codling wind park

Environmental Impact Assessment Report

Volume 4

Appendix 15.3 Seascape, Landscape and Visual Impact Assessment Methodology


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Abbreviations

Abbreviation	Term in Full
CAD	Computer Aided Design
CEA	Cumulative Effect Assessment
CWP	Codling Wind Park
DART	Dublin Area Rapid Transit
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
ELC	European Landscape Convention
FoV	Field of View
GLVIA	Guidelines for Landscape and Visual Impact Assessments
km	Kilometre
OS	Ordnance Survey
OWF	Offshore Wind Farm
SNH	Scottish Natural Heritage (now NatureScot)
SLVIA	Seascape, Landscape and Visual Impact Assessment
WTG	Wind Turbine Generator
ZTV	Zone of Theoretical Visibility
ZVI	Zone of Visual Influence

Definitions

Glossary	Meaning
the Applicant	The developer, Codling Wind Park Limited (CWPL).
Codling Wind Park (CWP) Project	The proposed development as a whole is referred to as the Codling Wind Park (CWP) Project, comprising of the offshore infrastructure, the onshore infrastructure, and any associated temporary works (construction / decommissioning).
Environmental Impact Assessment Report (EIAR)	A document reporting the findings of the EIA and produced in accordance with the Environmental Impact Assessment Regulations
magnitude (of change)	A term that combines judgements about the size and scale of the effect, the extent of the area over which it occurs, whether it is reversible or irreversible (temporary or permanent) and whether it is short or long term in duration
offshore infrastructure	The permanent offshore infrastructure, comprising of the WTGs, IACs, OSSs, Interconnector cables, offshore export cables and other associated infrastructure such as cable and scour protection.
Phase 1 Project	Under the special transition provisions in the Maritime Area Planning Act 2021, as amended (the MAP Act), the Minister for the Department of Environment, Climate and Communications (DECC) has responsibility for assessing and granting a Maritime Area Consent (MAC) for a first phase of offshore wind projects in Ireland. The Phase 1 Projects include Oriel Wind Park, Arklow Bank II, Dublin Array, North Irish Sea Array, Codling Wind Park and Skerd Rocks. A MAC has since been granted by DECC for each of the Phase 1 Projects.
photomontage	A visualisation which superimposes an image of a proposed development upon a photograph or series of photographs.
receptors	See Landscape Receptors and Visual receptors.
sensitivity	A term applied to specific receptors, combining judgements of the susceptibility of the receptor to the specific type of change or development proposed and the value related to that receptor.
study area	SLVIA study area is a 50 km buffer from the outermost wind turbine generator (WTG).
susceptibility	The ability of a defined landscape or visual receptor to accommodate the specific proposed development without undue negative consequences.
visualisation	A computer simulation, photomontage or other technique illustrating the predicted appearance of a development.

APPENDIX 15.3 SEASCAPE, LANDSCAPE AND VISUAL IMPACT ASSESSMENT METHODOLOGY

1 Introduction

1. Codling Wind Park Limited (CWPL hereafter 'the Applicant') is proposing to develop the Codling Wind Park (CWP) Project, which is located in the Irish Sea approximately 13 - 22 km off the east coast of Ireland, at County Wicklow.

2. This appendix forms part of **Chapter 15 Seascape, Landscape and Visual Impact Assessment** (SLVIA) of the Environmental Impact Assessment Report (EIAR) for the CWP Project and sets out further detail on the methodology applied for the SLVIA.

3. Guidelines for Landscape and Visual Impact Assessment, Third Edition (Landscape Institute and IEMA, 2013) (GLVIA3) is the key guidance document for SLVIA. It sets out at paragraph 1.1 that *"Landscape and Visual Impact Assessment is a tool used to identify and assess the significance of and the effects of change resulting from development on both the landscape as an environmental resource in its own right and people's views and visual amenity."* Paragraphs 2.20-2.22 of GLVIA3 indicate that the two components (assessment of landscape effects and assessment of visual effects) are *"related but very different considerations"* whilst paragraph 2.6 of GLVIA3 states that *"This guidance is equally applicable to all forms of landscape and does not separate townscape and seascape out for special treatment."* Therefore, within **Chapter 15, SLVIA**, effects were assessed separately on seascape character, landscape / townscape character, nationally designated landscapes and visual receptors.

4. The methodology has the following key stages, which are described in more detail in subsequent sections:

   - Baseline – included the gathering of documented information at an appropriate scale; scoping of the assessment and agreement of that scope with the Environmental Impact Assessment (EIA) practitioner, relevant consultees and local planning authorities; site visits; and initial reports to the EIA practitioner of issues that may need to be addressed within the design.
   - Design – reviewed initial layout / options, turbine choice(s), and mitigation options.
   - Assessment – included an assessment of the seascape, landscape and visual effects of the CWP Project's offshore infrastructure requiring site-based work and the completion of a report and supporting graphics.
   - Cumulative Effects Assessment (CEA) – assessed the effects of the CWP Project's offshore infrastructure in combination with other relevant projects, plans and activities. In this case the shortlist of projects assessed in the CEA for the SLVIA only identified wind farm developments referred to as Phase 1 Projects.

2 Stages of Assessment

2.1 Baseline

5. The baseline study established the scope of the assessment and the key seascape, landscape / townscape, nationally designated landscapes and visual receptors. It included the following key activities:

   - A desk study of relevant current national and, where relevant, local planning policy for the site and the surrounding areas.

- Agreement of the main study area radius with the key consultees.
- A desk study of designated landscapes within the agreed study area.
- A desk study of existing seascape and landscape character assessments for the site and surrounding areas with further specific studies on townscape character.
- A desk study of historic landscape or seascape character assessments (where available) and other information sources required to gain an understanding of the contribution of heritage assets to the present-day landscape.
- Zones of Theoretical Visibility (ZTV) studies to assist in identifying potential viewpoints and indicate the potential visibility of the CWP Project's offshore infrastructure, and therefore the scope of receptors likely to be affected. The methodology used in the preparation of ZTV studies is described in Section 7.
- Agreement, through consultation, on the scope for assessment of potential cumulative effects.
- Agreement, through consultation, on the number and location of representative and specific viewpoints within the study area.
- Identification of the range of other visual receptors (e.g. people travelling along routes, at visitor attractions on beaches or on the sea) within the study area.
- Site visits to become familiar with the study area, the seascape and landscape; to verify the documented baseline environment; and to identify viewpoints and receptors.

2.2 Scoping

6. The information gathered during the baseline assessment has been drawn together and summarised in the baseline section of EIAR **Chapter 15, SLVIA** and reasoned judgements made as to which receptors have potential to be significantly affected. Only these receptors have then been taken forward for the detailed assessment of effects, with others 'scoped out' (GLVIA3, (Landscape Institute and IEMA, 2013 para 3.19)).

2.3 Design

7. Throughout the development of the CWP Project, measures have been adopted as part of the evolution of the project design and approach to construction, to avoid or otherwise reduce adverse impacts on the environment. These mitigation measures have been referred to as 'primary mitigation'. They are an inherent part of the CWP Project and are effectively 'built in' to the impact assessment.

