from the majority of this route as the road has frequent intermittent and dense screening.

N78 National Road. This transport route is located approximately 10km from the nearest Proposed turbine (T01) but has little to no theoretical visibility throughout the LVIA Study Area. The closest receptor that the N78 passes through is the town of Castlecomer. There are no viewpoints or Photowire viewpoints from the N78 as visibility appraisal determined very little visibility of the Proposed Project is likely to occur.

14.7.3.2.8 Residential Visual Amenity- Discussion of Visual Effects

The Proposed Project design process has implemented appropriate set-back distances, with regard to the siting of Proposed turbines in proximity to residential dwellings. The Proposed Project adheres to the recommended 500m set back distance in the DoEHLG 2006 Guidelines and also the 4 times tip height set-back distance set out for residential visual amenity prescribed by the DoEHLG 2006 Guidelines with the closest Proposed turbine (T03) being located 724m from the nearest residential receptor.

5 of the 15 Photomontage Viewpoints and 4 of the 20 Photowire Viewpoints are located within 3km of the Proposed turbines. Photomontages are just one of the tools employed during the LVIA that was conducted in order to inform the assessment of landscape and visual effects. It would be a disproportionate measure to include an individual photomontage from every residential dwelling and this is not required to conduct a thorough and robust assessment of landscape and visual effects. In line with the guidance laid out in the GLVIA3 (LI & IEMA, 2013), the viewpoints selected for the LVIA conducted were informed by a range of factors including the "ZTV analysis, by fieldwork, and by desk research" (para 6.18, GLVIA3 2013). Furthermore, the GLVIA3 (LI & IEMA, 2013) states that representative viewpoints are "*selected to represent the experience of different types of visual receptor, where larger numbers of viewpoints cannot all be included individually and where the significant effects are unlikely to differ*" (para 6.19 GLVIA, 2013). It is submitted that the large number of viewpoints used in the conduct of the LVIA particularly in very close proximity to the Proposed turbines are sufficient to represent the residential receptors within the LVIA Study Area, including the "distribution of population" (para 6.18, GLVIA 2013)

As reported in the landscape baseline (see Section 14.4.2 *Landscape Character of the Proposed Project site*), the site is a large uninhabited area characterised by commercial forestry and agricultural fields. The image above illustrates how the Proposed turbines are set back from residential receptors in the surrounding landscape and that the distances are compliant with the guidance in the DoEHLG 2006 Guidelines and Draft DoHPLG 2019 Guidelines. Only landowners involved with the project are located within the 4x tip height (720m) set back distance recommended in the DoEHLG 2006 Guidelines. The map above also illustrates how the uninhabited areas to the west increase set back distances whilst providing a substantial landscape buffer between the Proposed turbines and these receptors.

In general, the wider upland area of the Killeshin Hills is a sparsely settled landscape with a relatively low population density. The population of the two No. District Electoral Divisions (DED)s within and surrounding the Proposed Project site is detailed in Chapter 5 of this EIAR– Population and Human Health. As shown in Table 5-2 in Chapter 5, the population density of DEDs recorded during the 2022 Census was 19.70 persons per km^2. This figure is significantly lower than the national population density of 73.27 persons per km^2 and the Carlow County population density of 69.08 persons per km^2. These findings indicate that the landscape surrounding the Proposed Project site has a low population density relative to other areas in the county and elsewhere in Ireland.

Visibility appraisals and evidence gathered during the RSA determined that there will be a very limited visual impact upon many of the residential receptors in the areas surrounding the site, due to screening from localised landform and mature vegetation. For context, the types of roadside screening mapped during the RSA is included again on Figure 14-03 above.

As shown in the image above, five photomontage viewpoints are located within 3km of the Proposed turbines. VP01, VP02, VP03 VP014, and VP15 and two photowires – PWVP-A and PWVP-B. These viewpoints were representative of visual effects on residential amenity and receptors of local community

importance in close proximity to the site. They were strategically selected where there are relatively open views in very close proximity to residences with limited screening elements within the landscape.

The following discussion of effects on residential visual amenity is informed by the five viewpoints mentioned above, Photowires included in Appendix 14-5, the mapping outcome of the RSA and other information gathered during site surveys. The discussion will follow the geography of the site in a clockwise orientation.

Residential Receptors to the North of the site

VP2: This viewpoint is located beside a cluster of houses North of the site in the townland of Agharue. A 'High' sensitivity rating was given to this viewpoint on account of the residential receptors with views towards the Proposed turbines. A 'Moderate' magnitude of change was determined as the Proposed turbines are large features altering the character and composition of views but do not comprise a large horizontal extent of the view and they are partially obscured by the intervening landform and vegetation. From this area, the Proposed turbines read coherently in the landscape and due to the intervening landform and mature boundary vegetation in the landscape, the lower turbine components are partially obscured from view, reducing their visual prominence and making them appear appropriately set-back from this view. The following factors were of consideration in the determination of residual visual effects:

- Adherence to the 4x tip height set back distance prescribed by theDoEHLG 2006 Guidelines;
- Due to screening from localised topography and mature vegetation, many of the other residential receptors in this area (e.g. western side of Argharue townland) will have very limited views of the Proposed turbines, far less than is shown in the photomontage.
- Due to the topographic characteristics of the area, views from residences in the townland of Agharue (and this area in general) are naturally focussed to the north and west along the River Dinin valley where there are longer ranging views of a higher scenic quality. The Proposed turbines will have no effect on these scenic sensitivities.
- As shown in the drone image below, there are multiple fields and physical landscape buffers between the Proposed Wind Farm site and the nearest residential receptors in the townland of Agharue

