

Seagreen Project

Appendices 13A

Seascape, Landscape and Visual Impact Assessment

on behalf of

Seagreen

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Appendix 13A

Seascape, Landscape and Visual Impact Assessment (SLVIA) Methodology

1.1 Overview

This section presents the impact assessment methodology applied to assess the potential environmental impacts associated with the construction, operation and decommissioning phases of the Optimised Seagreen Project.

This assessment methodology is informed by current EIA Regulations and draws upon the established Guidelines for Landscape and Visual Impact Assessment, 3rd edition (Landscape Institute & IEMA, 2013) (GLVIA 3) and other relevant recognised guidance. A full list of guidance documents is included within section 10.0 of this methodology.

GLVIA3 states 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.”* (para 1.1).

In addition, sections 2.20-2.22 of GLVIA 3 indicate that the two components (assessment of landscape effects, and assessment of visual effects) are *“related but very different considerations”* whilst para 2.8 records that *“The definition of landscape from the European Landscape Convention includes seascapes and marine environments.”*

This Seascape, Landscape and Visual Impact Assessment (SLVIA) methodology has been developed and refined over the course of many years and has been applied to the assessment of over 20 proposed offshore wind farm developments.

2.0 Introduction

The SLVIA methodology has 3 key stages, described in more detail in subsequent sections, as follows:

- 1) Baseline – includes the gathering of documented information at an appropriate scale; scoping of the assessment and agreement of that scope with the client, relevant consultees, EIA coordinator and local planning authorities; site visits; and, initial reports to the client of any issues that may need to be addressed within the design.
- 2) Design – includes review of the initial design and turbine option; input into the design and layout options; review of the ‘Rochdale Envelope’ parameters; identification of the realistic worst-case scenario (RWCS) for assessment purposes; and, consideration of mitigation options.
- 3) Assessment – includes an assessment of the seascape, landscape and visual effects of the development, including cumulative effects, requiring site-based work and the completion of a report and supporting graphics.

The design and assessment stages are necessarily iterative, with stages overlapping in parts. These stages are described in greater detail below.

3.0 Methodology Stages

3.1 Baseline

The baseline study establishes the scope of the assessment and the key seascape, landscape and visual receptors. It typically includes the following key activities:

- A desk study of current national and, where relevant, local planning policy relating to seascape, landscape and visual matters, for the site and the surrounding areas.
- A desk study including a draft Zone of Theoretical Visibility (ZTV) study, to establish and seek agreement to the main study area radius with the key consultees.
- A desk study of existing seascape and landscape character assessments, including any capacity and sensitivity studies, for the study area at national, regional and county/district level as appropriate.
- Preliminary ZTV studies, to assist in identifying (and agreeing through consultation) potential representative and specific viewpoints and to indicate the potential visibility of the proposed offshore wind farm, and therefore the scope of receptors likely to be affected.
- The identification of (and agreement upon through consultation) the scope for the assessment of potential cumulative effects.
- The identification of and agreements upon, through consultation, the number and location of representative and specific viewpoints within the study area.
- Identification of the range of other visual receptors within the study area.
- Site visits to become familiar with the study area, the seascape and surrounding landscape; to verify the documented baseline environment; and to identify representative and specific viewpoints and receptors.
- Input to the design process.

The information gathered during the baseline assessment is drawn together and summarised in the baseline section of the report and reasoned judgements are made as to which receptors are likely to be significantly affected. Only these receptors are then taken forward for the detailed assessment of effects, with others 'scoped out' (GLVIA 3, para 3.19).

During this stage, the design parameters for the offshore wind farm may not yet have been finalised and there may be a degree of iteration, particularly in respect of preparing ZTV studies and consequent changes to likely effects on receptors, whilst the proposed layout is established.

3.2 Design and Realistic Worst-Case Scenario (WCS)

The design stage for offshore wind farm developments usually requires the identification of project design parameters which embrace a range of possible development options for different layouts with different sized turbines and turbine numbers. In these situations, in accordance with the 'Rochdale Envelope' approach, a worst-case scenario (WCS) is identified from the range of development options under consideration and, with the agreement of the key consultees, this is then taken as the indicative project layout for assessment purposes.

The SLVIA is then undertaken on a WCS basis for the illustrative scheme that has the potential to bring about the largest impacts upon seascape and landscape character and visual amenity.

Accordingly, the likely significant seascape, landscape and visual effects of the Project as constructed will be no greater than, but may be less than, those assessed within the SLVIA.

To assist with the identification of the WCS preliminary ZTVs and wireframe views are prepared for the different layout options included within the design envelope.

More detailed design matters such as layout and the stacking of turbines is considered at the SLVIA assessment stage when the finer-grained elements of mitigation for the illustrative WCS scheme are considered. However, proposals located within the more challenging offshore environments cannot always afford a significant degree of fine tuning to turbine layout. Beyond design changes to the layout of turbines, such as the number and size of turbines, opportunities for significant mitigation measures are limited, due to the nature of the proposed offshore Project, the range of hard constraints that the Project must accommodate, and the characteristics of the receiving marine environment with its generally simple palette of expansive sea and sky panoramas. Within these constraints, mitigation measures are considered and embedded into the Project design, to best address potential effects.

