Planning and Environmental Consultants

Chapter 13 Landscape and Visual

Taurbeg Wind Farm Extension of Operational Life

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13.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) addresses the potential landscape and visual impacts of the continued operation of the existing Taurbeg Wind Farm. It covers the assessment methodology, a description of the existing Taurbeg Wind Farm and the existing landscape based on relevant guidance. It includes a description of the landscape policy of County Cork with specific reference to wind energy and the 20km LVIA Study Area (as defined in Section 13.2.1 below) in which Taurbeg Wind Farm is located.

The landscape of the area is described in terms of its existing character, which includes a description of landscape value and the landscape's sensitivity to change. The Landscape and Visual Impact Assessment (LVIA) of the existing Taurbeg Wind Farm uses visibility mapping and photos from representative viewpoints. The potential impacts in both landscape and visual terms are then assessed, including cumulative impacts.

It is important to re-iterate that Taurbeg Wind Farm is an existing wind farm and has been operational for approximately 19 years to date, with the current planning permission set to expire in 2026. This EIAR is being prepared in support of a planning application to extend the operational lifespan of the wind farm beyond 2026, by a further 10 years.

The key components of the existing Taurbeg Wind Farm with potential to give rise to landscape and visual effects are the 11 No. wind turbines currently visible within the landscape. The assessments in this LVIA are predominantly informed by on-site appraisals which determined the reality of landscape conditions and existing turbine visibility of the wind farms, as it is experienced on the ground.

A full description of the Proposed Project is outlined in Chapter 4 of this EIAR.

13.1.1 Statement of Authority

MKO has developed extensive expertise and experience over the last 15 years in the LVIA of large-scale infrastructure developments for Environmental Impact Assessment Reports (EIAR). The MKO Landscape and Visual team have produced LVIA across a diverse range of project types, including: renewable energy and grid infrastructure; residential developments; transport infrastructure; extraction infrastructure; and a range of other projects requiring EIAR.

This LVIA was written by Jack Workman and reviewed by Michael Watson. Keelan Crawford provided technical support for the production of the LVIA including fieldwork and GIS with oversight from Jack and Michael.

Jack Workman MSc., TMLI. is the Landscape & Visual Project Director at MKO and is chartered as a Technician Member of the British Landscape Institute. Jack is an environmental scientist and an LVIA specialist with an academic background in the field of Environmental Science and Geography. Jack's primary role at MKO is scoping and writing LVIA for EIARs with over 5 years' experience managing all aspects of LVIA for a broad range of commercial infrastructure developments. Jack holds a BSc. in Psychology, and an MSc. in Coastal and Marine Environments (Physical Processes, Policy & Practice). Jack is an active participant in the National Landscape Forum, presenting in 2023 and 2024 on the topic of LVIA, he also regularly delivers guest lectures for students on the topic of LVIA at top third level institutions in Ireland including University of Galway, Trinity College Dublin, University College Dublin and University College Cork. Jack holds a membership with the Chartered Institute of Water and Environmental Management and is also a member of the Landscape Research Group.

Michael Watson is the Environmental Director at MKO, overseeing a team of highly skilled environmental professionals working on EIAR for a wide range and scale of projects, in particular large-scale infrastructure, housing, commercial and renewable energy development. His key strengths include project strategy, expert knowledge of the EIA Directive, and in-depth knowledge of the various disciplines contributing to EIAR and the Habitats Directive, including LVIA. Michael has been the Head of the Environment Team at MKO for over nine years. He is a key member of the MKO senior management team responsible for developing the business, mentoring team members, fostering a positive culture and promoting continuous employee professional development. Michael holds an MA in Environmental Management from NUI Maynooth, is a Member of IEMA, a Chartered Environmentalist (CEnv) and a Professional Geologist (PGeo).

Keelan Crawford is a LVIA Specialist with MKO. Keelan holds a BA (Hons) in Geography & Economics and Masters in Applied Coastal and Marine Management. Keelan's key strengths and areas of expertise are in GIS mapping and LVIA. His primary role at MKO is conducting LVIAs and writing the Landscape and Visual Chapter of EIA reports.

13.1.1.1 Essential Aspects of the Existing Taurbeg Wind Farm from an LVIA Perspective

The Guidelines for Landscape and Visual Impact Assessment 3rd Edition (hereafter, GLVIA3) (Landscape Institute & Institute of Environmental Management and Assessment [LI & IEMA], 2013) states that:

> *"...it is important to make sure that the project description provides all the information needed to identify its effects 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 effects on the landscape and visual amenity".*

The tall, vertical nature of the turbines make them the most prominent elements of any proposed wind energy development from a landscape and visual perspective; hence the turbines have the most potential to give rise to significant landscape and visual effects. Therefore, the 11 No. turbines are deemed to be the 'essential aspect' of the existing Taurbeg Wind Farm giving rise to potential effects on the landscape and visual amenity and are the primary focus of the LVIA conducted in this Chapter.

13.1.1.2 Landscape and Visual Assessment of an Existing Wind Farm

The existing Taurbeg Wind Farm is a fully constructed existing wind farm that is currently operational and currently visible in the existing landscape. The impact assessments in this Chapter are predominantly informed by the current landscape and visual effects of the existing Taurbeg Wind Farm as it is experienced on the ground. In this regard, the LVIA is primarily reliant on visibility appraisals conducted during site visits and photographic imagery captured from within the surrounding landscape.

As is evident by all photos and visualisations in this Chapter, the Proposed Lifetime Extension amounts to little or no change to the existing views of the 11 No. turbines. As detailed in the methodology (see Section 13.2) the term 'Magnitude of Change' is a key factor used to determine impacts. In the context of this assessment, where the turbines already exist in the landscape, the magnitude of the **continued** impact of the turbines is considered, instead. To facilitate the impact assessments and effectively determine the continued landscape and visual impacts of the existing Taurbeg Wind Farm in the landscape, the magnitude of change was determined by considering the change that would occur against a 'do-nothing scenario' in which the turbines would be removed and therefore no longer be visible in the landscape.

For a proposal of new development in the landscape, the traditional LVIA utilises tools of a predominantly theoretical nature, including Zone of Theoretical Visibility (ZTV) mapping and photomontage visualisations. The LVIA in this Chapter conducted for the Proposed Lifetime

Extension, utilised these same traditional tools, as they still have relevance to the assessment process by providing context and illustrating the points being explained by text. Although the existing turbines are already in place, at a minimum, the ZTV mapping (explained in Section 13.2.3), identifies areas of the landscape for which the existing turbines are not visible at all, and in addition, identifies areas where potential visibility may theoretically occur. This allows relevant stakeholders and interested parties (e.g. the LVIA professional conducting this Chapter, the planning authority) to focus on and visit the relevant areas where potential visibility may theoretically occur. ZTV mapping was therefore used to inform visibility appraisals from key sensitive receptors and identify key viewpoint locations to use in the assessment of visual effects.

For this LVIA, verified photomontages are **not required**, as the turbines already exist and therefore do not need to be modelled within landscape views. Instead, the impact assessments in this Chapter are predominantly informed by on-site appraisals and photographic imagery captured on the ground. Several representative viewpoints were selected to assess impacts from prominent receptors where open visibility is evident, and which have potential for cumulative landscape and visual effects to occur. In the case of the existing Taurbeg Wind Farm, persons visiting the Site or the surrounding landscape can see the turbines from all locations with visibility around the Site. Therefore, the assessment is not reliant on the selected viewpoints to the same extent that it would be in a traditional LVIA for a project with proposed (i.e. non-existent) turbines.

13.2 Methodology

This section broadly outlines the methodology and guidance used to undertake the LVIA of the Proposed Lifetime Extension. There are five main sections to this assessment:

- Landscape Baseline;
- Visual Baseline;
- Cumulative Baseline;
- Likely and Significant Landscape and Visual Effects, presenting the assessment of landscape and visual effects including the assessment of effects from representative viewpoints, and cumulative effects.

13.2.1 Guidelines

While the legislation and general guidance on Environmental Impact Assessment (EIA) is set out in Chapter 1 of this EIAR, only the guidance specifically pertaining to landscape and visual impact are outlined below.

In 2002, Ireland signed and ratified the European Landscape Convention (ELC), which introduced a pan-European concept centring on the quality of landscape protection, management, and planning. In 2015, the Department of Arts, Heritage and the Gaeltacht accordingly published a National Landscape Strategy for Ireland, aiming to ensure compliance with the ELC and containing six main objectives, which included developing a 'National Landscape Character Assessment' as well as 'Landscape Policies'.