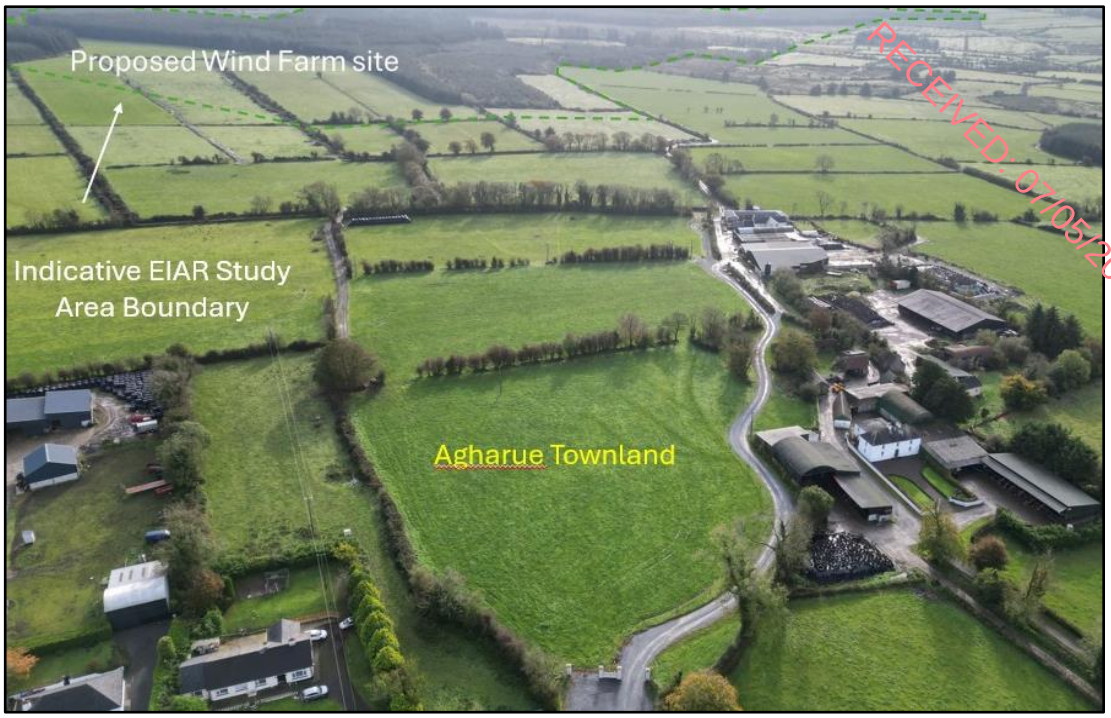

Plate 14-40 Drone view towards the Proposed Wind Farm site form the townland of Agharue.

'Moderate' residual effects were recorded from Viewpoint 2. Three residential receptors east of Viewpoint 2 will have relatively open views towards the Proposed turbines, similar to what is shown in the photomontage from Viewpoint 2 and will be subject to these visual effects. Many of the residential dwellings along this road to the west of Viewpoint 2 will not have open views of the Proposed turbines from their properties.

The RSA in Section 14.3.3 (and mapped above) shows that over half the road directly north of the Proposed Wind Farm site had either dense or intermittent roadside screening Plate 14-41 below shows a view along the road of the dense roadside screening in this area. From this section of the road views towards the Proposed Wind Farm site will be very limited.

Plate 14-41 Local Road directly North of the site shows intermittent and Dense roadside screening.

PWVP-J: This viewpoint represents 5 settlements located approximately 2.5km north-west of the nearest Proposed turbine (T01). It is noted that the majority of residential dwellings along this road and in this location will not have open views of the Proposed turbines, but the house directly behind this view will have the only open view from this Photowire viewpoint.

Plate 14-42 Extract from PWVP-J within Appendix 14-5

Residential Receptors to the North-East of the site

Viewpoint 1: VP 1 is located in the townland of Coolnakisha and was discussed previously in relation to effects on Scenic Route 8 where residual visual effects of 'Moderate' was determined. The residential receptors in this area, such as those visible in the foreground of the photomontage from Viewpoint 1 have their primary scenic amenity focused across the Barrow Valley to the east and south-east, not in the direction of the Proposed turbines.

PWVP-D shows a view from a different perspective further North-East of VP01. From this location, the Proposed turbines are not visible due to screening from localised topography. No significant effects are likely to arise for residents in this location.

Plate 14-43 Extract from PWVP-D within Appendix 14-5

Residential Receptors to the East of the site

The eastern boundary of the Proposed Wind Farm site comprises a prominent ridgeline. Onsite investigations determined that all residents to the east of the site are mostly located to the east of this ridgeline on the downslope of the Barrow Valley. The Proposed turbines are inset to the west of the ridgeline within the upland plateau of the Proposed Wind Farm site. These landform characteristics and strategic turbine siting restrict visibility of the Proposed turbines from receptors in this area as the prominent ridgeline screens views to the west towards the Proposed Project. This is shown by the ZTV mapping (Figure 14-01) to the east of the site. Some of the residential receptors in closest proximity to the east of the site are likely to have some visibility of the most elevated turbine components above the ridgeline and forestry. However, their primary scenic amenity is focused across the Barrow Valley to the east and south-east, not in the direction of the Proposed turbines. Visual effects are deemed to be 'Slight' for residences in this area where occasional slight visibility is likely to occur.