8. In terms of the SLVIA an analysis has been undertaken as part of the iterative design to determine whether the magnitude of change and consequential effects could be reduced for some visual receptors. The analysis, which was supported by a set of preliminary wireframes, concluded that whilst a reduction in the number of WTGs could be achieved to the north; this reduction would be insufficient to alter the magnitude of change and nature of visual effects experienced. Given the lack of variance in the nature of effects experienced as a consequence of a reduction in the number of WTGs other constraints associated with commercial fisheries and ecology have been factored in more substantively than SLVIA in terms of mitigation measures proposed.

9. Primary mitigation measures relevant to the assessment of SLVIA are set out in **Chapter** 1**5 SLVIA Table 15-21.**

2.4 Assessment

10. The assessment of potential effects included desk and site-based work, consisting of the following key activities:

- The preparation of ZTV plans based on two WTG Options for the CWP Project' offshore infrastructure (Option A and B).
- The preparation of computer generated wireframes showing the proposed layout of the project from a range of agreed viewpoints based on two Options.
- An assessment, based on both desk study and site visits for two WTG Options of the magnitude and significance of effects upon seascape character; landscape character; townscape character; nationally designated landscapes; and visual receptors, arising from the proposed development during construction, operation and maintenance, and decommissioning stages.
- An informed professional judgement as to whether each identified effect is beneficial, neutral or adverse.
- A clear description of the effects identified, with supporting information setting out the rationale for judgements.
- An informed professional judgement as to whether each identified effect is judged to be significant.
- The production of wireframes and photomontages from representative viewpoints showing the anticipated view for WTG Option A and B following construction of the proposed wind farm development.

3 Assessment judgements

11. The following factors were taken into consideration when making judgements within the assessment presented in **Chapter 15 SLVIA**.

3.1 Landscape / Seascape Susceptibility

12. The assessment of the susceptibility of the seascape or landscape receptor to change has been classified as high, medium or low and the basis for this assessment made clear using evidence and professional judgement. Intermediate ratings were also given, e.g. high-medium indicating an effect that was both less than high and more than medium. In such cases, the higher rating was always given first.

13. Indicators of landscape susceptibility to the construction, operation and decommissioning of the CWP Project offshore infrastructure are as follows:

- Overall strength and robustness: Where the overall characteristics and qualities of a particular seascape or landscape collectively result in a strong and robust landscape, it is likely to be capable of reasonably accommodating the influence of a proposed Offshore Wind Farm (OWF) without undue adverse effects on the special landscape qualities, in the case of a designated landscape, or the key characteristics for which an area of seascape or landscape character is valued. In these cases, the seascape or landscape would be less susceptible.
- Landscape scale and topography: Where the scale and topography are relatively large, they are likely to be able to physically accommodate the influence of a proposed OWF and be less susceptible to its effects. Seascapes and landscapes with a strong association to the array site, would be likely to be more susceptible than those with a weak association.
- Openness and enclosure: Openness in the seascape or landscape may increase susceptibility to change because it can result in wider visibility, however, open seascape or landscape may also be larger in scale and simple, which would decrease susceptibility. Conversely, enclosed seascape or landscapes can offer more screening potential, limiting visibility to a smaller area, however, they may also be smaller in scale and more complex which would increase susceptibility.
- Skyline: Prominent and distinctive skylines and horizons with important landmark features that are identified in the landscape character assessment, are generally considered to be more susceptible to development in comparison to broad, simple skylines which lack landmark features or contain other infrastructure features.

- Relationship with other development and landmarks: Contemporary landscapes where there are existing similar developments, such as WTGs or energy developments, or other forms of development such as industry, mineral extraction, masts, urban fringe, large settlements, or major transport routes, result in a lower susceptibility to development. This is because these existing human influences typically moderate the effects of the additional development. This is in contrast to the higher susceptibility of areas characterised by smaller scale, historic development and landmarks.
- Perceptual qualities: Notable seascapes / landscapes that are acknowledged to be particularly scenic, wild or tranquil are generally considered to be more susceptible to development in comparison to farmed, afforested and developed seascapes / landscapes where perceptions of 'wildness' and tranquillity are less tangible. Seascapes / landscapes which are either remote or appear natural may vary in their susceptibility to development.
- Seascape / landscape context and association: the extent to which a proposed OWF would influence the character of seascape or landscape receptors across the study area relates to the associations that exist between the seascape or landscape receptor within which a proposed OWF would be located and the seascape or landscape receptor from which a proposed OWF would be experienced. In some situations, this association will be strong, where the seascapes or landscapes are directly related, and, in other situations weak, where the seascapes or landscapes are not directly related. The context and visual connection to areas of adjacent seascape / landscape character, or designations has a bearing on their susceptibility to the development.

3.2 Landscape / Seascape Value

14. The value of a seascape or landscape character receptor is a reflection of the value that society attaches to that seascape or landscape. The assessment of the seascape or landscape value was classified as National / International, Local / County, Community and Limited, and the basis for this assessment made clear using evidence and professional judgement, based on the following range of factors.

- Seascape and landscape designations - A receptor that lies within the boundary of a recognised landscape related planning designation will be of increased value, depending on the proportion of the receptor that is affected and the level of importance of the designation which may be international, national, county or local. The absence of designations does not however preclude value, as an undesignated landscape character receptor may be valued as a resource in the local or immediate environment.
- Seascape or landscape quality - The quality of a seascape or landscape character receptor is a reflection of its attributes, such as scenic quality, sense of place, rarity and representativeness, as well as the extent to which its valued attributes have remained intact. A seascape or landscape with consistent, intact, well-defined and distinctive attributes is considered to be of higher quality and, in turn, higher value, than a landscape where the introduction of elements has detracted from its character.
- Seascape or landscape experience - The experiential qualities that can be evoked by a landscape receptor can add to its value and relates to a number of factors including the perceptual responses it evokes, the cultural associations that may exist in literature or history, or the iconic status of the seascape or landscape in its own right, the recreational value of the seascape or landscape, and the contribution of other values relating to the nature conservation or archaeology of the area.

3.3 Landscape / Seascape Sensitivity

15. The evaluation of seascape or landscape sensitivity was applied for each seascape or landscape receptor - high, high-medium, medium, medium-low, low, low-negligible and negligible - by combining individual assessments of the value of the receptor and its susceptibility to change. The basis for the

assessments was made clear using evidence and professional judgement in the evaluation of sensitivity for each receptor. Criteria that tend towards higher or lower sensitivity are set out in **Table 1** below.