In 2000, the Department of the Environment and Local Government (DoELG, formerly Department of Environment and Local Government) published the 'Landscape and Landscape Assessment: Consultation Draft of Guidelines for Planning Authorities' (hereafter, DoELG 2000 Guidance), which recommended that all Local Authorities adopt a standardised approach to landscape assessment for incorporation into Development Plans and consideration as part of the planning process. However, at the time of writing this report, the DoELG 2000 Guidance remains in draft form.

Therefore, the LVIA in this report is primarily based on the following guidance, published in the UK:

- GLVIA3 (LI & IEMA, 2013), and

- 'Notes and Clarifications on Aspects of Guidelines for Landscape and Visual Assessment Third Edition (GLVIA3): Landscape Institute Technical Guidance Note 2024-01' (hereafter, LI TGN 24-01) (LI, 2024).

In addition, ten general guidance documents also informed the framework preparation of this LVIA, as follows (arranged from most recent):

- 'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' (Environmental Protection Agency of Ireland [EPA], 2022);
- 'Guidance: Assessing the Cumulative Impact of Onshore Wind Energy Developments' (Nature Scot, 2021; includes methodology published in 2012);
- 'Draft Revised Wind Energy Development Guidelines' (Draft Revised WEDGs) (Department of Housing, Local Government and Heritage [DoHPLG], 2019);
- 'Visual Representation of Development Proposals' (Landscape Institute Technical Guidance Note 06/19, 2019) (hereafter, LI TGN 06/19);
- 'Siting and Designing Wind Farms in the Landscape, Version 3a' (Scottish Natural Heritage [SNH], 2017) (hereafter, SNH Guidance v.3a);
- 'Visual Representation of Wind Farms, Version 2.2' (SNH, 2017) (hereafter, SNH Guidance v.2.2);
- 'Spatial Planning for Onshore Wind Turbines: Natural Heritage Considerations' (SNH, 2015);
- 'Visual Representation of Wind Farms, Version 2' (SNH, 2014) (hereafter, SNH Guidance v.2)
- 'Wind Energy Development Guidelines for Planning Authorities' (WEDGs) (DoEHLG, 2006);
- 'Visual Assessment of Wind Farms: Best Practice' (SNH, 2002).

13.2.2 Scope and Definition of the Landscape and Visual Impact (LVIA) Study Area

For the purposes of this Chapter, where 'the Site' is referred to, this relates to the primary study area for the Proposed Lifetime Extension, as delineated by the EIAR Site Boundary in green. The Site is shown in mapping figures shown in Section 13.4 – *Landscape Baseline.*

The GLVIA3 (LI & IEMA, 2013) guidance refers to the identification of the area of landscape that is to be covered while assessing landscape and visual effects. The guidelines state:

> "*The study areas should include the Site itself and the full extent of the wider landscape around it which the Proposed Development may influence in a significant manner.*"

Landscape and visual baseline mapping and viewpoint selection are based on the two wider study areas referred to in this LVIA as the 'LVIA Study Area' with a 20km radius, and 'Landscape Character Assessment (LCA) Study Area' with a 15km radius; these are explained in subsections below. The geographical parameters of this LVIA were determined by desktop study, survey work undertaken and the professional judgement of the assessment team, as well as experience from other relevant projects and policy guidance or standards, including:

- GLVIA3 (LI & IEMA, 2013) and clarifications in LI TGN 24-01 (LI, 2024);
- *Appendix 3* of the WEDGs (DoEHLG, 2006);
- Draft Revised WEDGs (DoHPLG, 2019).

13.2.2.1 LVIA Study Area for Effects on Landscape and Visual Receptors: 20km Radius

An area of 20km surrounding the Site was selected to conduct assessment of landscape and visual receptors. The distance at which a ZTV is set from a proposed wind farm development usually defines the parameters of the LVIA Study Area, therefore, the radius of 20km was selected for landscape and visual effects, as is suggested by guidance (WEDGs, DoEHLG, 2006, p.94; Draft Revised WEDGs, DoHPLG, 2019, p.152):

> *'For blade tips in excess of 100m, a Zone of Theoretical Visibility radius of 20km would be adequate'.*

13.2.2.2 LCA Study Area for Effects on Designated Landscape Character Areas (LCAs): 15km Radius

Through extensive experience conducting LVIA for previous wind energy development projects, the MKO assessment team has determined that no significant effects on landscape character are likely to arise beyond a distance of 15km from the existing turbines. The turbines of a wind farm are unlikely to significantly impact the key characteristics of county-level designated LCAs beyond a distance of 15km, even for the most sensitive designated LCAs. Therefore, a study area of 15km, hereafter referred to as the '**LCA Study Area'**, is deemed appropriate for assessing the effects on landscape character in relation to designated LCAs.

13.2.2.3 Topics Scoped Out of Assessment

On the basis of desk studies and survey work undertaken, the professional judgement of the assessment team, experience from other relevant projects and policy guidance or standards, 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 ZTV mapping) and are therefore unlikely to be subject to 'Significant' effects;
- Effects on designated landscape receptors beyond a 20km radius (LVIA Study Area) from the existing 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 and designated LCAs beyond a 15km radius (LCA Study Area) from the existing turbines, where it is judged that potential 'Significant' effects on landscape character are unlikely to occur;
- Effects on visual receptors beyond a 20km radius (LVIA Study Area) from the existing turbines, where it is judged that potential 'Significant' effects are unlikely to occur;
- Cumulative landscape and visual effects beyond a 20km radius (LVIA Study Area) from the existing turbines, where it is judged that potential 'Significant' cumulative effects are unlikely to occur.

The tall, vertical nature of the existing turbines makes them the essential aspect of the Proposed Lifetime Extension from a landscape and visual perspective. The landscape and visual impact of other existing ancillary elements of the Proposed Lifetime Extension including roads and the substation are also addressed within this Chapter, however, the existing turbines are of primary focus in this LVIA.

13.2.3 Zone of Theoretical Visibility Mapping

Zone of Theoretical Visibility (ZTV) mapping is an important step in the LVIA process. For reasons outlined below, the ZTV is a useful mapping tool for LVIA, even when assessing the impact of turbines which are already built and visible within the landscape.

The MKO landscape and visual team have extensive experience ground-truthing areas showing no theoretical visibility of turbines on half-blade ZTV maps. In this regard, ZTV mapping is a useful tool to indicate where there is no visibility of turbines of a wind farm development (proposed or existing). The ZTV is therefore a useful tool for scoping out receptors from assessment that do not have theoretical visibility of turbines. In the context of the assessments reported in this Chapter, where the existing turbines already exist within the landscape, the ZTV ensures on-site visibility appraisals and identification of sensitive receptors can be focused to areas where the existing turbines are most likely to be visible. The results of site investigations reported later in this Chapter also consider the difference in visibility between what exists on the ground compared with what is shown on the ZTV map.

The ZTV represents the area over which a development can theoretically be seen and is based on a Digital Terrain Model (DTM), overlain on a map base. The DTM is a three-dimensional computerised visual representation of the topography, in the form of a digital model. The associated ZTV map, constructed based on the details of the DTM, indicates the following:

- Broad areas where visibility of a wind energy development is most likely to occur;
- How many of the existing turbines of the wind energy development are theoretically visible in those areas (using coloured bands for different numbers of turbines); and
- The extent and pattern of visibility.

The production of the ZTV map is one of the first steps of LVIA, as it (i) determines the boundaries of the LVIA Study Area in which impacts will be considered in more detail, and (ii) informs the identification of sensitive vantage points (SNH Guidance v.2.2, 2017).

13.2.3.1 ZTV Methodology

The ZTV maps presented in the EIAR show a calculated area of visibility of the existing turbines using the 'half-blade' height of the wind turbines as points of reference; this area is referred to as the Half-Blade ZTV, or ZTV. The WEDGs (DoEHLG, 2006 p.94) and Draft Revised WEDGs (DoHPLG, 2019 p.152) note that:

> *'It is recommended that the Zone of Theoretical Visibility should assess the degree of visibility based on the numbers of turbines visible to half the blade length in addition to hub height'.*

Furthermore, as well as per the guidance, a Half-Blade ZTV is considered more appropriate and useful than a 'full-blade' ZTV for analysing visibility of the existing turbines and scoping receptors in and out for assessment, particularly when using a DTM representing a bare earth scenario. The decision to use a Half-Blade ZTV is based upon the guidance as well as the professional judgement and the extensive experience of the assessment team in ground-truthing ZTVs against the reality of turbine visibility within landscapes where turbines already exist.

The area presented in the ZTV maps in this LVIA has a radius of 20km from the outer-most existing turbines.