The design, siting and mitigation of the potential effects of associated infrastructure, such as offshore substations and monitoring mast(s) are also considered within the assessment. The onshore grid connection route and onshore substation is usually considered within a separate LVIA and is not part of the SLVIA. For the Optimised Seagreen Project the transmission asset is already licenced. This remains unchanged and is therefore not considered within this assessment, with the exception of the OSPs which, for completeness, and because they are an offshore element, are considered within this SLVIA.

3.3 Assessment

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

- The preparation of ZTV plans based on the RWCS for the offshore wind farm.
- The preparation of computer generated wireframes showing the proposed layout of the Project and its relationship with other agreed offshore wind farms and the coastline from a range of agreed viewpoints.
- An assessment, based on both desk study and site visits, of the sensitivity of receptors to the proposed offshore wind farm.
- An assessment, based on both desk study and site visits, of the magnitude and significance of effects upon seascape character; landscape character; designated seascapes and landscapes; the existing visual environment; and visual receptors arising from the proposed offshore wind farm during the construction, operation and maintenance, and decommissioning stages.
- An informed professional judgement as to whether each identified effect is positive, neutral or adverse.
- A clear description of the effects identified, with supporting information setting out the rationale for judgements.

4.0 Assessment Terminology and Judgements

The key terms used within offshore assessments are:

- Sensitivity (to the type of change proposed) – established by considering the susceptibility and value attached to seascape, landscape and visual receptors.
- Magnitude of Effect – established through a consideration of the Scale, Duration and Extent of effects
- Significance of Effect – established through correlating Sensitivity and Magnitude of Effect

4.1 Sensitivity

4.1.1 Assessing Seascape Sensitivity

Seascape **Sensitivity** is rated within the range of High-Medium-Low-Very Low and is assessed by combining the considerations of susceptibility and value described below.

The methodology for seascape, in line with GLVIA3, continues to adhere to the principles set out in the Guide to Best Practice in Seascape Assessment (CCW, 2001) (GSA) guidance, albeit that the terminology is slightly different, as GSA defines the evaluation process and the issues to be considered as seeking to define the capacity of a seascape unit (also character area/type), to accommodate the changes arising from proposed offshore wind farm developments. The GSA states that *“Seascape evaluation is defined as the judgement and ranking of seascapes according to their quality, value or capacity to accommodate change”*.

In addition, the DTI’s Guidance on the Assessment of the Impacts of Offshore Wind Farms: Seascape and Visual Impact Report (DTI, 2005) guidance identifies a range of criteria that can either increase or decrease the susceptibility (recorded as sensitivity rather than susceptibility) of a seascape to offshore wind farm development and these are taken into consideration in the assessment of sensitivity.

Factors that can increase seascape susceptibility to offshore wind farm development include:

- Small scale seascape, landform limits views to horizon;
- Intricate and complex coastal form;
- Important focal points providing a focus for views;
- Where stillness is a key feature;
- Little impact of sea traffic and night time lighting;
- Viewed from secluded coastlines;
- An undeveloped, sheltered or calm seascape.

Factors that can decrease seascape susceptibility to offshore wind farm development include:

- Large scale, open views/panoramas;
- A simple composition of flat, horizontal forms;
- A lack of natural focal points;
- Evident marine activity and movement, including night time lighting;

- Crowded beaches where the focus is upon beach activities;
- A highly developed seascape;
- Exposed, windy seascapes where development would be seen as relating to windiness.

Seascape Value - with regards to value, it is acknowledged that while there are no 'seascape' designations as such, landscape designations which extend up to/lie on the coastline within seascape character units/areas/types (such as Heritage Coasts, National Parks and AONBs) will have a bearing on the overall value, and therefore sensitivity of a seascape receptor. However, these do not automatically infer a high value to the overall seascape character unit/area/type.

The recreational value attributed to a seascape can also be used to infer an assessment of the value of seascape units, or character areas/types and can be considered according to its value at a national, local/district, community or limited level.

4.1.2 Assessing the Sensitivity of Landscape and Visual Receptors

Landscape and Visual **Sensitivity** is similarly rated within the range of High-Medium-Low-Very low and is assessed by combining the considerations of susceptibility and value described below.

Susceptibility is assessed for both landscape receptors such as designated areas and landscape character areas/types, and for visual receptors (people). It indicates the ability of a defined landscape, or visual receptor, to accommodate the proposed development "*without undue consequences for the maintenance of the baseline situation and/or the achievement of landscape planning policies and strategies.*" (GLVIA 3, para 5.40). Susceptibility is rated on the following scale:

- High – undue consequences are likely to arise from the proposed development.
- Medium – undue consequences may arise from the proposed development.
- Low - undue consequences are unlikely to arise from the proposed development.