Table 1 Landscape / Seascape Character Sensitivity Criteria

Higher sensitivity criteria	Lower sensitivity criteria
Value	
Designation: Designated landscape / seascape with national policy level protection or defined for their natural beauty.	**Designation:** Landscape / seascape without formal designation. Despoiled or degraded seascape with little or no evidence of being valued by the community.
Quality: Higher quality landscape /seascape with consistent, intact and well-defined, distinctive attributes.	**Quality:** Lower quality seascape with indistinct elements or features that detract from its inherent attributes.
Rarity: Rare or unique landscape / seascape character types, features or elements.	**Rarity:** Widespread or 'common' landscape seascape character types, features or elements.
Aesthetic / scenic: Aesthetic / scenic or perceptual aspects of designated wildlife, ecological or cultural heritage features that contribute to landscape / seascape character.	**Aesthetic / scenic:** Limited wildlife, ecological or cultural heritage features, or limited contribution to landscape / seascape character.
Perceptual qualities: Landscape / seascape with perceptual qualities of wildness, remoteness or tranquillity.	**Perceptual qualities:** Landscape / seascape with many man-made influences and heavily disturbed.
Cultural associations: Landscape / seascape with strong cultural associations that contributes to scenic quality.	**Cultural associations:** Seascape with few cultural associations.
Susceptibility to change	
Strength and robustness: Fragile landscape / seascape vulnerable to and lacking the ability to accommodate change.	**Strength and robustness:** Robust landscape / seascape that is capable of reasonably accommodating change without undue adverse effects.
Landscape scale: A landscape / seascape of a suitably large enough scale to accommodate the development, with simple, broad and homogenous coastal landforms.	**Landscape scale:** A smaller scale landscape / seascape, with complex, distinctive or small-scale coastal landforms.
Openness / enclosure: Enclosed landscape / seascape can offer more screening potential, limiting visibility to a smaller area, however they may also be smaller in scale and more complex which would increase susceptibility.	**Openness / enclosure:** Openness may increase susceptibility if there is wider visibility, however open landscape / seascape may also be larger in scale and simple which would decrease susceptibility.

Higher sensitivity criteria	Lower sensitivity criteria
Skyline: Distinctive undeveloped skylines with landmark features.	**Skyline:** Developed, non-distinctive skylines without landmark features.
Relationship with other development: Little association with other contemporary development, or strong associations occur with smaller scale or historic development.	**Relationship with other development:** Strong or direct association with other similar contemporary developments and landscape / seascape character influenced by development.
Perceptual qualities: Perceptual qualities associated with particular scenic qualities, wildness or tranquillity.	**Perceptual qualities:** Contemporary, cultivated / settled or developed landscapes with fewer perceptual qualities are likely to have a lower susceptibility.
Seascape association: Adjacent landscape / seascape character context connected by associated character and views.	**Seascape association:** Host landscape / seascape character is separate from surrounding / adjacent seascape/landscape character with weak association.

3.4 Visual Susceptibility

16. Susceptibility relates to the nature of the viewer experiencing the view and how susceptible they are to the potential effects of a proposed OWF. A judgement to determine the level of susceptibility, therefore, relates to the nature of the viewer and their experience from that particular viewpoint or series of viewpoints, classified as high, high-medium, medium, medium-low or low and based on the following criteria:

- Nature of the viewer - The nature of the viewer is defined by the occupation or activity of the viewer at the viewpoint or series of viewpoints. The most common groups of viewers considered in the visual assessment include residents, motorists, and people taking part in recreational activity or working. Viewers, whose attention is focused on the landscape, or with static long-term views, are likely to have a higher sensitivity. Viewers travelling in cars or on trains will tend to have a lower sensitivity as their view is transient and moving. The least sensitive viewers are usually people at their place of work as they are generally less aware of changes in views.
- Experience of the viewer - The experience of the visual receptor relates to the extent to which the viewer's attention or interest may be focused on the view and the visual amenity they experience at a particular location. The susceptibility of the viewer to change arising from a proposed OWF may be influenced by the viewer's attention or interest in the view, which may be focused in a particular direction, from a static or transitory position, over a long or short duration, and with high or low clarity. For example, if the principal outlook from a settlement is aligned directly towards a proposed OWF, the experience of the visual receptor will be altered more notably than if the experience relates to a glimpsed view seen at an oblique angle from a car travelling at high speed. The visual amenity experienced by the viewer varies depending on the presence and relationship of visible elements, features or patterns experienced in the view and the degree to which the landscape in the view may accommodate the influence of a proposed OWF.

3.5 Magnitude of Change

17. The magnitude of change resulting from the CWP Project's offshore infrastructure was described as High, Medium, Low and Negligible and the basis for this assessment was made clear using evidence

and professional judgement. Intermediate ratings were also given, e.g. High-Medium, this indicates an effect that is both less than High and more than Medium and, in such cases, the higher rating would always be given first. In assessing the magnitude of change, the assessment has focused on the size or scale of change and its geographical extent. The duration and reversibility were also stated in relation to the assessed effects (i.e. as short / medium / long-term and temporary / permanent).

18. Examples of criteria that tend towards higher or lower magnitude of change that can occur on landscape and seascape receptors are set out in **Table 2**.

Table 2 Examples of Seascape and Landscape Magnitude of Change Criteria

Magnitude of change	Magnitude of change definition	Examples of seascape and landscape magnitude of change
High	The CWP Project's offshore infrastructure would result in a high level of alteration to the existing seascape / landscape character, forming the prevailing influence and/or introducing elements that are substantially uncharacteristic in the baseline environment. The addition of the CWP Project's offshore infrastructure would result in a major incremental change, loss or addition to the baseline.	**Size / Scale:** A large-scale change and major loss of key landscape elements / characteristics or the addition of large scale or numerous new and uncharacteristic features or elements that would affect the seascape / landscape character and the special landscape qualities / integrity of a landscape designation. Directly affecting a host seascape / landscape receptor or indirectly affecting a nearby receptor. **Geographical extent:** The size or scale of change would typically, but not always affect a large geographical extent or area and may be close to the CWP Project's offshore infrastructure.
Medium-high	Intermediate rating with combination of criteria from high or medium magnitude defined through professional judgement.	
Medium	The CWP Project's offshore infrastructure would result in a medium level of alteration to the existing seascape / landscape character, forming a readily apparent influence and/or introducing elements that are potentially uncharacteristic in the receiving environment. The addition of the CWP Project's offshore infrastructure would result in a moderate incremental change, loss or addition to the baseline.	**Size / Scale:** A medium scale change and moderate loss of some key landscape elements / characteristics or the addition of some new medium scale uncharacteristic features or elements that could partially affect the seascape / landscape character and the special landscape qualities / integrity of a landscape designation. Directly affecting a host seascape / landscape receptor or indirectly affecting a nearby receptor. **Geographical extent:** The size or scale of seascape/landscape change would typically, but not always affect a more localised geographical extent at an intermediate distance from the CWP Project's offshore infrastructure.
Medium-low	Intermediate rating with combination of criteria from medium or low magnitude defined through professional judgement.	