The Draft Revised WEDGs (DoPHLG, 2019, p.159) require that:

> *'...in areas where landscapes of national or international renown are located within 25 km of a proposed wind energy development, the Zone of Theoretical Visibility should be extended as far (and in the direction of) that landscape'.*

A mapping investigation determined that no landscapes of national or international renown are located between 20 to 25km from the existing turbines, thus the extension of the ZTV beyond 20km from the outer-most existing turbine is not warranted in the case of this LVIA. As explained above in Section 13.2.2 - *Scope and Definition of LVIA Study Area*, 20km was deemed a sufficient and appropriate study area for the existing Taurbeg Wind Farm and any assessment of landscape and visual effects, as is determined in the WEDGs (DoEHLG, 2006, p.94) and Draft Revised WEDGs (DoHPLG, 2019, p.152):

> *'For blade tips in excess of 100m, a Zone of Theoretical Visibility radius of 20km would be adequate.'*

It should be emphasised that the ZTV maps assume a worst-case or 'bare ground' scenario, i.e. no land cover. The ZTV represents the theoretical visibility of the existing turbines in the absence of all natural and manmade features from the landscape, including vegetation, houses, and other buildings. In reality, such features restrict or limit visibility of the wind turbines, due to the visual screening effects of vegetation; for example, forestry and road-side hedgerows and trees, and buildings, particularly within towns and villages.

On each ZTV map, separate colour bands are used to indicate the number of turbines potentially visible to half-blade height, i.e. only half of one blade may be visible over the topography, as opposed to seeing a full turbine. The legend on each map shows the number of visible turbines for each corresponding colour, as follows:

- Orange: 1-3 turbines theoretically visible;
- Green: 4-7 turbines theoretically visible;
- Yellow: 8–10 turbines theoretically visible;
- Navy: 11 turbines theoretically visible.

13.2.3.2 Limitations of ZTV Mapping

The SNH Guidance v.2.2 (2017) acknowledges the following limitations inherent to the use of theoretical visibility mapping:

- The ZTV presents a 'bare ground' scenario, i.e. visibility of the existing turbines in a landscape without screening structures or vegetation, such as trees, hedgerows, buildings and small-scale landform or ground surface features;
- The ZTV does not take into account the effects of weather or atmospheric conditions, and therefore can be said to represent a 'worst-case' scenario, that is, one in which the wind turbines could potentially be seen given the combination of no intervening obstructions and favourable weather conditions;
- A ZTV is only as accurate as the data on which it is based. Accordingly, is not viable to test the accuracy of a ZTV in the field, although some verification does occur during the assessment of viewpoints;
- In order to handle relatively large areas of terrain, the DTM data are based on information that does not allow detail to be distinguished below a certain level of resolution. There are also differences in the way that the software package 'interpolates' between heights in the calculations made; and finally,
- While the ZTV indicates areas from which a wind farm may be visible, it cannot show how the existing Taurbeg Wind Farm will actually look, nor can it indicate the nature or magnitude of visual impacts. For example, the visibility of turbines naturally decreases with the distance from which they are viewed, yet this is not accounted for in the ZTV. Figure 13-1 below provides an illustration of the differences in view relative to the distance of the viewer from the turbine:

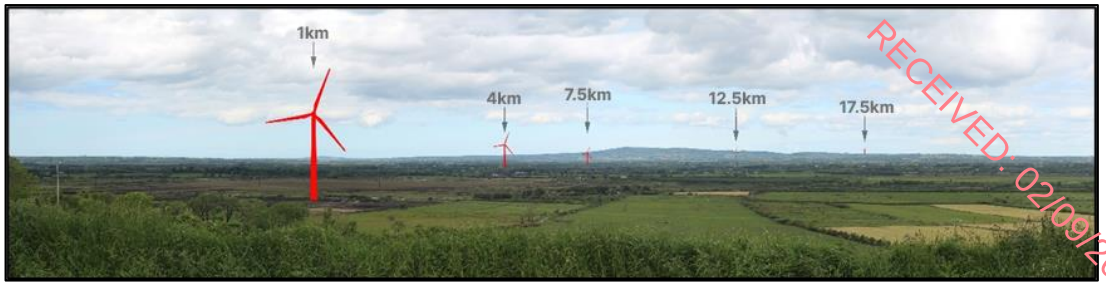


Figure 13-1 Effect of Distance on the Visibility of Wind Turbines (illustrative purposes only)

13.2.4 Photographic Visualisation

The assessment of potential impacts in this LVIA uses photographic and wireline visualisations (not Type 4 verified photomontages**, as the turbines are already existent within the landscape views), whereby the potential effects arising as a result of the Proposed Lifetime Extension are assessed from viewpoint locations representative of prominent and sensitive landscape and visual receptors located within the LVIA Study Area. These visualisations are included in Volume 2 of this EIAR – *Photographic Visualisation Booklet*.

The photographic visualisations are produced by stitching together high-quality photographs from each viewpoint. The visualisations are **not** 'photomontages'. Photomontages are produced by modelling and rendering infrastructure into the photographic imagery. As the existing Taurbeg Wind Farm is existing in the landscape, there is no need to model or render any developments into the panoramic photos, hence photomontages are not required in this instance, instead only the photos are required. Although the visualisations are not photomontages, they are presented in the layout and format required as per benchmark best practice guidance for LVIA and photomontages of wind energy developments; SNH Guidance v.2.2 (2017).

***** Note on Photomontages**: Type 4 verified photomontages are not required for this LVIA; therefore, no verified photomontages are included in the Volume 2 Photographic Visualisation Booklet. No rendering of turbines is required into the photographic imagery as the turbines already exist within the views. In addition, there are only existing turbines visible within the presented views. No other permitted or proposed turbines are visible within any of the presented views and therefore, no rendering is required for assessment of cumulative visual effects.*

Presentation of Wireline Views

A 'wireline' is a visualisation comprising a model of turbines accurately scaled and positioned within a digital elevation model (topography) as seen from a viewpoint. Wirelines do not include background photographic imagery. Wireline views of the existing Taurbeg Wind Farm are included in the *Volume 2 Photographic Visualisation Booklet* following the photographic imagery. As per guidance, wirelines are presented within both a 90-degree and a 53.5-degree field of view, on A1 banner sheets. The wireline views show the existing Taurbeg Wind Farm and all other existing wind farms within the view. Labels are added to the wireline views to identify the different turbines of the existing wind farms.

The SNH Guidance v.2.2 (2017) suggests that all turbine blades should be presented in the same orientation when presented within a wireline view with one blade completely vertical. The rationale for this method proposes that the singular vertical blade will show the greatest turbine tip height for all turbines.

Using the above method, the orientation of the turbine blades does not match what is presented in the corresponding photo. Conversely, guidance in the WEDGS (DoEHLG, 2006, p. 97) and Draft Revised WEDGs (DoHPLG, 2019) state the following in relation to wirelines (referring to 'wireframes' – equivalent to wirelines):

*'Related to the above, the photomontage should be accompanied by a wire frame computer generated perspective view of the landscape, or shaded-relief model, illustrating all theoretically visible turbines. These wire frame diagrams may also be used to indicate turbines that are not visible in whole or in part due to screening, simply to prove that point. **Wire frames and photomontages should be at the same scale and presented in unison so that direct comparison/correlation can be made'.***

This LVIA is cognisant of guidance from all three sources: the WEDGS (DoEHLG, 2006), Draft Revised WEDGs (DoHPLG, 2019) and SNH v.2.2 (2017). Of these, it is considered that that the guidance in the WEDGs and Draft Revised WEDGs is the preferred option. Thus, wireline views showing the turbines in irregular orientation with each other, but in unison with the corresponding photo is deemed an optimal method of presentation for the following reasons:

- The view enables direct correlation and comparison with the photo;
- If all turbines were to be oriented the same way, this would be an unnatural and unrealistic representation, hence there is no scenario in reality where this would occur;
- Although the single vertical blade shows the greatest tip height, it does not necessarily show the greatest visual exposure of turbines in the landscape, as there could potentially be two blades (instead of one) seen above a feature of the landform when using a non-regular orientation;

For these reasons outlined above, the turbines in the wireline views within the *Photographic Visualisation Booklet* are presented in unison with the orientation of the turbines in the photos, in line with the WEDGs and Draft Revised WEDGs guidance.

13.2.4.2 Viewpoint Identification

The viewpoints (i.e. photo locations) were selected following guidance contained in the WEDGs (DoEHLG, 2006) and Draft Revised WEDGs (DoHPLG, 2019), GLVIA3 and SNH Guidance v.2.2 (2017). The selection of viewpoints is designed to give a representative range of views of the existing Taurbeg Wind Farm.