The susceptibility of landscape character areas/types is influenced by their characteristics and is frequently considered (though often recorded as 'sensitivity' rather than susceptibility) within documented landscape character assessments and capacity studies. Landscape character assessments are reviewed and aspects relating to sensitivity and susceptibility considered.

Susceptibility of designated landscapes is influenced by the nature of their special qualities and the purposes of designation and/or the valued elements, qualities or characteristics, indicating the degree to which these may be unduly affected by the development proposed. These special qualities are typically recorded and protected through policy.

The susceptibility of accessible or recreational landscapes is influenced by the nature of the landscape involved; the likely activities and expectations of people within that landscape and the degree to which those activities and expectations may be unduly affected by the development proposed.

Susceptibility of visual receptors is primarily a function of the expectations and occupation or activity of the receptor. (GLVIA 3, para 6.32).

Landscape Value is "the relative value that is attached to different landscapes by society" (GLVIA 3, page 157). It is rated on the following scale:

- National/International – Designated or landscapes which are nationally or internationally designated or defined for their natural beauty, cultural and natural heritage and value – including National Parks, Areas of Outstanding Natural Beauty, World Heritage Sites and Heritage Coasts.
- Local/District – Locally or regionally designated landscapes (e.g. Area of High Landscape Value, Regional Scenic Areas); areas which local evidence (such as tourism guides, landscape character assessments or other documentary information) indicates as being more valued than the surrounding area.
- Community – ‘everyday’ landscape which is appreciated by the local community but has little or no wider recognition of its value.
- Limited – despoiled or degraded landscape with little or no evidence of being valued by the community.

4.1.3 Sensitivity

Landscape Sensitivity is rated within the range of High-Medium-Low-Very Low and is assessed by combining the considerations of susceptibility and value described above. The table below illustrates the judgement process for landscape receptors:

Table: Landscape Sensitivity

		Susceptibility		
		High	Medium	Low
Value	National/International	High	High - Medium	Medium
	Local/District	High - Medium	Medium	Medium – Low
	Community	Medium	Medium – Low	Low
	Limited	Low	Low – Very Low	Very Low

Seascape Sensitivity is identified in a single step process combining susceptibility and value as follows:

- High – Areas of small scale, undeveloped and intimate seascape with particularly distinctive attributes and defining characteristics that are susceptible to relatively small noticeable changes;
- Medium – Areas of moderate scale seascape and form with moderately distinctive attributes and defining characteristics that are reasonably tolerant of noticeable change;
- Low – Areas of seascape of a very large, expansive scale and of simple form with no particularly distinctive attributes and defining characteristics and which are thus potentially tolerant of noticeable change.

4.1.4 Visual Receptor Sensitivity

For visual receptors, judgements of susceptibility and value are closely interlinked considerations; for example, the most valued views are those which people go and visit because of the available view – and it is at those viewpoints that their expectations will be highest. The value attributed to visual receptors also relates to the value of the view – for example, a National Trail is nationally

valued for its access, not necessarily for its views. Views will be treated as valued where there is documentary evidence of that value – such as recommendations to visitors; or reference within special qualities of designated areas. The sensitivity of visual receptors is rated in a single step process which combines both susceptibility and value as follows:

- High – visitors to valued viewpoints which people might visit purely to experience the view, e.g. promoted or well-known viewpoints, key designed views; panoramic viewpoints marked on maps.
- High-Medium – people in locations where they are likely to pause to appreciate the view, such as at home, along public rights of way, from local waypoints such as benches; or at locations with views to/from local landmarks. Visitors, including offshore pleasure cruising, to attractions or heritage assets where views are an important contributor to the experience would also fall into this category.
- Medium – travellers using cycle routes or identified scenic road routes, including offshore recreational sailors, canoeists etc and those engaged in outdoor activities such as on golf courses
- Medium-Low – users of the majority of road and rail routes and rural, outdoor workers. Those engaged in other marine surface-based activities such as fishing.
- Low – those with limited opportunity to enjoy the view due either to the speed of travel (on motorways and dual carriageways); or because their attention is elsewhere e.g. those engaged in work or sporting activities. For offshore receptors this would include ships' crew, platform workers and divers.

4.2 Magnitude of Effect

Magnitude is rated within the range of High-Medium-Low-Very Low and is assessed by combining the considerations of scale, extent, and duration of effect.