Residential Receptors to the South and West of the site

Visibility appraisals and the results of the RSA determined that there will be no visibility of the Proposed Project from most of the residential receptors forming a cluster directly south of the site around the 'Ridge Crossroads'. Residential receptors to the south-east of the site will also have very limited visibility as shown by photowire PWVP-A (presented previously in Plate 14-26). Open visibility

of the Proposed Project occurs from the residential receptors located off the L3037 Local Road as its route extends to the north-west of the Ridge townland towards The Ridge or Seskinrea. Viewpoint 15 is the first instance where open views of the Proposed turbines will occur from residential receptors in this area, and Viewpoint 14 is also representative of residential receptors on this local road to the west.

Viewpoint 15 - Ridge, and Viewpoint 14 – Ridge/Seskinrea: A full comprehensive assessment of these viewpoints (incorporating potential cumulative effects) are included in Appendix 14-3. Both viewpoints are given a 'High' sensitivity on account of the residential receptors with views towards the Proposed turbines in close proximity, as well as their location on Co. Carlow Scenic Route 7. All Proposed turbines are visible from these viewpoints and would be visible from residential receptors located upon elevated vantage points to the west of the local road. The magnitude of change was deemed to be 'Moderate' as the Proposed turbines would result in a large-scale change in the baseline view but only take up a small horizontal extent of the view. In both instances, the Proposed turbines read coherently within the landscape, and are of acceptable scale with the intervening valley providing a sense of set back and separation from the residential receptors. Residual visual effects (accounting for cumulative visual effects) are deemed to be 'Moderate'. Site investigations and results from the RSA indicate that other sections along this road have some sort of roadside screening and that this likely screens views from residential receptors which are generally located to the western side of the road, the other side than the Proposed Project.

PWVP-B – Ridge/Seskinrea: This Photowire viewpoint (See Plate 14-44) is located approximately 1.4km west of the nearest Proposed turbine (T04) and is representative of residential receptors in the townland of Ridge/Seskinrea. The receptors represented by this photowire are at a lower base elevation than the Proposed Project and screening from localised landform, dense vegetation and buildings in the intervening landscape greatly reduce visibility and visual effects. Sensitivity is deemed to be 'High' on account of the residential receptor but there would be a 'Negligible' magnitude of change on account of the Proposed turbines. No significant visual effects are deemed to arise.

Plate 14-44 Extract from PWVP-B within Appendix 14-5

Temporary 'Slight' visual effects will occur at The Butts Crossroad during the construction phase, where the Proposed Grid Connection Route will be installed within the local road in the foreground of the photowire image pictured above.

Overview of Effects on Residential Visual Amenity

'Moderate' residual visual effects are likely to occur for approximately 13 No. residential receptors on the L3101 to the west of the site between Viewpoint 15 and The Butts Cross Road. With many of the residents on this road north of Viewpoint 14 having a setback distance greater than the 4 x tip height set back distance prescribe by the Draft DoHPLG 2019 Guidelines. 'Moderate' residual visual effects will occur for approximately 6 No. residential receptors to the north of the site represented by both Viewpoint 2 and Viewpoint 1. Through use of appropriate set back distances (as per the DoEHLG 2006

Guidelines and the Draft DoHPLG 2019 Guidelines) and the characteristics of local screening factors, no significant visual effects are deemed to arise from residential visual amenity in the landscape surrounding site and 'Moderate' residual visual effects will only occur for a relatively small number of properties in the area.

14.7.3.2.9 *Visual Effects of Ancillary Project Elements (non-turbine components)*

Proposed Wind Farm

For the purposes of this LVIA, a number of individual elements of the Proposed Project, ancillary to the Proposed turbines, have been grouped together for the assessment of visual effects. These operational project elements that are part of the Proposed Project, include the access roads, turbine hardstand areas, met mast components, and onsite 38kV substation and BESS. The Proposed Grid Connection Route may give rise to potentially similar visual effects. Details of these components of the Proposed Project and the required works to construct them are contained in Chapter 4 of this EIAR.

Due to the screening from hedgerows, treelines and undulating landform surrounding the site, most visibility of the lower (shorter/surface level), less visually prominent Proposed Project components will occur in their immediate surroundings; hence, visual effects will be localised and are predominantly confined to within the Proposed Wind Farm site itself.

Site Access Roads and Hardstand Areas. The proposed access roads and hardstand areas are flat features. They will be most visible within their immediate surroundings; therefore, any landscape and visual effects will be very localised. Every use will be made of the existing tracks within the site. Some tracks will be upgraded appropriately, construction of new roads will also be required to connect all components of the Proposed Project. Two illustrations shown previously in Figure 14-6 and Figure 14-7 shows that the access road from the site entrance and hardstand of Proposed turbine T06 will be visible from the local road to the west of the site where receptors (Residents; road users; Scenic Route 7) are looking down across the Proposed Wind Farm site from a slightly elevated vantage point. In time, following establishment and maturity of planting proposed as part of the BMEP (Appendix 6-4), the site access road will be mostly screened from view, mitigating visual effects. Overall, visual effects are likely to be highly localised, long-term and will be 'Slight'.