Magnitude of change	Magnitude of change definition	Examples of seascape and landscape magnitude of change
Low	The CWP Project's offshore infrastructure would result in a low level of alteration to the existing seascape / landscape character, providing a slightly apparent influence and/or introducing elements that are characteristic in the receiving environment. The addition of the CWP Project's offshore infrastructure would result in a low incremental change, loss or addition to the baseline.	**Size / Scale:** A small-scale change and minor loss of a few landscape elements / non key characteristics, or the addition of some new small-scale features or elements of limited characterising influence on seascape/landscape character / designations. **Geographical extent:** There may be a small partial change in seascape / landscape character, typically, but not always affecting a localised geographical extent at some distance from the CWP Project's offshore infrastructure.
Negligible	The CWP Project's offshore infrastructure would result in a negligible alteration to the existing seascape / landscape character. If visible it may form a barely discernible influence and/or introduce elements that are substantially characteristic in the baseline environment. The addition of the CWP Project's offshore infrastructure would result in negligible incremental change, loss or addition to the baseline.	**Size / Scale:** A very small-scale change that may include the loss or addition of some landscape elements of limited characterising influence. The seascape/landscape characteristics and character would be unaffected. **Geographical extent:** Typically affecting a very small geographical extent at greater distance from the CWP Project's offshore infrastructure.

19. Examples of criteria that tend towards higher or lower magnitude of change that can occur on views and visual receptors are set out in **Table 3.**

Table 3 Examples of Visual Magnitude of Change Criteria

Magnitude of change	Magnitude of change definition	Examples of visual magnitude of change
High	The CWP Project's offshore infrastructure would result in a high level of alteration to the existing view, forming the prevailing influence and / or introducing elements that are substantially uncharacteristic in the baseline view. The addition of the CWP Project's offshore infrastructure would result in a major incremental change, loss or addition to the baseline view.	**Size and Scale:** • A very large - large and dominant change to the view. • Number: Involving the loss/addition of a large number of features / elements. • Distance: Typically appearing closer to the viewer in the fore to middle ground. • Field of View (FoV): Affecting a large vertical angle and wide horizontal FoV.

		• Nature of Visibility: Multiple phase development, continuously and sequentially visible. • Contrast: Strong degree of contrast with surroundings with little or no screening. • Skyline: Visible on the skyline as a new feature. • Consistency of Image: Contrasting with other developments, lacking in visual rationale. Typically experienced from representative viewpoints, illustrating a visual effect likely to be experienced by larger numbers of people, relative to the activity, affecting a large area or length / proportion of route. May also be experienced from a specific viewpoint.
Medium-high	Intermediate rating with combination of criteria from high or medium magnitude of change category.	
Medium	The CWP Project's offshore infrastructure would result in a medium level of alteration to the baseline view, forming a readily apparent influence and / or introducing elements that are potentially uncharacteristic in the receiving view. The addition of the CWP Project's offshore infrastructure would result in a moderate incremental change, loss or addition to the baseline view.	**Size and Scale:** • A medium and prominent change to the view. • Number: Involving the loss / addition of a number of features / elements. • Distance: Typically appearing in the middle ground. • FoV: Affecting a medium vertical angle and moderate horizontal FoV. • Nature of Visibility: Multiple phase development, intermittently and sequentially visible. • Contrast: Contrast with surroundings and may benefit from some screening. • Skyline: Visible on the skyline along with other features. • Consistency of Image: Different from other developments, some visual rationale. Typically experienced from representative viewpoints illustrating a visual effect likely to be experienced by a medium number of people, relative to the activity, affecting a medium area or length / proportion of route. May also be experienced from a specific viewpoint.
Medium-low	Intermediate rating with combination of criteria from medium or low magnitude of change category.	

Low	The CWP Project's offshore infrastructure would result in a low level of alteration to the baseline view, providing a slightly apparent influence and / or introducing elements that are characteristic in the receiving view. The addition of the CWP Project's offshore infrastructure would result in a low incremental change, loss or addition to the baseline view.	**Size and Scale:** • A small and noticeable change being missed by the casual observer. • Number: Involving the loss / addition of a small number of features / elements. • Distance: Typically appearing in the background. • FoV: Affecting a small vertical angle and narrow horizontal FoV. • Nature of Visibility: Simple, single development, intermittently and infrequently visible. • Contrast: Some parity / 'fits' with surroundings and may benefit from screening. • Skyline: Partly visible on a developed skyline or not visible on the skyline. • Consistency of Image: Similar from other developments with visual rationale, appearing reasonably well accommodated within its surroundings. Typically experienced from illustrative viewpoints likely to be experienced by low numbers of people, relative to the activity, affecting a smaller area or length / proportion of route. May also be experienced from a specific viewpoint.
Negligible	The CWP Project offshore infrastructure will result in a negligible alteration to the existing view. If visible it may, form a barely discernible influence and / or introduce elements that are substantially characteristic in the baseline view. The addition of the CWP Project's offshore infrastructure would result in negligible incremental change, loss or addition to the baseline view.	**Size and Scale:** • A small or negligible change, need to 'look for it'. • Number: Involving the loss / addition of a small number of features / elements. • Distance: Typically appearing in the far distance. • FoV: Affecting a very small vertical and narrowest horizontal FoV. • Nature of Visibility: Simple, single development, intermittently and infrequently visible. • Contrast: Blends with surroundings and / or is well screened. • Skyline: Partly visible on a developed skyline or not visible on the skyline. • Consistency of Image: Similar from other developments with strong visual rationale, appearing well

		accommodated within its surroundings. Typically experienced from illustrative viewpoints likely to be experienced by low numbers of people, relative to the activity, affecting a smaller area or length / proportion of route. May also be experienced from a specific viewpoint.

4 Seascape and Landscape Character Considerations

20. This section sets out some of the methodological considerations that have informed the assessment of seascape and landscape effects. It should be read alongside the methodology provided in **Chapter 15 SLVIA** and provides further supporting information in relation to key aspects of the methodology.

21. The National Marine Planning Framework (Government of Ireland, 2021) (NMPF) states under Policy 1 that proposals *"should demonstrate the likely significant impacts of a development on the seascape and landscape of an area have been considered."* The document refers to the National Landscape Strategy (Department of Arts, Heritage and the Gaeltacht, 2015), European Landscape Convention (2000) (ELC) and Regional Seascape Character Assessment for Ireland 2020 (Marine Institute, 2020), which have been reviewed as part of this assessment.

22. The ELC provides the following definition:

"Landscape means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors."

23. And notes in Article 2 that landscape includes *"natural, rural, urban and peri-urban areas. It includes land, inland water and marine areas"*.

24. The NMPF states that *"seascape refers to landscapes with views of the coast or seas, and coastal areas and the adjacent marine environment with cultural, historical and archaeological links with each other."*. The Regional Seascape Character Assessment for Ireland takes its definition of seascape from 'An Approach to Seascape Character Assessment' (Natural England, 2012), which is broadly similar to the NMPF definition *"an area of sea, coastline and land, as perceived by people, whose character results from the actions and interactions of land with sea, by natural and/or human factors"*.