'Viewpoints' are locations at which photographic imagery was captured for the Volume 2 – *Photographic Visualisation Booklet*. 6 No. viewpoints were chosen for assessment following visibility appraisals and capture of imagery from key visual receptors during a site visit. Section 13.5 – Visual Baseline included a mapping exercise to identify the following sensitive visual receptors in the LVIA Study Area:

- Designated Scenic Routes and Scenic Views;
- Settlements;
- Recreational Routes and Tourist Destinations:
    - Waymarked Walking Routes;
    - Cycle Routes;
    - Scenic Drives;
    - Tourist Routes;
- Viewing Points (e.g. marked on OSi Maps)
- Prominent Transport Routes.

6 No. Viewpoints were selected from locations representing key visual receptors with relatively open views towards the existing Taurbeg Wind Farm. In addition, viewpoints were selected in close proximity to the existing turbines, where turbines are most visible, and hence visual effects may be greatest.

Viewpoints were chosen having regard to the SNH Guidance v.2.2 (2017) which advises that a range of views should be shown at a range of distances and aspects, as well as at varying elevations and showing

both where the development will be completely visible as well as partially visible. Consideration was also given to ensure that viewpoints captured other wind farms in order to assess cumulative visual effects.

13.2.4.3 Limitations of Photographic Visualisation

Photographic visualisations are subject to a range of limitations, as stated in SNH Guidance v.2 (2014):

- Visualisations provide a tool for assessment that can be compared with an 'actual' view in the field; they should never be considered as a substitute to visiting a viewpoint in the field;
- Neither photographs nor visualisations can replicate a view as seen in reality by the human eye;
- Visualisations are only as accurate as the data used to construct them;
- Visualisations can only represent the view from a single location at a particular time and in particular weather conditions;
- Static visualisations cannot convey the effect of turbine blade movement.

Although the scale, siting and geometry of visualisations are based on technical data, the other qualities of the image are open to judgement. The guidance also notes that interpretation of visualisations must be taken into account as well as additional information including variable lighting, the movement of turbine blades, seasonal differences and the movement of the viewer through the landscape. However, accepting these limitations, the SNH Guidance v.2 (2014) and v.2.2 (2017) state that photomontages are useful tools in the visual impact assessment of wind turbines, as for this case where the turbines are already existing in the landscape, visualisations are used.

13.2.4.4 Presentation of Visualisations in the Volume 2 Photographic Visualisation Booklet

The viewpoints presented in the accompanying Volume 2 Photographic Visualisation Booklet show several panoramic views from each viewpoint location. The photographic visualisation and wireline views are panoramas presented on banner sheets of paper of size 'A1'. More specifically, the horizontal field of view presented in the visualisations are spread across 84.1cm, the equivalent of the maximum horizontal field of an A1 sheet of paper. In line with best practice guidance for the production of photomontages for wind energy development (SNH Guidance v.2.2, 2017; LI TGN 06/19, 2019) the A1 banners present the existing Taurbeg Wind enlarged to fit within a 53.5° horizontal field of view.

The viewpoint images contained in the Volume 2 Photographic Visualisation Booklet are devised to be viewed at arm's length. The viewpoints are presented in in the Volume 2 Booklet as stated below:

- **Overview Sheet** – Viewpoint details include location description, grid reference distance from nearest turbine and technical data in relation to photography. Three maps at various scales show the viewpoint location. A 120-degree existing view image ('Key Image). Existing turbines visible in the landscape may appear within the image and the horizontal extent of the 90-degree and 53.5-degree image to be presented in subsequent images is also framed.
- **Proposed View and Matching Wireline at 90º** - 90-degree panorama view, a photographic visualisation a matching wireline image of the same view which includes any existing turbines visible in the landscape, including the existing Taurbeg turbines. If turbines are already existing in the landscape, these are visible on the photograph and are rendered in the wireline.
- **Proposed View at 53.5º**– Showing a photographic visualisation of the existing turbines and any existing turbines in a 53.5-degree horizontal field of view.
- **Proposed Wireline at 53.5º** - Showing a wireline image of the existing turbines and any existing turbines in a 53.5-degree horizontal field of view. The existing turbines

and any other existing wind farms are individually coloured and labelled for ease of identification.

13.2.5 Identification of Landscape and Visual Receptors

Section 13.4 Landscape Baseline of this LVIA 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 Site. The Landscape Baseline states baseline information about the receiving landscape of the Site and its wider setting.

Section 13.5 Visual Baseline of this LVIA identifies key sensitive visual receptors in the LVIA Study Area where visibility of the existing Taurbeg Wind Farm occurs and reports upon the nature of this visibility from visual receptors. The visual baseline is informed by ZTV mapping and visibility appraisals conducted during site visits. Receptors with no visibility of the existing Taurbeg Wind Farm are scoped out from assessment in the baselines section of the Chapter.

The effects on key sensitive landscape and visual receptors identified in the baseline investigation are assessed in Section 13.7– *Likely or Significant and Visual Effects using* the methodology reported below. The assessment of effects is primarily informed by site visits, ZTV mapping and the analysis of the 6 No. visualisations from representative viewpoints.

13.2.6 Assessing Landscape Effects

In line with the GLVIA3 (LI & IEMA, 2013), the potential impacts on landscape receptors and visual receptors are assessed separately. This section details the methods used to determine the likely significant landscape effects of the existing Taurbeg Wind Farm on landscape receptors.

The methodology for assessing landscape effects uses qualitative methods in order to arrive at an overall impact assessment, based on the DoELG 2000 Guidance as well as the GLVIA3 (LI & IEMA, 2013) and WEDGs (DoEHLG, 2006) and Draft Revised WEDGs (DoHPLG, 2019).

Here, 'landscape effects' are described as changes which affect the landscape as a resource. This includes how the Proposed Lifetime Extension will affect the physical elements that make up the landscape, as well as its aesthetic and perceptual aspects and its landscape character. Landscape effects also relate to changes in the structure of the landscape. Under the GLVIA3 (LI & IEMA, 2013), the assessment of likely 'Significant' effects on landscape receptors includes a judgement on both the 'Sensitivity' of the receptor as well as the 'Magnitude of Change'.

13.2.6.1 Landscape Sensitivity: Value & Susceptibility to Change

Landscape 'Sensitivity' is described in the GLVIA3 (LI & IEMA, 2013) as a combination of the landscape's 'Susceptibility to Change' as well as the 'Value' attached to the landscape.

Landscape susceptibility to change is described as the ability of the landscape receptor (either the overall character, quality of the landscape or a particular landscape feature) to accommodate the existing turbines without undue consequences for the maintenance of the baseline (existing) landscape and/or the aims of landscape planning policies and strategies. Table 13-1 below presents differing assessment criteria for susceptibility to change.

Table 13-1 Assessment Criteria for Landscape Susceptibility to Change

Susceptibility of Landscape Receptor to Change	Description and Example Criteria

'High'	Landscape receptors where the overall character of the landscape receptor or the nature of the individual landscape receptor causes it to have a high susceptibility to change considering its inherent characteristics and where the landscape receptor has a low ability to accommodate the proposed change without undue consequences for the maintenance of its landscape character, and/or its quality or condition, and/or its particular aesthetic and perceptual aspects, and where such change is not in compliance with planning policies/strategies.
'Medium'	Landscape receptors where the overall character of the landscape receptor or the nature of the individual landscape receptor causes it to have a medium susceptibility to change considering its inherent characteristics and where the landscape receptor has a moderate ability to accommodate the proposed change without undue consequences for the maintenance of its landscape character, and/or its quality or condition, and/or its particular aesthetic and perceptual aspects, with consideration given to planning policies/strategies.
'Low'	Landscape receptors where the overall character of the landscape receptor or the nature of the individual landscape receptor causes it to have a low susceptibility to change considering its inherent characteristics and where the landscape receptor has a Strong ability to accommodate the proposed change without undue consequences for the maintenance of its landscape character, and/or its quality or condition, and/or its particular aesthetic and perceptual aspects, and where such change may be in compliance with planning policies/strategies.

Landscape 'Value' is a combination of values which are assessed in Section 13.4 - *Landscape Baseline,* combining any formal landscape designations, and, where there are no designations, judgements based on individual elements of the landscape receptor, for example particular landscape features, notable aesthetic, perceptual or experiential qualities, and combination of these contributors.