Meteorological (Met) Mast. One met mast is proposed as a part of the Proposed Project. This will be a slender structure, 36.5 metres in height, and will not be an imposing structure in terms of visual impact. The landscape and visual effects of the proposed met mast will be localised, considering that it will be significantly less visible than any turbine given its shorter and slender lattice form and will fade from view at a distance of anything more than a few kilometres (approx. 2km) where it will have little to no impact. As shown in the EIAR Volume 2: Photomontage Booklet, the met mast is only likely to be clearly visible in VP14. The wireline within the photomontage booklet shows the met mast in several other photomontage viewpoints, however, due to screening from vegetation, topography and infrastructure views are limited. Within the site and its immediate landscape setting, the visual effects arising from the met mast is considered to be 'Slight'.

Proposed Onsite 38kV Substation and Battery Energy Storage System (BESS). The proposed onsite 38kV substation and BESS compound is one of the larger and potentially more visually prominent elements of the ancillary infrastructure. The footprint of the proposed onsite 38kV substation and BESS compound measures approximately 3,450 square metres (m^2) in area. As shown in previously in Plate 14-19 (Landscape Character of the Proposed Project site), the proposed onsite 38kV substation is located in an agricultural field in the middle of the Proposed Wind Farm site. Plate 14-19 and Plate 14-20 show that the proposed onsite 38kV substation and BESS compound enclosed by mature forestry to the north, west and south eliminating visibility from receptors in these directions. Visibility appraisal determined that there will be no visibility from the residential receptors to the east or the local road network around Tullowcreen Crossroads.

The proposed onsite 38kV substation and BESS compound is located immediately adjacent to the L30372 local road which represents visual receptors of 'Low' sensitivity. There will be a 'Moderate' localised magnitude of change to receptors on the local road passing the substation and BESS compound. On balance residual visual effects are deemed to be long-term and 'Slight'.

Proposed Grid Connection Route

As the Proposed Grid Connection Route is located underground, landscape and visual effects during the operational phase will be Imperceptible once vegetation has re-established along the roadway following earthworks during the construction phase. The landscape and visual effects occurring during the construction phase of the Proposed Grid Connection Route are reported previously in Section 14.7.2.

14.7.3.3 Cumulative Effects: Other Wind Farms

14.7.3.3.1 *Cumulative Landscape Effects*

Cumulative impacts on the character of the wider landscape are most likely to occur as a result of the Proposed turbines, where they might be visible in conjunction with other wind farm developments. A description of the cumulative visual interactions between the Proposed turbines and other cumulative projects in the LVIA Study Area is included in the photomontage assessment tables contained in Appendix 14-3. A comprehensive assessment of likely visual effects arising from the intervisibility of the Proposed turbines and other wind farms is included below in Section 14.7.3.3.2 – *Cumulative Visual Effects.*

The Proposed Project contributes to cumulative landscape effects on this upland area of the Killeshin Hills and Castlecomer Plateau. The Killeshin Hills and east of the Castlecomer plateau is a landscape highly modified by existing land uses and is a sparsely settled area of upland making it a highly suitable area for the development of wind energy. As reported previously in Section 14.6 – *Cumulative Context,* there is one existing wind energy development in this upland area - the Gortahile Wind Farm which is located approximately 3.1km to the north of T1. The permitted Bilboa Wind Farm is located immediately north approximately 1.2km from T2, and the permitted White Hill Wind Farm is located approximately 2.1km to the south-west of T6 The Bilboa wind farm planning application (PL01.318271) was submitted in 2011 and permitted in 2012 although no construction is currently underway. The proposed Freneystown Wind Farm is located approximately 8.2km to the south-west of T6 and could potentially contribute to cumulative landscape effects in the wider upland area in a future receiving environment. The proposed Freneystown Wind Farm is approximately 8.2km to the southwest of the Proposed Project and therefore no locations were identified where in-combination cumulative visual effects would occur.

As shown by the cumulative ZTV (Figure 14-15 previously), there will be a few small areas to the east of the LVIA Study Area where the Proposed Project will introduce turbines to landscape views as novel elements. The photomontage visualisations show that when viewed from the central plains of the Barrow Valley to the east, the Proposed turbines are generally seen amongst the other existing and permitted wind farm developments. The Proposed turbines are seen to be centred between the two permitted wind farms (Bilboa and White Hills) and left of the existing Gortahile Wind Farm. Therefore, there are some slight cumulative effects on landscape character of this area where the Proposed Project contributes to the number of turbines visible upon the ridgeline which forms the western side of the Barrow Valley.

In general, the Proposed Project is not adding new novel elements to this area of the landscape, the Proposed turbines are generally viewed in combination with the other existing, permitted, and proposed projects. The assessments in this LVIA have determined that this upland area has the capacity to absorb additional wind energy development without significant effects on the character of the landscape.

14.7.3.3.2 Cumulative Visual Effects

There are many potential scenarios and interactions where cumulative visual effects may occur. These scenarios can include interactions between the Proposed Project, other energy developments (wind farms or grid infrastructure), as well as other man-made landscape features (quarries, transport networks, overhead telecommunication lines). Guidance for assessment of cumulative effects of onshore wind farms (SNH,2012) & (NatureScot, 2021) clearly states the following:

"At every stage in the process the focus should be on the key cumulative effects which are likely to influence decision making, rather than an assessment of every potential cumulative effect".