4.2.1 Scale of Effect

The Scale of effect is assessed for all receptors and identifies the degree of change which would arise from the development. It is rated on the following scale:

- Large – total or major alteration to key elements, features, qualities or characteristics, such that post development the baseline situation will be fundamentally changed. The degree of change must be such that the wind farm is dominant, commanding and unmistakeable and, being the foremost feature, easily seen.
- Medium - partial alteration to key elements, features, qualities or characteristics, such that post development the baseline situation will be noticeably changed. The degree of change must be such that the wind farm is conspicuous, well defined, clearly visible and catches the eye.
- Small – minor alteration to key elements, features, qualities or characteristics, such that post development the baseline situation will be largely unchanged despite discernible differences. The degree of change must be such that the wind farm is apparent, obvious and evident.
- Negligible – Very minor alteration to key elements, features, qualities or characteristics, such that post development the baseline situation will be fundamentally unchanged with barely perceptible differences. The degree of change must be such that the wind farm is not obvious, lacks definition and its presence is both subtle and blurred.

For seascape, standard definitions for judging scale of effect need to embrace descriptors that acknowledge the characteristics of the marine environment. These include the simpler palette of defining characteristics; the dominance of sea and sky; the greater expanse of panoramas; the prevalence of uninterrupted and distant views; the absence of scale indicators and, the limited influence of landform. It is therefore important that definitions include fuller descriptors to assist in attributing scale of effect. The temporal influence of weather can also have a marked influence upon scale of effect in the way that it does not for onshore development, although this is not factored in to the assessment.

4.2.2 Extent of Effect

The Extent of effect is assessed for all receptors and indicates the geographic area over which the effects will be experienced. For visual receptors, geographical extent takes into account 'the angle of view in relation to the main activity of the receptor; the distance of the viewpoint from the proposed development; and the extent of area over which the changes would be visible' (GLVIA, version 3, para 6.40). Extent of effect is rated on the following scale for all receptors:

- Limited – site, or part of site, or small part of receptor area (< approx. 10%)
- Localised – site and immediate surroundings, or part of receptor area (up to approx. 25%)
- Intermediate – up to approx. 25km, or around half the receptor area
- Wide – beyond 25km, or more than half of the receptor

The DTI 2005 guidance identifies a range of criteria that tend to either increase or reduce the apparent scale and extent of effect arising from offshore wind development.

Factors that tend to increase apparent scale and extent of effect upon seascape

- Short viewing distances from the coastline
- Large proportion of the field of view occupied by turbines
- Large percentage of development visible
- A static receptor
- The wind development seen as the focal point
- Visual references to aid understanding of scale
- Strong contrasts and movement

Factors that tend to reduce apparent scale and extent of effect upon seascape

- Long viewing distances from the coastline
- Small proportion of the field of view occupied by turbines
- Small percentage of development visible
- A mobile receptor
- Wind farm not acting as a focal point
- An absence of visual clues to aid understanding of scale
- Low contrasts and visibility

The scale and extent of effect is also influenced by the background to the development, the context within which it is seen and the effects of aspect, lighting and weather upon it.

4.2.3 Duration of Effect

The Duration of effect is assessed for all receptors and identifies the time period over which the change to the receptor as a result of the development would arise. It is rated on the following scale:

- Permanent – the change is expected to be permanent and there is no intention for it to be reversed.
- Long-term – the change is expected to be in place for 10 years or more with a commitment for removal and the change will be reversed, fully mitigated or not occurring permanently.
- Medium-term – the change is expected to be in place for 2-10 years and will be reversed, fully mitigated or no longer occurring beyond that timeframe.
- Short-term – the change is expected to be in place for 0-2 years and will be reversed, fully mitigated or no longer occurring beyond that timeframe.

The anticipated lifespan of the proposed wind farm is a period of up to 25 years. This is a reasonable length of time and can be considered to be long-term on the above scale. The effects associated with construction and decommissioning works will usually be short term. The reversibility of effects is also a material consideration and is referred to within the assessment.