Notably, the GLVIA3 (LI & IEMA, 2013, p.89) states that:

> *'...there should not be over-reliance on designations as the sole indicator of value'.*

Accordingly, the assessments of landscape value undertaken in the LVIA included consideration of various elements that contribute to landscape value of specific receptors, using best practice standards and professional judgement. Where this occurred, landscape value was judged based on clearly stated criteria.
Table 13-2 below presents differing assessment criteria for landscape value.

Table 13-2 Assessment Criteria for Landscape Value

Value Attached to Landscape Elements	Description and Example Criteria
'High'	Landscape receptors forming part of designations (e.g. areas of amenity, scenic routes/views) in the development plan, or at a national or international level, or landscape receptors not designated but where the receptor is judged to be of equivalent value using clearly stated criteria including wildness, naturalness,

Value Attached to Landscape Elements	Description and Example Criteria
	very strong cultural heritage or natural heritage associations and/or very high recreational value.
'Medium'	Landscape receptors where value is not formally designated but are of value as good examples of high quality, intact landscapes or landscape features and are deemed to be of relatively high scenic quality. Landscapes or landscape receptors that contain some rare elements, include areas or features which are wild or have a sense of naturalness, have strong cultural associations or which have recreational value.
'Low'	Landscapes that are not formally designated and considered as modified. Areas which do not have particularly scenic qualities, do not include rare elements or landscape features and do not have strongly evident cultural or heritage associations.

Section 13.4 - *Landscape Baseline,* describes and determines the landscape value of the Site and its wider landscape setting in order to establish the capacity of the immediate landscape in which the existing turbines will be built, as is prescribed by best practice guidance (GLVIA3, 2013, p.80):

> *'...as part of the baseline description the value of the potentially affected landscape should be established'.*

Comprehension of landscape value and its susceptibility to change enables determination of the sensitivity of the landscape at a micro-level, as well as the Site itself and the wider landscape setting.

In combining the assessment of the landscape value of a landscape receptor with the susceptibility to change of that receptor, it is noted here that a judgement of 'High' landscape value does not necessarily imply that this receptor has a 'High' susceptibility to change, and it is emphasised that this relationship can be complex. The combination of these to judgements, which determines the overall landscape 'Sensitivity', is undertaken using professional judgement with the rationale for judgements clearly explained in the description of the assessment of effects or in the baseline study. On this basis, landscape receptors have been assigned one of the four following 'Sensitivity' ratings:

- 'Very High';
- 'High';
- 'Medium';
- 'Low'.

No table is provided for the description of these different classifications of landscape sensitivity as the relationship between susceptibility to change and landscape value is inherently complex and not suitable to concise definitions. It is noted that sensitivity classifications are generally guided by local and national planning policy, particularly for designated Landscape Character Areas (LCAs) and county policy in relation to these, as well as county wind energy policy, where available. However, it is noted that in cases where local variations in landscape receptors merit a smaller-scale-focused assessment that may differ from the policy, this was undertaken using professional judgement and is clearly explained in this Chapter.

13.2.6.2 Sensitivity of Landscape Character Areas (LCAs)

The 'Sensitivity' of designated LCAs is comprehensively assessed in Section 13.7.2.1.2. Ireland does not currently have a standardised nationwide Landscape Character Assessment. As such, the LCAs scoped

in for assessment in this LVIA are located in different counties and each county uses a different method, scale, hierarchy and naming convention to represent the sensitivity of its individual LCAs.

For the purposes of this LVIA, and to provide consistency across the assessment of LCAs (Section 13.7.2.1.2) a rating of 'Sensitivity' was assigned to each LCA within the following classification scale:

- 'Very High';
- 'High';
- 'Medium';
- 'Low'.

The sensitivity classification assigned to each LCA considers key characteristic and sensitivity descriptions (and where applicable, the sensitivity ratings) in the respective county development plans, as well as any relevant wind energy capacity designations and policy. A rationale for the sensitivity classification of each LCA is provided in the assessment tables included in Section 13.7.2.1.2. LCAs at the 'Very High' end of the scale would include very sensitive landscapes of national importance, whilst LCAs at the 'Low' end of the scale might be locally important landscapes but are those which do not comprise receptors or characteristics of unique or national value.

13.2.6.3 Magnitude of Change in the Landscape

Taurbeg Wind Farm is an existing wind farm which is built, operational and currently visible in the existing landscape. As is evident by the visualisations, the existing Taurbeg Wind Farm amounts to little or no change to the existing views of the existing landscape. The term 'Magnitude of Change' is used in the impact assessment tables included in this EIAR. The context of this assessment where the turbines already exist in the landscape, the magnitude of the continued impact of the turbines is considered. In order to facilitate the impact assessments and effectively determine the continued impact of the existing Taurbeg turbines, the magnitude of change was determined by considering the change that would occur in a 'do-nothing scenario' where the turbines would be removed, thereby no longer existing in the landscape.

The magnitude of change, both within a given LCA or for a specific landscape receptor, is defined by a combination of the visual presence—that is, the size and scale—of the change, the extent of the area to be affected and the duration and reversibility of the effect.

It should be emphasised that all LVIA guidance documents generally agree that wind farm developments themselves are considered 'reversible'. As part of the impact assessment process, the magnitude of change for each LCA and landscape receptor was assessed using the definitions outlined in Table 13-3 below.

Table 13-3 Assessment Criteria for Magnitude of Landscape Change

Magnitude of Change	Description
'Substantial'	Where a landscape will experience the loss of key landscape features or the introduction of uncharacteristic additions over a large area. The changes to the landscape are prominent and large in scale. The level of change has an effect on the overall landscape character. The effects are likely long term and may be irreversible.
'Moderate'	A more limited loss of or change to landscape features over a medium extent which will result in some change to landscape features and aesthetics. Could include the addition of some new uncharacteristic features or elements that would lead to the potential for change in landscape character in a localised area or part of a landscape character area. Would include

Magnitude of Change	Description
	moderate effects on the overall landscape character that do not affect key characteristics. The effects could be long- to medium-term and/or partially reversible.
'Slight'	The loss of or change to landscape features of limited extent, or changes to landscape character in smaller areas. Changes would not affect key characteristics. The addition of any new features or elements to the landscape would only result in low-level changes to the overall aesthetics of the landscapes. Changes to the landscape are more evident at a local level and not over a wide geographical area. The effects could potentially be medium- to short-term and/or reversible.
'Negligible'	A change affecting smaller areas of landscape character including the loss of some landscape elements or the addition of features or elements which are either of low value or hardly noticeable. The effects could be short-term and/or reversible.

13.2.6.4 Landscape Effects Assessment Matrix

The overall 'Significance' of landscape effects is determined by combining the landscape receptor 'Sensitivity' and the 'Magnitude of Change' classifications, according to the Landscape Effects Assessment Matrix shown below in Table 13-4.

In the below matrix, landscape receptor sensitivity is shown in the first, left-hand column and magnitude of landscape change is shown in the first row at the top. This matrix is used as an indicative tool to assist in determining the significance of landscape effects. In different circumstances, differing levels of mitigating factors may ultimately result in a different determination of the final rating of significance. The 'Significance' of a landscape effect is based on a balance between the 'Sensitivity' of the receptor and the 'Magnitude of Change' of the effect.

Table 13-4 Landscape Effects Assessment Matrix

	Substantial	Moderate	Slight	Negligible
Very High	Major	Major/Moderate	Moderate	Moderate/Minor
High	Major/Moderate	Moderate	Moderate/Minor	Minor
Medium	Moderate	Moderate/Minor	Minor	Minor/Negligible
Low	Moderate/Minor	Minor	Minor/Negligible	Negligible

The final 'Significance' rating of the landscape effect is then arrived at using a combination of the matrix and the EPA (2022) classification definitions, shown in Table 13-5 below.

The determination of significance uses a seven-point scale, ranging from 'Major' to 'Negligible'. This seven-point scale is then translated to the EPA (2022) impact assessment classifications of 'Significance', as outlined in the table.

Table 13-5 Impact Assessment Significance Classification from EPA (2022) for Landscape Effects

Matrix Classification Significance	EPA Significance Classification	EPA (2022) Definition of Significance
Major	**Profound**	An effect which obliterates sensitive characteristics.
Major/Moderate	**Very Significant**	An effect, which by its character, magnitude, duration or intensity alters most of a sensitive aspect of the environment.
Moderate	**Significant**	An effect, which by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Moderate/Minor	**Moderate**	An effect that alters the character of the environment in a manner consistent with existing and emerging baseline trends.
Minor	**Slight**	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Minor/Negligible	**Not Significant**	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Negligible	**Imperceptible**	An effect capable of measurement but without significant consequences.