25. The National Landscape Strategy does not contain a definition of landscape character. 'An Approach to Landscape Character Assessment' (Natural England, 2014) defines landscape character as *"a distinct and recognisable pattern of elements, or characteristics, in the landscape that make one landscape different from another, rather than better or worse."*

26. The Regional Seascape Character Assessment for Ireland used the landward boundary definition used in the Northern Ireland Regional Seascape Character Assessment (Northern Ireland Environment Agency and Department of Environment, 2014) to define the landward boundary of seascape character areas. This provides the following 'hierarchy of criteria' for establishing the landward boundary:

    1. *"Initially based on the coastal road, which as a defined feature, strongly relates to how the seascape is perceived;*
    2. *Further modified to incorporate key natural and cultural physical features that have a strong marine influence; and*
    3. *Where criteria 1 and 2 are not relevant, professional judgements were made to identify the extent to which terrestrial areas demonstrated a strong perceptual experience of the sea."*

27. Seascape and landscape character assessments usually define Key Characteristics of seascape or landscape character areas. Page 51 of An Approach to Landscape Character Assessment (Natural England, 2014) describes the function of Key Characteristics in landscape assessment, as follows:

"*Key characteristics are those combinations of elements which help to give an area its distinctive sense of place. If these characteristics change, or are lost, there would be significant consequences for the current character of the landscape. Key characteristics are particularly important in the development of planning and management policies. They are important for monitoring change and can provide a useful reference point against which landscape change can be assessed. They can be used as indicators to inform thinking about whether and how the landscape is changing and whether, or not, particular policies – for example - are effective and having the desired effect on landscape character.*"

28. It follows from the above that in order to assess whether landscape character is significantly affected by a development, it should be determined how each of the key characteristics would be affected. The judgement of magnitude therefore reflects the degree to which the key characteristics and elements which form those characteristics would be altered by the proposals. The same principle applies to assessing whether seascape character is significantly affected.

4.1 Seascape character

29. Seascape characterisation in Ireland has been informed by two main documents; 'An Approach to Seascape Character Assessment' (Natural England, 2012) and the Northern Ireland Regional Seascape Character Assessment.

30. It is important to recognise the interrelationship between, and interdependency of, the sea and land. The character of seascape character areas will often be defined by both seaward and landward elements.

31. The approach to assessing the susceptibility, value and sensitivity of seascape character areas to a proposed development is described in Section 15.4 of **Chapter 15 SLVIA** with reference to the following guidance documents:

- An approach to seascape sensitivity assessment, Marine Management Organisation, 2019a. (MMO1204a); and
- Seascapes sensitivity assessment: Technical Report, Marine Management Organisation, 2019b. (MMO1204b)

32. With respect to seascape sensitivity, the Regional Seascape Character Assessment for Ireland does not provide any guidance in relation to the assessment of sensitivity of seascape character, and no guidance exists for Ireland in relation to assessing seascape sensitivity. Therefore, the assessment in **Chapter 15 SLVIA** used best practice guidance for assessing sensitivity of seascape character, which was published by England's Marine Management Organisation (MMO) in 2019, 'An approach to seascape sensitivity assessment' (MMO1204, 2019).

4.1.1 Seascape character susceptibility – considerations

33. The susceptibility of seascape character types or areas was judged based on both the attributes of the receiving environment and the characteristics of the proposed development. Thus, the key characteristics of the seascape character types / areas were considered, along with natural factors (form, topography and character of the coast (comprising the hinterland and coastal edge)); cultural / social factors (human use of the sea, coast and hinterland, historic features); quality / condition (intactness and state of repair); aesthetic and perceptual factors (scale, openness and enclosure, exposure (e.g. sheltered and calm or exposed), aspect (visual relationship with the sun e.g. when

viewed from the coast); seascape pattern and foci (features and elements on / above sea level or on the coast or hinterland), and visual characteristics (key views, intervisibility with coast, type and number of typical receptors, how the seascape is experienced). The likelihood of material effects on the seascape character types or areas were judged based on the scale and layout of the proposal and how this relates to the characteristics of the receiving seascape. Further detail on criteria which affected seascape character susceptibility to OWF development can be seen in **Appendix 15.5 Seascape Character Assessment**.

34. Issues associated with visibility were considered within seascape character assessment. Clarity of visibility was determined by prevailing weather conditions including such aspects as air moisture content and air pressure. Visibility influences the visual receptor's perception of distance and there are inherent difficulties in judging both scale and distance when looking across expanses of sea. Perspective can often be condensed and misread due to an absence of reference points to provide a sense of scale. Moreover, where the immediate coastline shelves gently, a further dynamic is introduced into the view, varying according to the state of the tide and the resultant extent of exposed foreshore. This can change the character of local areas on a regular basis and alter visual judgments.

4.1.2 Seascape value - considerations

35. With regards to value, it was acknowledged that while there are no 'seascape' designations as such, landscape designations which extend up to / lie on the coastline adjoining seascape character areas or types (such as Special Amenity Area Orders or AONBs) would have a bearing on the overall value, and therefore sensitivity of a seascape receptor. However, it should be noted that these would not automatically infer a high value to the overall seascape character area or type.

36. MMO1204b (section 5.3) states:

"The degree of influence [of a designated landscape] is likely to be determined by a number of factors including the defined special qualities of the designation, distance from the designation, intervisibility and the relationship between the designation and character area.

Value will also derive from other factors equivalent to those explored in 'An Approach to Landscape Sensitivity Assessment' (Natural England, 2019, p 18). These include:

- *other designations e.g. nature conservation designations, heritage designations such as World Heritage Sites and local landscape designations;*
- *character and sense of place;*
- *valued attributes such as coastal form, perceptual qualities, cultural and natural features and associations, special qualities;*
- *community values - these may be ascertained by engagement with communities who engage with seascape in various ways;*
- *recreational value; and*
- *other intrinsic value.*

37. Community values may be ascertained by community engagement or other evidence. This information is important as it relates to people's quality of life. Communities' views may contrast with, or reinforce, 'expert' opinion."

38. Further detail on criteria which affect seascape character value can be seen in **Appendix 15.5, Seascape Character Assessment**.

4.2 Landscape character

4.2.1 Landscape character susceptibility – considerations

39. The susceptibility of landscape character types or areas was judged, based on both the attributes of the receiving environment and the characteristics of the proposed development. Thus, the key characteristics of the landscape character types / areas were considered, along with scale, openness, topography; the absence of, or presence, nature and patterns of development, settlement, landcover, the contribution of heritage assets and historic landscape elements and patterns, and land uses in forming the character. The condition of the receiving landscape, i.e. the intactness of the existing character was also relevant in determining susceptibility. The likelihood of material effects on the landscape character types or areas was judged, based on the scale and layout of the proposal and how this relates to the characteristics of the receiving landscape.

40. The introduction of any development into a landscape adds a new feature which can affect the 'sense of place' in its near vicinity, but with distance, the existing characteristics reassert themselves.

41. The baseline was informed by desk study of published landscape character assessments and field survey. It is specifically noted within An Approach to Landscape Character Assessment (Natural England, 2014) that:

"Our landscapes have evolved over time and they will continue to evolve – change is a constant but outcomes vary. The management of change is essential to ensure that we achieve sustainable outcomes – social, environmental and economic. Decision makers need to understand the baseline and the implications of their decisions for that baseline."