4.2.4 Use of Viewpoints in assessing Magnitude of Effect upon Visual Receptors

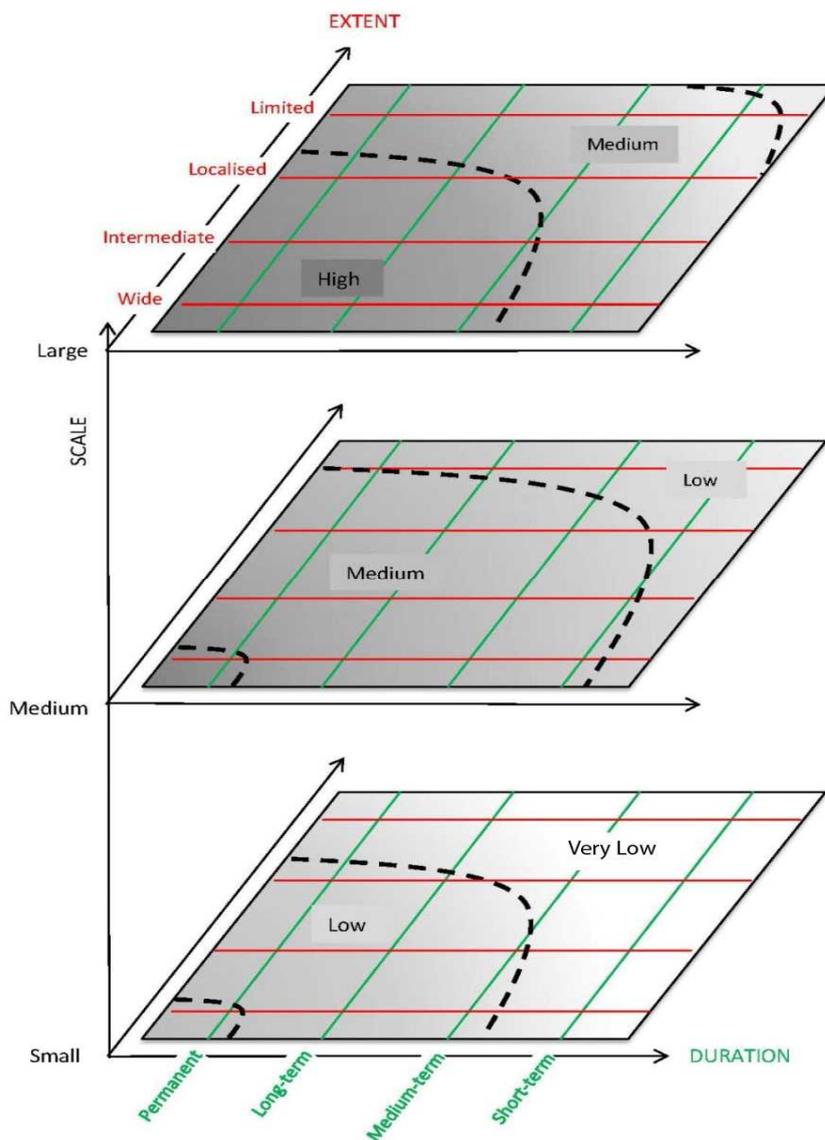
The representative viewpoints are used as ‘samples’ on which to base judgements of the scale of effects on visual receptors. As these viewpoints represent a range of different types of visual receptors, duration and extent are not judged at representative viewpoint locations. Thus, the scale of effect is assessed at representative viewpoints, but duration and extent is judged only when assessing impacts on the visual receptors.

For specific viewpoints, duration and extent are assessed, with extent reflecting the extent to which the development affects the valued qualities of the view from the specific viewpoint. For example, a very distant wind farm would typically be judged to have a limited extent of effect on a 360 degree panoramic view; but might be judged to have a greater extent if it appeared within the focal area of a channelled or designed view.

4.2.5 Establishing Magnitude of Effect

The Magnitude of effect is rated within the range of High-Medium-Low-Very Low and is informed by combining the scale, duration and extent of effect. The diagram below illustrates the judgement process. Where the Scale of effect is judged to be Negligible the Magnitude is also assumed to be Negligible and no further judgement is required:

Diagram: Establishing Magnitude of Effect



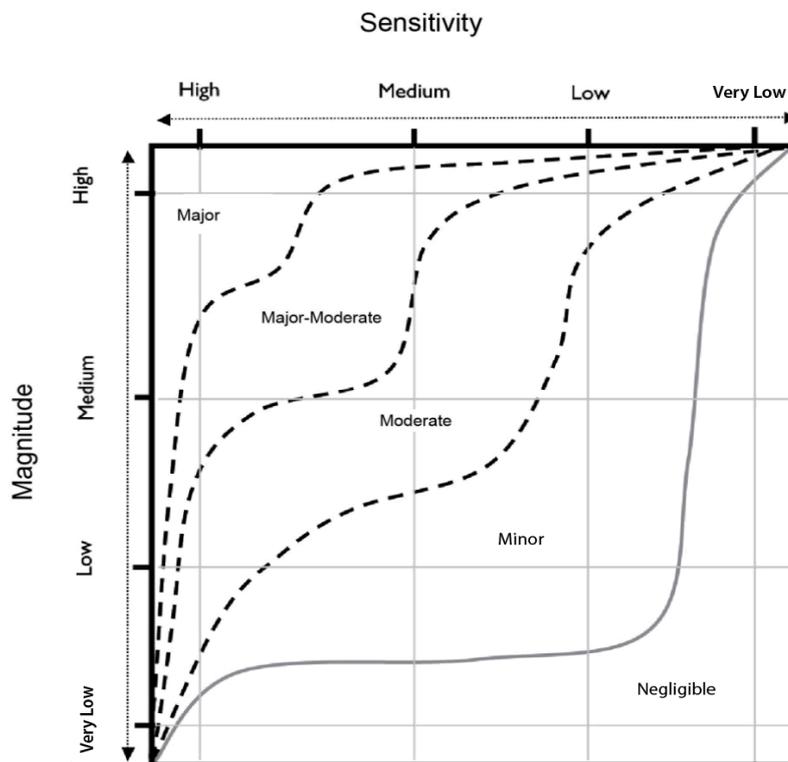
The layered diagram above illustrates how scale, extent and duration are combined to identify the magnitude of effect. Scale is the primary determining factor of magnitude but is adjusted to reflect variations in both extent and duration such that the magnitude will be higher where the effect is particularly widespread and long-lasting or lower if it is constrained in geographic extent and/or timescale.