"The level of information generated can distract attention from the most significant cumulative effects which are likely to influence the consenting decision. Assessments should therefore focus on the most significant cumulative effects and conclude with a clear assessment of those which are likely to influence decision making".

The descriptions of cumulative visual effects reported in Appendix 14-3 (*Photomontage Visual Impact Assessment Tables*) are based on the photomontages in the Photomontage Booklet and are guided by the identification labels on the wireline views accompanying each photomontage view. The cumulative visual effects also account for effects which might not occur in the field of view presented in the photomontage through written discussion in Appendix 14-3. The potential for cumulative visual effects is accounted for in the 'Magnitude of Change' row in each impact assessment table and is considered in the 'Residual Visual Effect' determination given for each viewpoint.

When determining how cumulative effects contribute to the magnitude of change, the focus is always on the extent to which the Proposed Project will contribute towards the cumulative effects on the particular receptors under assessment at each viewpoint. The assessment and discussion of cumulative effects also consider the probability of such cumulative effects arising in mind of the category of the other developments with which the Proposed Project interacts: 'Existing' – Certain; 'Permitted' – High Probability; or 'Proposed' – an Uncertain scenario.

The greatest cumulative visual effects occur from receptors located within the Killeshin Hills where the Proposed turbines are viewed in close proximity and in combination with the existing Gortahile Wind Farm, the permitted White Hill Wind Farm, and the permitted Bilboa Wind Farm. Whilst other wind energy developments are located in the LVIA Study Area, interactions with these developments were identified as having the greatest potential for significant cumulative visual effects and were therefore the focus of the assessments in this LVIA.

Cumulative Visual Effects in Close Proximity to the Proposed Project

Simultaneous In Combination Cumulative Visual Effects: Simultaneous in combination views occur from receptors where the Proposed turbines are seen in the same field of view as the other developments, this occurs in almost all photomontages, but the effects are greatest in closer proximity, within the Killeshin uplands. The permitted Bilboa Wind Farm is located in closest proximity to the Proposed Project and there are instances such as views from the south or north (VP14, VP15, VP8) where the two developments could be visible as one connected development. There are slightly greater set back distances from the permitted White Hill Wind Farm (>2km to the nearest Proposed turbine) and the existing Gortahile Wind Farm (>3km to the nearest Proposed turbine). The Proposed turbines are therefore generally seen to be visually separate from these developments in most of the photomontages due to either different positioning in the landscape or an obvious difference in scale.

In combination visual effects occur from Viewpoint 9 in Co. Kilkenny where multiple wind energy developments (existing Gortahile Wind Farm, permitted White Hill Wind Farm, and permitted Bilboa Wind Farm), including the Proposed turbines are visible within one relatively narrow field of view. Similar effects also occur from Viewpoint 3 which is also located in Co. Kilkenny where the Proposed

turbines are visible in combination with the permitted Bilboa Wind Farm and existing Gortahile Wind Farm, and then the White Hill Wind Farm in another direction to the south east.

Successional In Combination Cumulative Visual Effects: The assessment of visual effects in Appendix 14-3 also accounts for potential Successional in combination effects where a receptor needs to turn their head to experience visual effects in another direction or field of view. The greatest potential for in combination successional effects will occur in the few instances where there are receptors located between the differing developments. This will occur for receptors represented by Viewpoint 15 where the Proposed Project, permitted Bilboa Wind Farm and existing Gortahile Wind Farm are visible in one direction to the north-east and then the permitted White Hill Wind Farm will be visible to the south-west. A photomontage of the permitted White Hill Wind Farm was produced from the same exact viewpoint as VP15 and was included as part of the LVIA included for the EIAR of the White Hill Wind Farm project. That photomontage is seen in Viewpoint 11 (Figure 62) of that EIAR included as part of the planning application (Pl Ref: PA01.315365). White Hill Wind Farm Viewpoint 11 shows that only one permitted turbine (WH T02) will be clearly visible, its hub is seen, but its lower components are partially obscured by the localised landform. Only blades of the other permitted White Hill Wind Farm turbines will be visible. Whilst cumulative effects will be limited in this regard, some minor combined in succession visibility and effects will occur in this instance.

There is likely to be some combined in succession visual effects from the few residential receptors located between the Proposed Project and the permitted Bilboa Wind Farm if they are to be built in a future baseline scenario. These receptors would be represented by Viewpoint 2. In this scenario there will be visual separation between these developments as well as the landform buffer of Gallows Hill located between the two developments. Visibility appraisals determined that whilst there may be occasional successional in combination effects they will not be significant and there will be no cumulative effects on the more open and scenic views along the river valley to the north and west from residential receptors in this area. Similar cumulative visual effects will occur from residents located adjacent to the existing Gortahile Wind Farm represented by Viewpoint 8. The existing Gortahile Wind Farm turbines are visible in one direction (North), then the Proposed turbines, permitted Bilboa Wind Farm turbines and permitted White Hill Wind Farm turbines are visible in combination to the other direction (North-East).