4.2.2 Landscape value – considerations

42. Paragraph 5.19 of GLVIA3 states that *"A review of existing landscape designations is usually the starting point in understanding landscape value, but the value attached to undesignated landscapes also needs to be carefully considered and individual elements of the landscape- such as trees, buildings or hedgerows -may also have value. All need to be considered where relevant."*

43. Paragraph 5.20 of GLVIA3 indicates information which might indicate landscape value, including:

- Information about areas recognised by statute such as National Parks, Areas of Outstanding Natural Beauty (AONBs) and in the case of Ireland Special Amenity Areas;
- Information about Heritage Coasts, where relevant;
- Local planning documents for local landscape designations which for Ireland varies depending on Local Planning Authorities and includes for instance AONBs, Highly Sensitive Landscapes, Areas of High Amenity Value, Prospects and Views;
- Information on features such as Architectural Conservation Areas, Sites and Monuments Record, Historic Graveyards, historic or cultural sites;
- Art and literature, identifying value attached to particular areas or views; and
- Material on landscapes of local or community interest, such as local green spaces, village greens or allotments.

44. An assessment of landscape value was made based on the following factors outlined in **Table 1** of the Landscape Institute's 'Technical Guidance Notes 02-21: Assessing landscape value outside national designations': natural heritage; cultural heritage; landscape condition; associations; distinctiveness; recreational; perceptual (scenic); perceptual (wildness and tranquillity); and functional.

45. In addition to the above list, consideration was also given to any evidence that indicates whether the landscape has particular value to people that would suggest that it is of greater than Community value.

5 Viewpoints and Visual Receptors - considerations

46. This section sets out some of the methodological considerations that informed the assessment of visual effects. It should be read alongside the methodology provided in **Chapter 15 SLVIA** and provides further supporting information in relation to key aspects of the methodology.

47. A wide variety of visual receptors can reasonably be anticipated to be affected by the CWP Project's offshore infrastructure. Within the baseline assessment, the ZTV study and site visits were used to determine which visual receptors are likely to be significantly affected and therefore merit detailed assessment. In line with guidance (GLVIA3); both representative and specific viewpoints may be identified to inform the assessment. In general, the majority of viewpoints would be representative – representing the visual receptors at the distance and direction in which they are located and of the type(s) that would be present at that location. The representative viewpoints have generally been selected in locations where significant effects would be anticipated; though some may be selected outside of that zone – either to demonstrate the reduction of effects with distance; or to specifically ensure the representation of a particularly sensitive receptor.

48. The types of visual receptors likely to be included with the assessment are:

- Users of walking routes or accessible landscapes including Public Rights of Way, National and Regional Trails and other long-distance routes, Common Land, Open Access Land, permissive paths, land held in trust offering free public access, and other regularly used, permitted walking routes;
- Visitors to and residents of settlements;
- Visitors to specific valued viewpoints;
- Visitors to attractions or heritage assets for which landscape and views contribute to the experience;
- Users of roads or identified scenic routes, including promoted cycling route;
- Users of the Dublin Area Rapid Transport (DART) railway line from Dublin to Greystones (which runs on the Belfast Dublin Main Lines) and a commuter service link from Greystones to Wicklow forming of the Dublin to Rosslare Main Line;
- Users of the inter tidal zone (e.g. beach users, swimmers and surfers);
- Recreational sailors;
- Ferry passengers; and
- Outdoor workers, including those engaged in marine surface-based activities such as commercial ships, fishing or operation and maintenance of oil and gas platforms and OWFs.

49. With the exception of specific viewpoints, each route, settlement or location encompass a range of possible views, which might vary from no view of the CWP Project's offshore infrastructure to very clear, close views. Therefore, effects are described in such a way as to identify where views towards the CWP Project's offshore infrastructure are likely to arise and what the scale, duration and extent of those views are likely to be. In some cases, this will be further informed by a nearby viewpoint and in others it will be informed with reference to the ZTV, aerial photography and site visits. Each of these individual effects are then considered together in order to reach a judgement of the effects on the visual receptors along that route, within that area or in that place.

50. The representative viewpoints are used as 'samples' on which to base judgements of the scale of effects on visual receptors. The viewpoints represent multiple visual receptors, and duration and extent are judged when assessing impacts on the visual receptors.

51. For specific viewpoints (key and sometimes promoted viewpoints within the landscape), duration and extent are assessed, with extent reflecting the extent to which the CWP Project's offshore infrastructure affects the valued qualities of the view from the specific viewpoint.

52. **Table 4** below sets out typical examples of visual receptor sensitivity for different types of visual receptors.

Table 4 Visual Receptor Sensitivity – typical examples

		Susceptibility		
		High	Medium	Low
Value	National / International	1 High	4 High-Medium	8 Medium
	Local / District	2 High-Medium	5 High-Medium	8 Medium
	Community	3 High-Medium	6 Medium	9 Medium-Low
	Limited		7 Medium-Low	10 Low
1	Visitors to valued viewpoints or routes which people might visit purely to experience the view, e.g. promoted or well-known viewpoints, routes from which views that form part of the special qualities of a designated landscape can be well appreciated; key designed views; panoramic viewpoints marked on maps.			
2	People in locations where they are likely to pause to appreciate the view, such as from local waypoints such as benches; or at key views to/from local landmarks. Visitors to local attractions including specific beaches, heritage assets or public parks where views are an important contributor to the experience, or key views into / out of Conservation Areas. Recreational sailors who have travelled (in large numbers) from further than the local community and whose appreciation of the view is likely to be an important part of their recreational experience.			
3	People in the streets around their home, or using public rights of way, navigable waterways or accessible open space (public parks, open access land). Areas where recreational sailing is mostly undertaken by the local community.			
4	Users of promoted scenic rail routes.			
5	Users of promoted scenic local road routes.			
6	Users of cycle routes, local roads and railways.			
7	Outdoor workers, including commercial offshore fishermen. Ferry passengers.			
8	Users of A-roads which are nationally or locally promoted scenic routes.			
9	Users of sports facilities such as cricket grounds and golf courses.			
10	Users of Motorways and A-roads; shoppers at retail parks, people at their (indoor) places of work. Offshore workers constructing, maintaining or operating OWFs, gas and oil rigs.			

5.1 Preparation and use of Visuals

53. The ZTVs were used to inform the field study assessment work, providing additional detail and accuracy to observations made on site. Photomontages may also be produced in order to assist readers of the assessment in visualising the proposals but are not used in reaching judgements of effect. The preparation of the ZTVs (and photomontages where applicable) was informed by the Landscape Institute's Technical Guidance Note 06/19: Visual Representation of Development Proposals (Landscape Institute, 2019) and NatureScot's Visual Representation of Wind Farms: Guidance (NatureScot, 2017).