4.3 Significance

Significance indicates the importance or gravity of the effect. The process of forming a judgement as to the degree of significance of the effect is based upon the assessments of magnitude of effects and the sensitivity of the receptor, to come to a professional judgement of how important this effect is.

How this judgement is arrived at is illustrated by the diagram below. This provides a guide to decision making but is not a substitute for professional judgement.

Diagram: Significance (based on EIA significance evaluation matrix, IEMA Special Report 2011)



The significance ratings indicate a 'sliding scale' of the relative importance of the effect, with Major being the most important and Negligible being the least. Effects that are towards the higher level of the scale (Major) are those judged to be most important, whilst those towards the bottom of the scale are "of lesser concern" (GLVIA 3, para 3.35).

Where intermediate ratings are given, e.g. "Moderate-Minor", this indicates an effect that is both less than Moderate and more than Minor, rather than one which varies across the range. In such cases, the higher rating will always be given first; this does not mean that the impact is closer to that higher rating, but is done to facilitate the identification of the more significant effects within tables. Intermediate judgements may also be used for judgements of Magnitude.

4.4 Positive/Adverse/Neutral

Effects are defined as Positive, Adverse or Neutral. Neutral effects are those which overall are neither Adverse nor Positive but may incorporate a combination of both.

The decision regarding the significance of effect and the decision regarding whether an effect is Positive or Adverse are entirely separate. For example, a rating of Major and Positive would indicate an effect that was of great significance and on balance Positive, but not necessarily that the proposals would be extremely Positive.

Whether an effect is Positive, Adverse or Neutral is identified based on professional judgement. GLVIA 3, para 2.15 indicates that this is a "particularly challenging" aspect of assessment, particularly in the context of a changing landscape and the need to address climate change.

4.5 Cumulative Effects

For the assessment of cumulative effects a search area around the site (usually of a similar extent to the study area) is identified and agreed taking account of SNH's Guidance 'Assessing the Cumulative Impact of Onshore Wind Energy Developments', (March 2012) which advises that:

- *"An assessment of cumulative impacts associated with a specific development proposal should encompass the effects of the proposal in combination with:*
- *existing development, either built or under construction;*
- *approved development, awaiting implementation; and*
- *proposals awaiting determination within the planning process with design information in the public domain. Proposals and design information may be deemed to be in the public domain once an application has been lodged, and the decision-making authority has formally registered the application."* [para. 26] – note that this category also includes recently refused applications which may yet be appealed.

For each of these schemes agreement is reached with the Local Planning Authorities / consultees as to whether they should be included in the assessment. Initial cumulative ZTVs identifying potential extents of visibility may be used to inform such discussions. For the Optimised Seagreen Project, the relevant cumulative projects have been drawn from the extensive list of potential cumulative projects agreed with MS-LOT and as identified within the 2017 Scoping Opinion.

Schemes which are in scoping are also noted but are not included within the assessment unless they become active applications before the SLVIA is submitted, with occasional exceptions for schemes where reliable information is available with respect to the scheme design, and the application is known to be imminent.

The cumulative assessment examines the same groups of seascape, landscape and visual receptors as the assessment for the offshore wind farm. The assessment is informed by cumulative ZTVs, showing the extent of visual effects of the schemes in different colours, to illustrate where visibility of more than one development is likely to arise. Cumulative wireframes are prepared which show each of the developments in different colours so that they are each readily identifiable.

In addition, the effects on users of routes through the area, from which wind farms may be sequentially visible as one passes through the landscape are also considered. This assessment is based on a desk study of ZTVs, aerial photography and site visits to travel along the routes being assessed and may also make use of graphs indicating the proximity and visibility of wind farms along the route.

It is important to note the following:

- Operational and consented wind farms are treated as being part of the landscape and visual baseline. i.e. it is assumed that consented schemes will be built except for occasional exceptions where there is good reason to assume that they will not be constructed. Reflecting this, the main SLVIA assesses effects on the basis that these developments are in place, and consented schemes are included in all wireframes – not just cumulative wireframes. This is not necessary for operational schemes which are included in existing view photographs where visible.

- Schemes in planning are assessed via a series of scenarios involving one or several of the other developments being consented along with (or before) the proposed offshore wind farm. Two assessment ratings are provided for each scenario – one which indicates the combined effects if all of the schemes in that scenario were consented together (combined effects); and one which indicates the additional effects that consenting the application scheme would have if the other schemes were already consented (incremental effects).
- For each assessed receptor, combined effects may be the same as for the proposed offshore wind farm, or greater (where the influence of multiple schemes would increase effects, or where schemes in planning would have the predominant effects).
- For each assessed receptor, incremental effects may be the same as for the proposed 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 project scheme would be less).