13.2.7 Assessing Visual Effects

'Visual effects' relate to the changes in views and visual amenity of the surroundings of individuals or groups of people, brought about by the development of the proposed lifetime extension. These may result from changes in content and character of views as a result in changes to the landscape. The assessment of visual effects is based on the views shown in the photographic visualisations and the potential visibility indicated by ZTV mapping, as well as the actual visibility on the ground.

It should be noted that, in assessing visual effects, there are two types of effects:

- **Visual obstruction:** Occurs when there is an impact on a view which blocks the view;
- **Visual intrusion:** Occurs when there is an impact on a view, but which does not block the view.

Due to the nature of the development and the appearance of wind turbines, 'visual intrusion' occurs more frequently than 'visual obstruction'. Therefore, the 'Significance' of the effect on visual receptors is a combination of the 'Sensitivity' of the receptor as well as the 'Magnitude of Change' of the effect.

Mitigating factors are then taken into consideration to arrive at a 'Residual' visual effect. Residual visual effects are graded upon the same 'impact assessment classification of significance' scale used for landscape effects, as defined by the EPA (2022), which is included below in Table 13-9.

13.2.7.1 Visual Receptor Sensitivity

The 'Sensitivity' of a visual receptor depends on the occupation or activity of the people involved, as well as the extent to which the attention is focused on views and visual amenity, according to the

GLVIA3 (LI & IEMA, 2013). Visual receptor sensitivity is assessed as being 'Very High', 'High', 'Medium', or 'Low', based on the definition of descriptions and examples set out in Table 13-6 below.

Table 13-6 Assessment Criteria for Visual Receptor Sensitivity

Sensitivity of Visual Receptor(s)	Description
'Very High'	Included in this category are viewers primarily focused on views from this particular location, such as visitors to popular destinations identified for their outstanding views, and residents in close proximity who have primary views of a scenic quality in the direction of the proposed turbines.
'High'	Includes viewers at designated views or landscapes, such as residents in close proximity to the viewpoint who have primary views in the direction of the existing turbines that may not necessarily be of a particularly scenic quality, viewers at well-known heritage or popular tourist or recreational areas and viewers along scenic or tourist routes.
'Medium'	Includes viewers who may have some susceptibility to a change in view, such as residents in medium proximity but who do not have views focused in the direction of the existing turbines or whose views are not of a particularly scenic quality, those from views which are not designated but may have local recreational uses or those travelling along routes or at views which are considered moderately scenic.
'Low'	Includes viewers engaged in activities where the focus is not on the landscape or view. This includes those travelling along a busy route, viewers at work or engaged in sport not related to views or the experience of the landscape.

As described earlier in Section 13.2.4 - *Photographic Visualisations* are specific locations which are representative of key visual receptors. The viewpoint assessment tables in Section 13.7.2.2.2 consider all receptors represented in the determination of the visual receptor sensitivity rating for each viewpoint. This determination takes a balanced approach considering the types, sensitivities, and quantities of visual receptors represented. The sensitivity rating given to each viewpoint in Section 13.7.2.2.2 considers both the susceptibility of the visual receptors represented as well as the value attached to the available views at that location.

13.2.7.2 Magnitude of Visual Change

The turbines at the Site already exist in the landscape. Therefore, determining the 'Magnitude of Change' between an 'Existing' View and 'Proposed View' amounts to no change in scenic amenity and would not effectively describe the current visual impact using standard best practice LVIA methodology ('Receptor Sensitivity' × 'Magnitude of Change'). In order to facilitate the visual impact assessments included in this Chapter and effectively determine the visual impact of the proposed turbines, the magnitude of change was determined by considering the change that would occur in a 'do-nothing scenario' where the turbines would not be visible in the landscape. A comprehensive description of the visual impact assessment of each photographic visualisation is detailed in Section 13.7.2.2.2 - *Viewpoint Assessment Tables*.

The magnitude of change in terms of the visual change resulting at each viewpoint is determined by assessing a combination of scale of the change, the extent of the area to be affected and the duration and reversibility of the effect, determined by reviewing the photomontage and wireframe images for

each viewpoint. The 'Magnitude of Change' is determined in accordance with the definitions and descriptions included below in Table 13-7.

Table 13-7 Assessment Criteria for Magnitude of Visual Change

Magnitude of Change	Description
'Substantial'	Substantial change, where the proposal would result in large scale, prominent or very prominent change, leading to substantial obstruction of an existing view or complete change in character and composition of the baseline through removal of key elements or the addition of uncharacteristic elements which may or may not be visually discordant. This includes viewpoints where the existing turbines are fully or almost fully visible over a wide extent, at close proximity to the viewer. This change could be long-term or of a long duration.
'Moderate'	The change in the view may involve partial obstruction of existing view or partial change in character and composition of the baseline through the introduction of new elements or removal of existing elements. Likely to occur at locations where the existing turbines are partially visible over a moderate or medium extent, and which are not in close proximity to the proposed development. Change may be readily noticeable but not substantially different in scale and/or character from the surroundings and wider setting.
'Slight'	The proposal would be partially visible or visible at sufficient distance to be perceptible and result in a low level of change in the view and its composition and a low degree of contrast. The character of the view may be altered but will remain similar to the baseline existing situation.
'Negligible'	Any change would only be barely distinguishable from the status quo 'do-nothing scenario' in the surroundings. The composition and character of the view would be substantially unaltered, approximating to little or no change.

13.2.7.3 Visual Effects Assessment Matrix

The final 'Significance' rating of visual effects is determined by combining the visual receptor 'Sensitivity' and the 'Magnitude of Change' classifications, according to the Visual Effects Assessment Matrix shown below in Table 13-8.

In the matrix, visual receptor sensitivity is shown in the first, left-hand column and magnitude of the visual change is shown in the first row at the top of the table. This matrix is used as an indicative tool to assist in determining the significance of visual effects. In different circumstances, differing levels of mitigating factors may ultimately result in a different determination of the final rating of significance. The 'Significance' of a visual effect is based on a balance between the 'Sensitivity' of the receptor and the 'Magnitude of Change' of the effect.

Table 13-8 Visual Effects Assessment Matrix

	Substantial	Moderate	Slight	Negligible
Very High	Major	Major/Moderate	Moderate	Moderate/Minor
High	Major/Moderate	Moderate	Moderate/Minor	Minor
Medium	Moderate	Moderate/Minor	Minor	Minor/Negligible

	Substantial	Moderate	Slight	Negligible
Low	Moderate/Minor	Minor	Minor/Negligible	Negligible

The significance of the visual effect is arrived at using a combination of the above matrix and what is known as the 'Visual Effect Significance Graph' from the EPA (2022) (shown in Figure 13-2, see next section).

The determination of significance uses a seven-point scale, ranging from 'Major' to 'Negligible'. This seven-point scale is then translated to the EPA (2022) impact assessment classifications of 'Significance', as outlined in Table 13-9 below.

Table 13-9 Impact Assessment Significance Classification from EPA (2022) for Visual Effects

Matrix Classification Significance	EPA Significance Classification	EPA (2022) Definition of Significance
Major	Profound	An effect which obliterates sensitive characteristics.
Major/Moderate	Very Significant	An effect, which by its character, magnitude, duration or intensity alters most of a sensitive aspect of the environment.
Moderate	Significant	An effect, which by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Moderate/Minor	Moderate	An effect that alters the character of the environment in a manner consistent with existing and emerging baseline trends.
Minor	Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Minor/Negligible	Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Negligible	Imperceptible	An effect capable of measurement but without significant consequences.

13.2.8 Determination of Residual Landscape and Visual Effects

After determining the 'Significance' of landscape and visual effects using the above assessment matrices (and significance graph in the case of visual effects), mitigating factors are then taken into consideration to arrive at the final 'Residual' effect rating, translated to the EPA classification scheme. In some cases, mitigating factors merit a reduction in classification.

The matrices and tables above are excellent tools to aid professional judgement in the determination of the significance of an effect. They are useful in that they provide a transparent, objective structure to the process of balancing 'Sensitivity' and 'Magnitude of Change'.

Particularly for determining residual visual effects, the formulaic process created by the use of the above matrices (Table 13-6 and Table 13-7) does provide an indicative initial assessment, which can be seen clearly in the viewpoint assessment tables in Section 13.7.2.2.2.

However, over-reliance on the formulaic process, which is heavily influenced by the definitions of 'Sensitivity' and 'Magnitude of Change' contained in the matrices can lead to a failure of properly accounting for the full range of circumstances and factors at play in the determination of the final significance rating of a visual effect (see *sub-section 3.35* in '*Step 3: Judging the Overall Significance of the Effects*' of the GLVIA3, LI & IEMA, 2013, p.41).