The undulating landform characteristics and vegetated nature of the landscape comprising the uplands of the Killeshin Hills and the Castlecomer Plateau (Co. Kilkenny) provide adequate screening that in general limit the potential for combined in succession cumulative visual effects on receptors. This LVIA only identified few very occasional instances where such cumulative visual effects are likely to occur and they are not deemed to be significant.

Cumulative Visual Effects when Viewed form the East

The Proposed Project will contribute to cumulative visual effects when viewed from receptors in the central plains and Barrow Valley to the east where most visual exposure of the development occurs beyond 5km. The Proposed Project contributes to the number of turbines visible above the ridgeline from this easterly perspective. 6 No Photomontages (VP 06; 05; 04; 12; 7; and 11) are included in the photomontage booklet showing the Proposed turbines in combination with the other wind energy developments sited in the upland area. The Proposed turbines are viewed in combination with the permitted White Hill Wind Farm turbines which are always seen to the left of the view, then the permitted Bilboa Wind Farm turbines and existing Gortahile Wind Farm turbines which are always seen to the right of the view from these easterly perspectives. The existing Gortahile Wind Farm turbines are only visible from the most south-easterly perspectives. The Proposed Project is always seen to be located in the centre, flanked on either side by the other developments, which is predominantly the permitted White Hill Wind Farm to the left (South) and the permitted Bilboa Wind Farm to the right (North). Due to its positioning between these other developments the Proposed Project does not extend the horizontal extent of turbines within the view. In most instances there is clear spatial and visual separation between the three wind farms (the Proposed Project, the permitted White Hill Wind

Farm and the permitted Bilboa Wind Farm). The three developments are generally viewed together as an intermittent linear array off turbines seen across the uplands.

As reported previously in Section 14.7.3.2.3, the even profile, ordered spacing and staggered linear layout of the Proposed Project is aligned with the prominent linear ridgeline forming the western side of the Barrow Valley when seen from receptors located in the lowland plains to the east. Consequently, the Proposed Project to be seen as a linear array of turbines which read coherently in the landscape from easterly perspectives. These beneficial aesthetic characteristics of the Proposed Project and its location centred between the other developments provides a sense of balance when cumulative in combination effects occur from receptors to the east and the Proposed turbines effectively assimilate with the other wind energy developments.

Cumulative Visual Effects Summary & The Wind Energy Development Guidelines

The DoEHLG 2006 Guidelines for the siting and design of wind energy developments in relation cumulative effects within the Transitional Marginal Landscape Type is as follows:

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

The guidance suggests that views of the Proposed turbines along with the existing Gortahile Wind Farm, the permitted Bilboa Wind Farm, and the permitted White Hill Wind Farm will, in general, be acceptable aesthetically speaking within this landscape type, which is undulating and large in scale, allowing it to absorb multiple wind energy developments. The topographically undulating nature of the more upland area of the Killeshin Hills and Castecomer Plateau provides visual screening which greatly restricts the visibility of the Proposed Project and the other developments from vast areas of the LVIA Study Area to the north, west and south. When viewed from the lowlands to the east, there is visual separation between the Proposed Project and other developments, and, although they are seen in the same area of the landscape, each development is generally seen to be separate in relative isolation from one another.

As demonstrated by the mapping and photomontage visualisations there is a number of existing and permitted, wind energy developments in this area of County Carlow, particularly in the Killeshin Hills. The cumulative photomontages in the Volume 2 Booklet illustrate the nature and extent of potential cumulative visual effects which are likely to occur on specific visual receptors and the differing geographic perspectives surrounding the site. This LVIA has determined that the undulating and well-defined landform features and highly dense levels of vegetation in this area have the potential to reduce the extent of cumulative visual effects experienced by visual receptors in this area and that it has the capacity to absorb multiple wind energy developments in combination with the Proposed Project.

14.7.3.4 Turbine Range: Assessment of Landscape and Visual Effects

Section 14.1.3.2 describes the range of turbine dimensions assessed in this chapter. 'Scenario 3 – Median', with a tip height of 180m, a rotor diameter of 150m and a hub height of 105m is considered throughout the EIAR assessment and is a representative illustration of the Proposed Project. This combination of rotor diameter and hub height (Maximum Hub Height and Median Rotor Diameter for the Maximum 180m Tip Height) is the turbine presented for every photomontage viewpoint in the photomontage booklet (and all photowires in Appendix 14-5).

Alternative turbine model configurations have been presented for 2 selected viewpoints included at the end of the photomontage booklet; Scenario 1 – Maximum, and Scenario 2 - Minimum (See

specifications in Section 14.1.3.2). The viewpoints selected are representative of short-range views (VP014 <1 km from the Proposed turbines and VP15 <1 km from the Proposed turbines) where the difference in range is likely to be most discernible. The photomontage assessment tables in Appendix 14-3 for these viewpoints contained in Volume 2 Photomontage Booklet include a row describing and addressing the alternative turbine configurations compared with the Median scenario which was used for all photomontages.

The photomontage visuals show that there is barely a discernible difference between the different ranges. The difference is only just evident with the aid of a comparative wireline (the alternative turbine envelope overlain the Median Scenario used for all Viewpoints). Irrespective of which range is used, the determination of likely significant residual visual effects will not be altered. As demonstrated by the turbine ranges presented in the Photomontage Booklet, irrespective of which combination of hub height and blade length within the proposed range outlined in this application is installed on site, the significance of residual landscape and visual effects will not be altered.