The way in which the assessment is described and presented is varied depending on the number and nature of scenarios which may arise. This variation is needed to convey to the reader the key points of each assessment, in line with the SNH guidance which emphasises that: *“The key principle for all cumulative impact assessments is to focus on the likely significant effects and in particular those which are likely to influence the outcome of the consenting process.”* (SNH 2012, para. 33, and similar directions at paras. 66 and 102)

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.

The SNH guidance also encourages consideration of the composition and relationship of the various developments within the landscape and in views, noting that: *“In presenting the findings of the assessment, there is a risk of focussing on a quantitative assessment of the effects. This will be helpful, but a qualitative analysis of these is required to fully appraise the effects. The production of extensive quantitative analysis alone is not sufficient.”* (SNH 2012, para. 99).

4.6 Assessment of Night-time Effects

A separate night-time assessment of visual effects may be required from selected and agreed viewpoints, depending on the distance of the proposed development from the nearest coastline and the specification/ performance of lighting for the permanent installations (turbines and offshore substations/platforms). Lighting to be considered within the assessment may include navigation, aviation, identification and operational lighting.

The assessment may also extend to construction stage effects where night-time operations, such as the deployment of construction vessels and use of temporary construction/safety lighting, may give rise to visual effects from the coastline, albeit this will be of a temporary and intermittent nature.

Night-time assessment will require additional professional photography and the preparation of photomontages; input from qualified engineers will also be required to advise on lighting specification and performance.

The Optimised Seagreen Project includes a focused assessment of night time effects reflecting and proportionate to the approximate 30km distance that the nearest turbines are located to the coastline.

5.0 Preparation and Use of ZTVs, Wireframes and Photomontages

The preparation of the ZTVs, wireframes and photomontages are an integral element of the assessment and are produced in compliance with SNH's 'Visual Representation of Wind Farm Guidance' (Version 2.2, February 2017).

The ZTVs and wireframes are used to inform the field study assessment work, providing additional information to observations made on site. In line with the SNH guidance, photomontages are also produced in order to assist readers of the assessment in visualising the proposals but are not used in reaching judgements of effect.

The following points should be borne in mind in respect of the ZTV study:

- Onshore areas shown as having potential visibility may well have visibility of the offshore wind farm obscured by local onshore features such as trees, hedgerows, embankments or buildings, particularly where the wind farm is located at some distance and the viewpoint/receptor is inland from the coastline such that, for example, hedgerows can readily obscure views of the more distant offshore wind farms.
- Since only the turbine hubs and blade tips have been modelled, this may be all that is visible – rather than the turbine tower. This is particularly true of onshore areas near the edges of potential visibility.

A detailed description of the methods by which ZTVs and wireframes are prepared is available on request.

In addition to the main visualisations, illustrative views may be used as appropriate to illustrate particular points made within the assessment. These are not prepared to the same standard as they simply depict existing views, character or features rather than forming the basis for visualisations.

Distances - Where distances are given in the assessment, these are approximate distances between the Turbine Area and the nearest part of the receptor in question, unless explicitly stated otherwise.

6.0 Seascape Character

Seascape Characterisation is principally informed by both 'The Guide to Best Practice in Seascape Assessment' (GSA) (March 2001) and 'Guidance on the Assessment of the Impact of Offshore Wind Farms: Seascape and Visual Impact Report' (DTI – November 2005). The GSA states clearly that:

"Seascape assessment is an extension of landscape character assessment rather than a specialism in its own right. It does not replace the need for a thorough landscape assessment on land." (Para 1.6)

It is therefore important to recognise the interrelationship between, and interdependency of, the sea and land. Identified seascape units will thus, whatever their scale and extent, straddle segments of the coastline with their character being defined by both seaward and landward elements. The GSA then highlights that, whilst some key elements in seascape assessment are common to landscape assessment, there are others that are noticeably different or wholly absent from landscape character assessment work. The key differences are identified as:

- the effects of historic and cultural issues related to the marine environment;

- the coastline acting as a clearly defined edge;
- variability and dynamism associated with the marine and coastal components;
- difficulties associated with understanding the scale and distance of elements set within the marine component;
- different principals of visual movement arising from the coastline and marine components;
- amenity functions and uses of the seashore; and
- functions and uses of the sea.

The GSA reviews these highlighting key characteristics and issues. All elements are considered during the process of defining the geographical extent of seascape units.

Particular attention is given to issues associated with visibility, both from the land towards the sea, and vice versa. Clarity of visibility is in turn determined by prevailing weather conditions including such aspects as air moisture content and air pressure. Visibility in turn, 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.