54. The following points were borne in mind in respect of the ZTV study:

- Onshore areas shown as having potential visibility may have visibility of the development obscured by local features such as trees, hedgerows, embankments or buildings.
- Since only the WTG hubs and blade tips have been modelled, this may be all that is visible – rather than the WTG tower. This is particularly true of onshore areas near the edges of potential visibility.

55. The following points were borne in mind in respect of visualisations, as identified in Annex A of Visual Representation of Wind Farms: Guidance (NatureScot, 2017):

- A visualisation can never show exactly what the wind farm will look like in reality due to factors such as: different lighting, weather and seasonal conditions which vary through time and the resolution of the image.
- The images provided give a reasonable impression of the scale of the WTGs and the distance to the WTGs but can never be 100% accurate.
- A static image cannot convey turbine movement, or flicker or reflection from the sun on the turbine blades as they move.
- The viewpoints illustrated are representative of views in the area but cannot represent visibility at all locations.
- To form the best impression of the impacts of the wind farm, these images are best viewed at the viewpoint location shown.
- The images must be printed at the right size to be viewed properly (260 mm by 820 mm).
- The printed images should be held flat at a comfortable arm's length. If viewing these images on a wall or board at an exhibition, you should stand at arm's length from the image presented to gain the best impression.
- It is preferable to view printed images rather than view images on screen. If you do view images on screen, you should do so using a normal PC screen with the image enlarged to the full screen height, to give a realistic impression. Do not use a tablet or other device with a smaller screen to view the visualisations described in this guidance.

56. A detailed description of the methods by which ZTVs and visualisations were prepared is set out in Section 8 of this Appendix.

6 Night-time Assessment

57. The sensitivity of visual receptors at night is generally rated as follows:

- National value and High susceptibility – visitors to Dark Sky Parks.
- Local value and High susceptibility – visitors to dark sky discovery sites or public observatories.
- Community value and High susceptibility – wild campers, people engaged in nighttime activity such as bat watching, residents of notably dark areas (i.e. rural locations with no street lighting) in the streets around their homes or footpaths where dark skies are integral to the amenity.
- National (or Local) value and Medium susceptibility – visitors to nationally important or well-known local landmarks that are illuminated at night.

- Community value and Medium susceptibility – residents in urban areas or semi-urban / rural areas in the streets around their homes, users of cycle routes and footpaths where street lighting / illumination is characteristic.
- Community value and Low susceptibility – drivers using local, unlit roads and train passengers.
- Limited value and Low susceptibility – users of main roads, illuminated minor roads and people at their place of work.

7 Cumulative Assessment

58. Cumulative assessment relates to the assessment of the effects of more than one development. A search area from the CWP Project's offshore infrastructure (typically of a similar scale to the study area for the CWP project alone) was agreed with Phase 1 Projects.[1]

59. Only operational and consented developments were considered, unless specific circumstances indicated that a development in planning should be included, with progressively decreasing emphasis placed on those which were less certain to proceed. Typically, operational and consented developments were treated as being part of the baseline. i.e. it was assumed that consented schemes would be built except for occasional exceptions where there was good reason to assume that they would not be constructed.

60. The cumulative assessment examined the same groups of seascape, landscape, townscape, nationally designated landscapes and visual receptors as the assessment for the CWP Project's offshore infrastructure though different viewpoints were used in order to better represent the likely range of effects arising from the combination of schemes. The assessment was informed by cumulative ZTVs, as necessary, showing the extent of visual effects of the schemes in different colours to illustrate where visibility of more than one development was likely to arise. Cumulative wireframes and photomontages were also prepared.

61. In addition, the effects on users of routes through the area, from which developments may be sequentially visible as one passes through the landscape were also considered, if appropriate. This assessment was based on the desk study of ZTVs and aerial photography, and site visits to travel along the routes being assessed.

62. In relation to seascape, landscape, nationally designated landscapes and visual cumulative assessment, it was important to note the following:

    - For each assessed receptor, incremental cumulative effects may be the same as for the application scheme or reduced (where the influence of other schemes in planning would be such that were they consented and considered to be part of the baseline, the incremental change arising from the addition of the application scheme would be less).
    - Subject to the distance and degree of intervening landform, vegetation and structures there may be no cumulative effects.

63. The way in which the assessment was described and presented varied, depending on the number and nature of scenarios which may arise. This variation is needed in order to convey to the reader the key points of each assessment. For example, the three different cumulative combinations that may arise for an assessment in which there are two existing undetermined applications each can be assessed individually. A situation in which there are 10 applications cannot reasonably be assessed in this way and the developments may need to be grouped for analysis.

[1] Discussions with other Phase 1 Projects agreed a joint approach to undertaking cumulative SLVIAs. This included the application of a study area of 50 km to all cumulative SLVIAs (CSLVIAs) based on best practice and guidance.

8 Visualisations and ZTV Studies

8.1 ZTV and ZVI Studies

64. Bare earth and obstructed ZTV studies were prepared using the ESRI ArcGIS Viewshed routine. This created a raster image that indicated the visibility (or not) of the points modelled. LDA Design undertook a ZTV study that was designed to include visual barriers from settlements and woodlands (with heights derived from NEXTMap 25 surface mapping data). If significant deviations from these assumed heights were noted during site visits, for example, young or felled areas of woodland, or recent changes to built form, the features concerned were adjusted within the model or the adoption of a digital surface model will be used to obtain actual heights for these barriers.

65. The model was also designed to take into account both the curvature of the earth and light refraction, informed by the SNH guidance. LDA Design undertook all ZTV studies with observer heights of 2 m.

66. The ZTV analysis began at 1 m from the observation feature and worked outwards in a grid of the set resolution until it reached the end of the terrain map for the project.

67. For all plan production LDA Design produced ZTVs that had a base and overlay of OpenStreetMap Raster mapping. The ZTVs have been reproduced at a suitable scale on an A3 template to encompass the study area refer to **Appendix 15.10 SLVIA** with a further set presented in **Appendix 15.12 Bare Earth ZTVs at A1, Appendix 15.13 Obstructed ZTVs at A1** and **Appendix 15.14 Cumulative ZTVs at A1**.

68. The Zone of Visual Influence (ZVI) was described rather than presented, based on observations and professional judgement on the extent of actual visibility following the assessment site visits, and aligns with the computer generated obstructed ZTV. As described in **Chapter 15, SLVIA** section 15.6, the ZVI extends seaward and encompasses at a low elevation onshore a 6 km corridor running north south along the coastline. It also included all elevated ground rising up to 900 m and forming part of the Wicklow Mountain National Park, the Dublin Hills and associated outliers such as Great and Little Sugar Loaf.

8.2 Ground model accuracy

69. Depending on the project and level of detail required, different height datasets may be used. **Table 5** presents a list of example data products and their specifications:

Table 5 Example data products and their specifications

Product	Distance Between Points	Vertical RMSE Error
LiDAR	50 cm – 2 m	Up to +/-5 cm
Photogrammetrically Derived Heights	2 m – 5 m	up to +/- 1.5 m
OS terrain 5	5 m	up to +/- 2.5 m
NEXTMap25 DTM	25 m	+/- 2.06 m
OS terrain 50	50 m	+/- 4 m

70. Site-specific topographical survey data may also be used where available.

8.3 Photomontages and Wireframes

71. Verified photomontages were produced in seven stages. Wireframes were produced using the same overall approach, but only required Steps 1 – 5 as outlined below.