14.7.4 Decommissioning Phase Effects

The landscape and visual effects during decommissioning are anticipated to be of a similar nature as those occurring during the construction phase.

The important element of decommissioning from a landscape and visual impacts perspective is the dismantling and removal of the Proposed turbines. This will occur for a limited period of time and will predominately involve cranes adjacent to the Proposed turbines during the dismantling process. Upon decommissioning of the Proposed Project, the Proposed turbines will be disassembled in reverse order to how they were erected. The Proposed turbines will be disassembled with a similar model of crane that was used for their erection and will likely be removed from the Proposed Wind Farm site using the same transport methodology adopted for delivery to the Proposed Wind Farm site initially.

Proposed turbine foundations would remain in place underground and would be covered with earth and reseeded as appropriate. This naturalisation process would revert the landscape of the Proposed Wind Farm site to a condition similar to the current landscape baseline.

Removal of the turbines and ancillary infrastructure from the Proposed Project site will result in a Short-term, Slight, Negative visual effect. A Decommissioning Plan has been prepared (Appendix 4-8) the detail of which will be agreed with the local authority prior to any decommissioning. The Decommissioning Plan will be updated prior to the end of the operational period in line with decommissioning methodologies that may exist at the time and will be agreed with the competent authority at that time.

14.8 Conclusion

Chapter 14 of this EIAR includes the Landscape and Visual Impact Assessment (LVIA) of the Proposed Project. The LVIA comprises a comprehensive assessment of sensitive landscape and visual receptors located within a 20km LVIA Study Area. The LVIA was conducted in accordance with national and international LVIA guidance through desktop analysis, on-site appraisals, topographic and ZTV modelling and use of photomontage visualisations. This chapter presents the landscape and visual baseline conditions of the Proposed Project site, outlines the local policy context with respect to landscape and visual designations, models the ZTV to identify the landscape and visual receptors which have theoretical visibility. All receptors included for further assessment following ZTV mapping and on-site visibility appraisals are assessed, following a structured methodology grounded in best practice guidance for LVIA and impact assessment of wind energy developments. The impact assessments are informed by photomontage visualisations and information gathered during site visits. This LVIA assesses cumulative landscape and visual effects in combination with other existing, permitted and proposed wind farm developments in the LVIA Study Area.

This Chapter is accompanied by one volume and five appendices as follows:

- *EIAR Volume 2: Photomontage Booklet*, Photomontage visualisations of the Proposed turbines from 15 No. representative viewpoints, including modelling of other existing, permitted and proposed wind energy developments;
- *Appendix 14-1: LVIA Methodology*, outlining the guidance and detailed methodology used for the assessments conducted in this chapter;
- *Appendix 14-2: LCA Assessment Tables*, assessing landscape and cumulative effects of 3 No. LCAs included in for assessment;
- *Appendix 14-3: Photomontage Assessment Tables*, assessing visual and cumulative visual effects of the 15 No. representative viewpoints presented in the *Photomontage Booklet*;
- *Appendix 14-4: LVIA Baseline Map*, An A0 map showing all baseline landscape features, viewpoints, and visual receptors;
- *Appendix 14-5: Photowire Visualisation Booklet*, presenting photowires (early-stage/draft photomontages) from 20 No. viewpoint locations throughout the LVIA Study Area that were not included in the Volume 2 booklet – does not include modelling of other cumulative developments.

This Chapter assesses the likely significant landscape and visual impacts arising as a result of the Proposed Project. Although all elements of the Proposed Project are assessed, the Chapter focusses upon the Proposed turbines, as they are deemed to be the essential aspects of the proposal under assessment from a landscape and visual perspective. The Chapter describes the baseline landscape and assesses the direct effects on the landscape of the Proposed Wind Farm site, as well as effects on landscape character and the impact on designated LCAs. Visibility of the Proposed turbines was analysed from receptors within a study area extending 20km from the Proposed turbines; and visual effects from specific visual receptors were determined from information gathered during multiple site visits as well as other tools such as ZTV mapping and photomontages.

The Proposed Wind Farm is located in an upland plateau at the eastern periphery of the Killeshin Hills enclosed by undulating landforms to the north, west and south. Consequently, these landforms restrict visual exposure in these directions (north, west and south) as shown by the ZTV mapping which shows very limited theoretical visibility in a vast proportion of the LVIA Study Area. Most visibility occurs either in close proximity to the site (within 5km) or in the lowlands of the Barrow Valley to the east, also referred to as the Central Plains.

The site is located in a working landscape comprising of commercial forestry and agricultural fields of grazing pastures and mature hedgerows. The immediate setting of the site is a sparsely populated, working landscape, set back from large settlements and population centres. Site investigations determined that the landscape is of 'Low' landscape value and ultimately 'Low' sensitivity, with landscape attributes and characteristics making it an eminently suitable site for wind energy development from an LVIA perspective. In the context of the DoEHLG 2006 Guidelines, the site and landscape setting best represents the Transitional Marginal Landscape Character Type. The Proposed Project generally adheres to the siting and design guidance set out in the DoEHLG 2006 Guidelines for this landscape type.