In actuality, a wide range of factors, mitigating or otherwise, can factor into the final determination, and it is not possible to capture the complexity involved in balancing all considerations within the necessarily limited definitions contained in the matrices. This then naturally results in circumstances whereby the process of the determination of significance using the formulaic method involved with the matrix shown above in Table 13-8 can result in misrepresentations of the overall significance of visual effects. It is only by applying professional judgement and composing narrative descriptions of the effect, that such complexity can be integrated into the final determination of significance.

Therefore, the formulaic methods based upon the matrices presented above are combined with professional judgement in the determination of significance. This is shown by the 'Visual Effects Significance Graph' below in Figure 13-2 Visual Effects Significance Graph (adapted from EPA, 2022) which illustrates how the professional judgement of the competent expert is used to properly determine the significance of an effect taking all considerations into account.

Accordingly, in this LVIA, focus is placed upon the narrative description of effects (see *sub-section 3.36* of the GLVIA3, LI & IEMA, 2013, p.41) given the naturally subjective nature of the significance determination process, particularly in relation to visual effects, ensuring that the rationale for the overall judgement is clear (see *sub-sections 3.28* and *3.29* in '*Step 2: Combining the Judgments*', GLVIA3, 2013, p.40). The comprehensive assessment of viewpoints included in Section 13.7.2.2.2 aims to provide a transparent and robust determination of residual visual effects utilising the graph in Figure 13-2 below in combination with a clear and logical narrative.

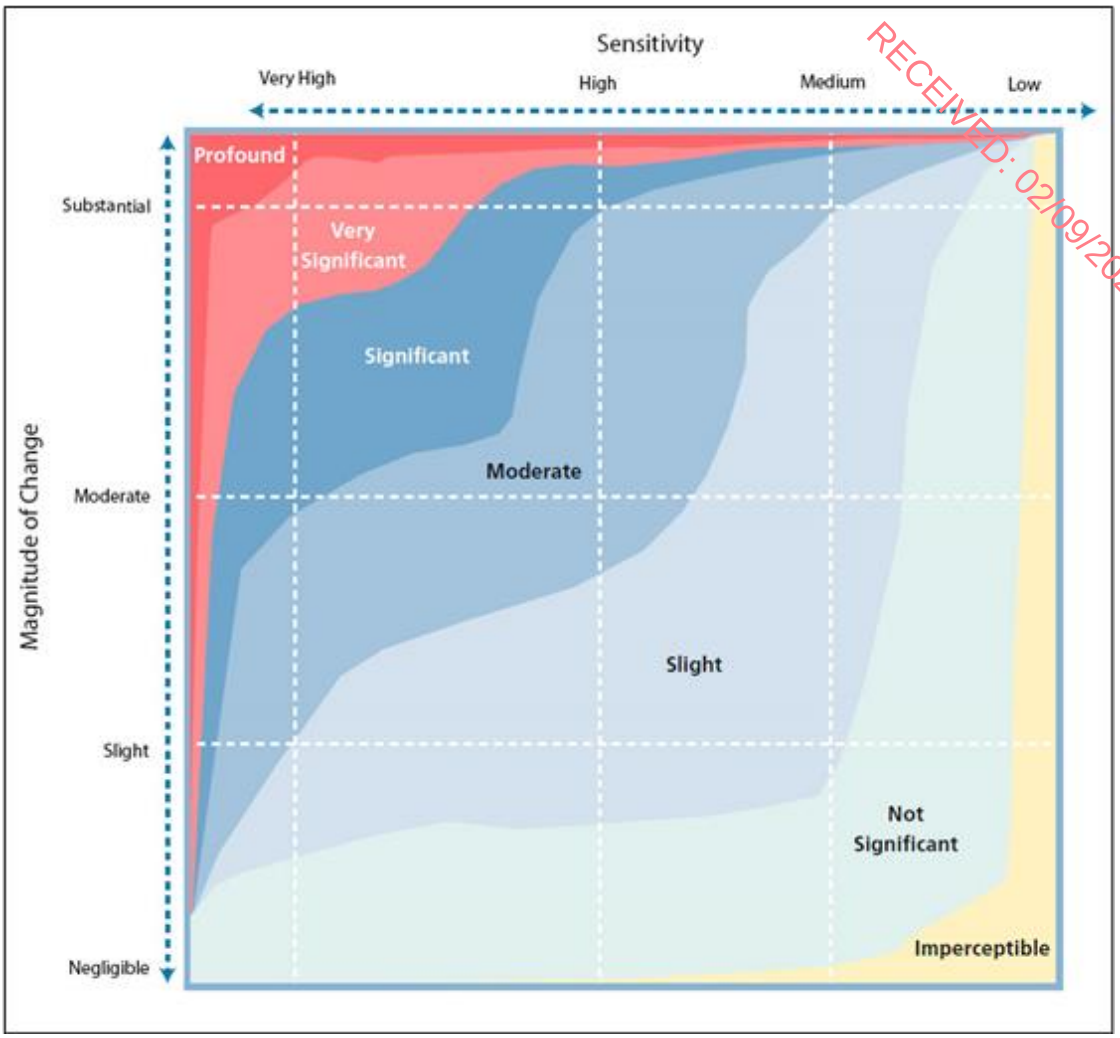


Figure 13-2 Visual Effects Significance Graph (adapted from EPA, 2022)

13.2.9 Assessing Cumulative Landscape and Visual Effects

Cumulative Landscape Effects. The Nature Scot online publication '*Assessing the Cumulative Landscape and Visual Impact of Onshore Wind Energy Developments*' (2021) identifies two principal areas of cumulative landscape effects, on the physical fabric of the landscape and on the landscape character, which state:

- ***'Physical Fabric:*** *Cumulative effects on the physical fabric of the landscape arise when two or more developments affect landscape components such as woodland, dykes, rural roads or hedgerows. Although this may not significantly affect the landscape character, the cumulative effect on these components may be significant – for example, where the last remnants of former shelterbelts are completely removed by two or more developments'.*
- ***'Landscape Character:*** *Cumulative effects on landscape character arise when two or more developments introduce new features into the landscape. In this way, they can change the landscape character to such an extent that they create a different landscape character type, in a similar way to large scale afforestation. That change need not be adverse; some derelict or degraded landscapes may be enhanced as a result of such a change in landscape character'.*

Potential changes to the physical fabric outlined above are predominantly restricted to the Site and the LCAs in which the Site is located. Therefore, the landscape receptors are to be assessed for cumulative

landscape effects on the physical fabric of the landscape arising from the existing turbines and all other components of the existing Taurbeg Wind Farm.

Cumulative effects on the landscape character were assessed in the identified LCAs with theoretical visibility of the existing turbines, with particular emphasis on the LCA in which the existing turbines will be located.

Cumulative landscape effects are included in Section 13.7: Likely Significant Landscape and Visual Effects.

Cumulative Visual Effects. For this assessment, Nature Scot (2021) defines cumulative effects as '*additional changes caused by a proposed development in conjunction with other similar developments*' Whilst this assessment considers other types of developments beside wind farms, the focus is always on assessing the greatest potential for 'Significant' cumulative visual effects. In this regard, the greatest cumulative effects with the Proposed Lifetime Extension are most likely to occur in conjunction with other wind energy developments, therefore the focus of cumulative visual effects assessment in this Chapter is on the interactions with other wind turbines. The definition in the WEDGs (DoEHLG, 2006) defines cumulative impacts in terms of wind farms, as the perceived effect on the landscape of two or more wind energy developments visible from any one place.

The GLVIA3 (LI & IEMA, 2013) and Nature Scot (2021) guidance also note that cumulative visual effects can be experienced **in combination**, where two or more developments are visible from one viewpoint, either **simultaneously** or **in succession**, and these are considered in the assessment of visual effects in Section 13.7.2.2.2. The viewpoints illustrate combined visibility, and analysis of the viewpoints as well as site visits and field work undertaken allows sequential visibility to be assessed.

Another type of cumulative visual effect includes where two or more developments are seen **sequentially**, where a viewer moves to another viewpoint or along a transport or recreational route and sees the same or different developments. The viewpoints illustrate the combined visibility and analysis of the viewpoints, route screening, site visits and field work undertaken, thereby allowing sequential visibility to be assessed.