1. Photography was undertaken using a full frame digital SLR camera and 50 mm lens. A tripod was used to take overlapping photographs which were joined together using an industry standard application to create a single panoramic image for each viewpoint. These were then saved at a fixed height and resolution to enable correct sizing when reproduced in the final images. The photographer also noted the GPS location of the viewpoint and took bearings to visible landmarks whilst at the viewpoint.
2. Creation of a ground model and 3D mesh to illustrate that model. This was created using NEXTMap25 DTM point data (or occasionally other terrain datasets where required, such as site-specific topographical data or Photogrammetrically Derived Heights) and ground modelling software.
3. The addition of the CWP Project's offshore infrastructure to the 3D model. The main components of the CWP Project's offshore infrastructure were accurately modelled in CAD and then inserted into the 3D model at the proposed locations and elevations.
4. Wireline generation – The identified viewpoints for the SLVIA were added within the 3D CAD model with each observer point inserted at 1.5 m above the modelled ground plane. The location of the landmarks identified by the photographer were included in the model. The view from the identified viewpoint was replicated using virtual cameras to create a series of single frame images, which also include bearing markers. As with the photographs, these single frame images were joined together using an industry standard application to create a single panoramic image for each viewpoint. These were then saved at a fixed height and resolution to ensure that they are the same size as the photographs.
5. Wireline matching – The photographs were matched to the wirelines using a combination of the visible topography, bearing markers and the landmarks that have been included in the 3D model.
6. For the photomontage, an industry standard 3D rendering application was used to produce a rendered 3D view of the CWP Project's offshore infrastructure from the viewpoint. The rendering used materials to match the intended surface finishes of the development and lighting conditions according to the date and time of the viewpoint photograph.
7. Methodology for night-time photomontages have the following additional steps:
8. Two types of light source were modelled when rendering the night-time views:
    - Point light sources (aviation and navigation lights);
    - Directional lighting of the unique identifiers on the lower sections of the WTG.
9. The specification of the lighting and the principles used for the lighting layout design for each WTG Option was presented in **Chapter 15, SLVIA**.
10. Using similar exposure settings to those used to take the original panoramas reference photographs were taken of an OWF at a similar distance from shore as the CWP Project's offshore infrastructure.
11. The model of the proposals was then rendered in specialist software with the aviation, navigation and turbine ID lights shown in the correct locations, using specifications in **Chapter 15, SLVIA**.
12. The rendered development was then added to the photograph in the position identified by the wireline (using an image processing application) to ensure accuracy. The images were then layered to ensure that the development appeared in front of and behind the correct elements visible within the photograph.

72. In accordance with the guidance provided in Landscape Institute Technical Guidance Note 06/19 (Ref. 6), visualisations were prepared to the technical methodology set out below. The wireframe and photomontages prepared in support of the SLVIA adhered to the Type 3 visualisation specification as

surveyed locational accuracy s not generally necessary but image enlargement, to illustrate perceived scale was appropriate.

8.4 Technical Methodology

73. **Table 6** summarises the information and equipment used for the taking of photographs and preparation of the visualisations, in accordance with the requirements of LI TGN 06/19 Visual Representation of Development Proposals.

Table 6 Information and equipment used for viewpoints and visualisations

Information	Technical Response
Photography	
Method used to establish the camera location	Aerial photography in ESRI ArcGIS along with GPS reading taken on site
Likely level of accuracy of location	Better than 2 m
If lenses other than 50 mm have been used, explain why a different lens is appropriate	N/A
Written description of procedures for image capture and processing	See point 1 above
Make and type of Panoramic head and equipment used to level head	Calumet CK8157 tripod with Manfrotto 303 Plus Levelling Head with fine adj. leveller
If working outside the UK, geographic co-ordinate system (GCS) used	N/A
3D Model / Visualisation	
Source of topographic height data and its resolution	NEXTMap25, with a resolution of 25m.
How have the model and the camera locations been placed in the software?	Georeferenced model supplied by engineers Camera locations taken from photography viewpoint locations
Elements in the view used as target points to check the horizontal alignment	Existing buildings, infrastructure / road alignments, telegraph poles / street lighting / signage, field boundaries, DSM
Elements in the view used as target points to check the vertical alignment	Topography, existing buildings
3D Modelling / Rendering Software	Civil 3D / AutoCAD / 3DS Max / V-Ray

9 References

74. Council of Europe (2000). European Landscape Convention

75. Department of Arts, Heritage and the Gaeltacht (2015). National Landscape Strategy. Available at: https://www.gov.ie/en/publication/8a59b-national-landscape-strategy/ [Accessed: March 2024].

76. Government of Ireland (2021) National Marine Planning Framework. Available at: https://www.gov.ie/pdf/?file=https://assets.gov.ie/139100/f0984c45-5d63-4378-ab65-d7e8c3c34016.pdf#page=null [Accessed: March 2024].

77. HM Government, Northern Ireland Executive, Scottish Government and Welsh Assembly Government (2011). UK Marine Policy Statement. Available at: UK marine policy statement - GOV.UK (www.gov.uk) [Accessed: January 2024].

78. Landscape Institute, Institute of Environmental Management and Assessment (2013). Guidelines for Landscape and Visual Impact and Assessment, Third Edition, London, Routledge.

79. Landscape Institute (2019). Technical Guidance Note 06/19 Visual Representation of Development Proposals Available from: https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2019/09/LI_TGN-06-19_Visual_Representation.pdf [Accessed January 2024]]

80. Marine Institute (2020). Regional Seascape Character Assessment for Ireland. Available at: https://emff.marine.ie/sites/default/files/bluegrowth/PDFs/final_seascape_character_assessment_report_with_annexes.pdf [Accessed: March 2024].

81. Marine Management Organisation (2019). An approach to seascape sensitivity assessment (MMO1204), Available at: https://assets.publishing.service.gov.uk/media/5f0f29d8d3bf7f03a36faab3/MMO1204_An_Approach_to_seascape_sensitivity_assessment_for_publication_a.pdf [Accessed: January 2024]

82. Natural England (2012). An Approach to Seascape Character Assessment. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/396177/seascape-character-assessment.pdf [Accessed: January 2024]

83. Natural England (2014). An Approach to Landscape Character Assessment Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/691184/landscape-character-assessment.pdf [Accessed January 2024]

84. Natural England (2019). An Approach to Landscape Sensitivity Assessment, Available at: https://www.gov.uk/government/publications/landscape-sensitivityassessment [Accessed January 2024]

85. Northern Ireland Environment Agency and Department of Environment (2014). Regional Seascape Character Assessment for Ireland. Available at https://www.daera-ni.gov.uk/publications/northern-ireland-regional-seascape-character-assessment [Accessed: March 2024].