Local planning policy designates the uplands where this site is located as being a landscape of high sensitivity and does not promote it as an area for wind energy development. However, analysis of policy and of the landscape itself during site investigations for this LVIA have determined that the transitional marginal upland landscape of the Killeshin Hills is capable of effectively absorbing the Proposed Project. There is also a strong planning precedent for the principle of wind energy development in this area considering the existing Gortahile Wind Farm, permitted Bilboa Wind Farm and permitted White Hill Wind Farm located in proximity to the Proposed Wind Farm site.

The landscape sensitivity of the site is deemed to be 'Low'. The introduction of vertical man-made structures and ancillary infrastructure will substantially alter the landscape comprising the proposed infrastructure footprint at the site. The magnitude of change was deemed to be 'Substantial' as the

addition of uncharacteristic new features (turbines) will cause a change in landscape character. The Proposed Wind Farm site has been designed to where possible avoid effects on landscape receptors within the site. The Proposed Project comprises a Green Infrastructure Plan and Biodiversity Management and Enhancement Plan (Appendix 4-3 and Appendix 6-4 respectively), these plans include planting to offset loss of vegetation required to facilitate construction of the Proposed Project. The Proposed Project amounts to direct long-term 'Moderate' landscape effects upon the physical fabric and character of the landscape of the Proposed Wind Farm site.

3 No. designated LCAs were identified and included for further assessment. 2 No. from Co. Carlow and 1 No. from County Kilkenny. The effects of the Proposed Project on the character and physical fabric of these LCAs were comprehensively assessed in Appendix 14-2, including potential for cumulative effects. Landscape Effects on the Killshin Hills LCA are deemed to be 'Moderate' where the Proposed Project will materially alter the LCA. Effects on other LCAs were deemed to be 'Slight' and 'Not Significant'. Effects on landscape character from the other LCAs only relate to impacts on perceptual and aesthetic qualities.

Baseline investigations identified a total of 122 No. visual receptors in the LVIA Study Area. This included 39 No. designated Scenic Routes and Views, 1 No. OSi Viewing Areas, 27 No. settlements, 22 No. recreational, tourism and heritage destinations and recreational routes (i.e. walking trails), and 33 No. regional- and national-level transport routes. A preliminary analysis using ZTV mapping and on site visibility appraisals excluded most receptors from assessment due to either no or very limited visibility. 34 No. visual receptors were included for further assessment and are represented by the 15 No. selected photomontage viewpoints and 20 No. photowire viewpoints.

On-site visibility appraisals, ZTV mapping, a RSA and assessment of over 35 no. viewpoint locations (15 No. in the EIAR Volume 2: Photomontage Booklet and 20 No. in Appendix 14-5) determined that visibility of the Proposed turbines will be very limited from locations beyond 5 km to the north, south and west from the Proposed turbines, and distant open visibility occurs from the lowlands to the east. Therefore, the focus of assessment of visual effects on visual receptors was concentrated to sensitive receptors within 5km of the site and receptors to the east.

Photomontages were used to illustrate the assessment of the visual effects arising as a result of the Proposed Project from 15 No. viewpoint locations. The likely significant visual effects from each viewpoint are comprehensively addressed in Appendix 14-3, including assessment of cumulative effects. The assessment concluded that no 'Profound', 'Very Significant' or 'Significant' effects occurred at any of the 15 viewpoints. Residual effects of 'Moderate' occurred at 7 of the 15 viewpoints. A residual effect of 'slight' was deemed to arise at 4 of the 15 No viewpoints. All other viewpoints were assessed as resulting in 'Not Significant' (4) or 'Imperceptible' (0) residual visual effects.

The greatest potential for significant visual effects are likely to occur from receptors in close proximity to the site. 15 No. viewpoints (7 photomontages, 8 photowires) were captured within 5km of the Proposed turbines to address effects on residential receptors surrounding the site, as well as several designated scenic routes and protected views in proximity. 8 No. photowires were produced within 5km and show locations where very limited visibility of the Proposed turbines occur and there will be no impact on the receptors they represent. Designated Co. Carlow scenic routes 6, 7, 8, 9 are all located along the local road network surrounding the site, as well as Co. Carlow protected views 31 and 32. The impact assessment of these scenic designations were guided by the assessment of representative photomontage viewpoints (VP1, VP14, VP15) and several photowire viewpoints. The photomontages and the impact assessments (see Discussion in Section 14.7.3.2.2) determined that the Proposed Project will not significantly impact on the key scenic or landscape sensitivities of these designated scenic amenities. Residual visual effects on these receptors, accounting for cumulative effects, were deemed to be 'Moderate'.

Cumulative effects on landscape character are included in the impact assessment outlined in Appendix 14-2. Cumulative visual effects are also discussed and summarised in Appendix 14-3 and above in this Chapter. As demonstrated by the mapping and photomontage visualisations there is an accumulation of

existing and permitted wind energy developments in the Killeshin Hills. The cumulative photomontages in the Volume 2 Booklet illustrate the nature and extent of potential cumulative visual effects which are likely to occur on specific visual receptors and the differing geographic perspectives surrounding the site. This LVIA has determined that the undulating and well-defined landform features and highly dense levels of vegetation in this area have the potential to reduce the extent of cumulative visual effects experienced by visual receptors in this area and that it has the capacity to absorb multiple wind energy developments in combination with the Proposed Project.

In conclusion, the Proposed Project is an appropriately designed development and suitably scaled, sited in a suitable landscape for wind energy development with no potential significant effects on key landscape and visual sensitivities in the LVIA Study Area.