The guidance on cumulative effects given in the WEDGs (DoEHLG, 2006) relating to the Site is as follows:

- *'Similarity in the siting and design approach is preferred where a number of wind energy developments are located in the same landscape character area, particularly within the same viewshed. However, an alternative approach where a particular aesthetic effect is sought may be acceptable;*
- *Different wind energy developments can appear as a single collective unit if located near each other;*
- *It is preferable to avoid locating turbines where they can be seen one behind another, when viewed from highly sensitive key viewpoints (for example, viewing points along walking or scenic routes, or from designated views or prospects), as this results in visual stacking and, thus, confusion. This may not be critical, however, where the wind energy development to the rear is in the distant background;*
- *Wind energy developments within relatively close proximity to one another, while in different landscape character contexts, may be so close as to be within the same visual unit and, therefore, should involve the same siting and design approach'.*

The SNH Guidance v.3a (2017) states that:

> *'...introducing turbines that are not similar in form, design, colour and scale may increase visual complexity and clutter'.*

Therefore, the cumulative assessment concentrates on the following issues:

- Whether the existing turbines increase the spatial extent of turbines in the view;
- Whether the different wind energy developments can appear as a single collective unit or there is separation;
- Whether 'visual stacking' occurs; and
- Whether the contrast of different size and design between different wind developments creates visual clutter.

As cumulative visual effects depend on the aspect from which the turbines will be seen various viewpoints were selected to give a thorough overview of the how the existing turbines will appear in conjunction to turbines already present.

The assessment of cumulative effects is included in the viewpoint assessment tables in Section 13.7.2.2.2 of this Chapter.

13.3 Theoretical Visibility of the Existing Taurbeg Wind Farm: ZTV Versus Actual Visibility

The half-blade ZTV map of the existing Taurbeg Wind Farm and LVIA Study Area is shown below in Figure 13-3, with the following colour scheme:

- Orange: 1-3 turbines theoretically visible
- Green: 4-7 turbines theoretically visible
- Yellow: 8-10 turbines theoretically visible
- Navy: 11 turbines theoretically visible

Map Legend

- LVIA Study Area
- County Borders
- Existing Taurbeg Turbines

Zone of Theoretical Visibility

- 1-3 Turbines Theoretically Visible
- 4-7 Turbines Theoretically Visible
- 8-10 Turbines Theoretically Visible
- 11+ Turbines Theoretically Visible

Drawing No.

Figure 13-3

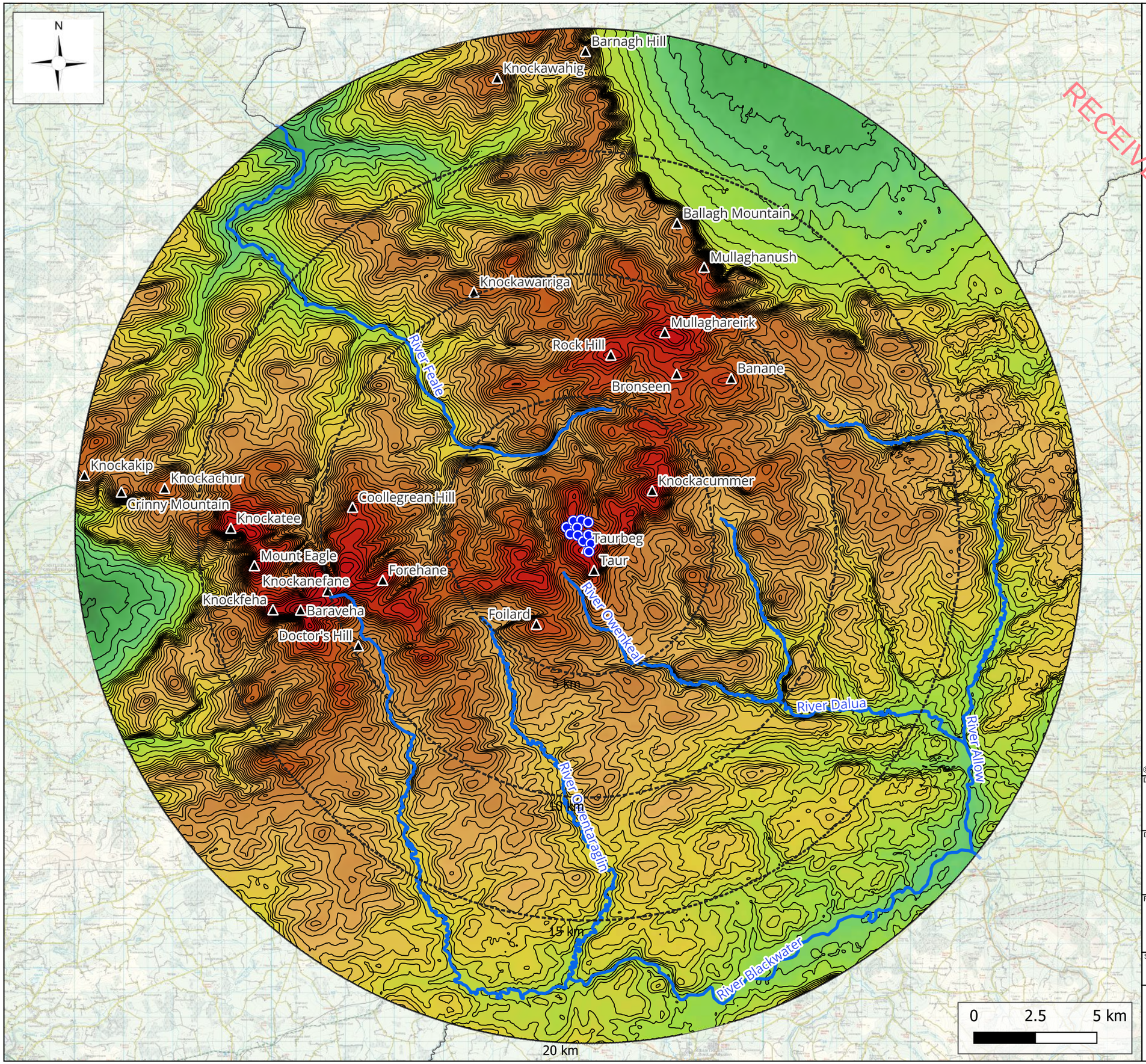
Drawing Title

ZTV Map

Project Title

Taurbeg Wind Farm Extension of Operational Life

Scale	Project No.	Date	Drawn By	Checked By
1:150,000	231030	14.11.2024	KC	JW



Map Legend

- LVIA Study Area
- Existing Taurbeg Turbines
- Mountains/Hills
- Prominent Rivers
- 10m Contours

Elevation m (AOD)

- 25
- 50
- 75
- 100
- 150
- 200
- 250
- 300
- 350
- 400
- 450

Drawing No.

Figure 13-4

Drawing Title

Physical Features Map

Project Title

Taurbeg Wind Farm Extension of Operational Life

Scale	Project No.	Date	Drawn By	Checked By
1:150,000	231030	14.11.2024	KC	JW

Figure 13-4 above depicts the elevation gradients and topographical features within the receiving landscape of the LVIA Study Area. These features define the distribution of theoretical visibility of the existing turbines as illustrated in Figure 13-3. As seen in the above figures, the Site is located on the peaks of Taurbeg Hill, which is part of the Mullaghareirk Mountains. The hills of Knockacummer, Taur and Foilard enclose the existing Taurbeg Wind Farm which visually screens views of the existing Taurbeg turbines in large portions of the LVIA Study Area. The undulating landforms within the Mullaghareirk Mountain range create narrow and short valleys throughout the LVIA Study Area which provides natural visual screening of the existing Taurbeg Wind Farm.

Distribution of Theoretical Visibility

In Figure 13-3, the ZTV map shows that there is mostly full theoretical visibility of the Taurbeg Wind Farm within 5km of the Site. Taurbeg Wind Farm is centred amongst the hills of Knockacummer, Taur and Foilard. These surrounding landforms provide some visual enclosure, this is represented by large areas with no theoretical visibility, particularly to the southwest and northeast of the LVIA Study Area.

The undulating landforms and narrow valleys of the Mullaghareirk Mountain range provide visual screening of Taurbeg Wind Farm from large areas of the wider landscape setting, resulting in substantial areas of no theoretical visibility to the southwest, west and northeast of the LVIA Study Area, particularly beyond 10km. The majority of the theoretical visibility is on the peaks of the undulating landforms, where there are very few sensitive receptors. There are very few areas of theoretical visibility at lower elevation within the narrow valleys of the Mullaghareirk Mountain range where receptors such as Rockchapel and the transport routes are located. There is intermittent theoretical visibility to the south, west and northwest of Taurbeg Wind Farm. Site visits and viewpoint assessment show that the actual visibility of the existing turbines is far less than the theoretical visibility shown by the ZTV mapping.

CH.13 LANDSCAPE AND VISUAL

END OF PART 1