The GSA (and others) also provides guidance on the identification of the spatial extent of seascape units. It identifies three tiers of units, namely: national, regional and local, and notes that the smaller units will effectively 'reside' within the larger regional and national units. Guidance is also given on both the seaward and landward extent of the various scaled seascape units as well as suggestions as to their likely lateral extent along the coastline. Whilst the landward extent of seascape units can be more readily defined due to the multitude of physical elements and the complexity of landform, it is far more difficult to define a seaward extent. Thus, visibility becomes a key component in defining the seaward extent of the seascape units which can overlap as they 'bleed out' along the coastline.

National Seascape Units

The GSA advises that national seascape units will cover extensive sections of the coastline where there is an overriding common defining characteristic such as coastal orientation or landform. It suggests that such units will be defined by major headlands of national significance. The units are then defined as extending for up to 24 km offshore and inland to the full extent of the Zone of Visual Influence (ZVI). Coastal orientation and the topography of the coastline are identified as key defining characteristics.

Regional Seascape Units

The GSA advises that the most appropriate scale for undertaking seascape characterisation in association with coastal developments, such as offshore wind farms, is the regional seascape unit. It sets out the main recommended parameters for defining regional seascape units (RSUs), which are noted as generally extending for up to 15 km offshore and inland for up to 10 km. It is noted that the

landward extent of the regional seascape unit may well include areas of visually dead ground i.e. areas of land that are not intervisible with the sea component of the unit.

The later DTI Guidance, 'Guidance on the Assessment of the Impact on Offshore Wind Farms: Seascape and Visual Impact Report' (November 2005), advises that the spatial extents of RSUs, "*can extend up to a 35km seaward limit and have a landward boundary of approximately 10km, determined by land-sea intervisibility.*"

For those proposed wind farms which will lie in excess of 15 km offshore, the DTI Guidance will be adopted within the SLVIA to determine the extents of RSUs.

7.0 Landscape Character

The European Landscape Convention (ELC) is the first international instrument to deal in an integrated way with the whole landscape. It is adopted and promoted by the Council of Europe and, following signing and ratification by the UK government, came into effect in 2007. It provides the following definition of landscape: "*Landscape is an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors.*" It also notes in Article 2 that landscape includes "*natural, rural, urban and peri-urban areas. It includes land, inland water and marine areas*".

The Landscape Character Assessment - Guidance for England and Scotland, (CA/SNH, 2002) defines landscape character as (Box 2.1): "*A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.*"

It also notes that (Para. 2.1): "*Character makes each part of the landscape distinct, and gives each its particular sense of place. Whether we value certain landscapes for their distinctiveness, or for other reasons, is a separate question.*"

The susceptibility of the landscape is 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 areas/types are considered, along with scale, openness, topography; the absence, or presence of, nature and patterns of development, settlement, land cover; the contribution of heritage assets and historic landscape elements and patterns; and land uses in forming character.

The condition of the receiving landscape, i.e. the intactness of the existing character will also be relevant in determining susceptibility. The likelihood of material effects on the landscape can be judged based on the scale and layout of the proposal and how this relates to the characteristics of the receiving landscape. Thus a large-scale landscape is likely to be less sensitive to large scale developments, whilst small scale, enclosed landscape may be highly sensitive to all but very small scale proposals.

It is specifically noted within 'Landscape Character Assessment – Guidance for England and Scotland', CA/SNH, 2002 (para 1.14) that: "*Landscape Character Assessment is not a tool designed to resist changes that may influence the landscape. Rather it is an aid to decision-making - a tool to help understand what the landscape is like today, how it came to be like that, and how it may change in the future.*"

In para 6.32 it describes the purpose of Key Characteristics in landscape assessment, as follows: "*Key characteristics are those combinations of elements which help give an area its distinct sense of place.*"

They tend in many cases to be 'positive' characteristics, but they may also, in some cases, be 'negative' features which nevertheless are important to the current character of the landscape. If the key characteristics which are identified were to change or be lost there would be significant consequences for the current character of the landscape. These would usually be negative but sometimes positive where some characteristics currently have a negative influence on the character (e.g. the effects of a busy road corridor). Key characteristics should therefore be the prime targets for monitoring change and for identifying landscape indicators."

It follows from the above that 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 will be altered by the proposals.

8.0 Designations

Whilst all landscapes/seascapes can be valued, designations are recognised as an indicator of the value of a particular seascape or landscape.

Seascape - Existing marine designations (such as MCZs, Marine Nature Reserves and Marine Protected Areas) are all essentially focused on the protection of wildlife and ecologically rich areas within the marine environment. No areas of sea are currently designated on account of their intrinsic character, or visual/scenic attributes.

Heritage Coasts, which are defined rather than designated, are stretches of outstanding, undeveloped coast and their identification includes recognition of their value. Their purpose for definition includes conserving, protecting and enhancing the natural beauty of their coasts and their marine flora and fauna. It is noted that the setting of nationally designated landscapes that abut the coast may include areas of seascape.

Landscape - In considering the effects on designated areas, a number of factors need to be considered. The effects on the component landscape character types/areas and the effects on views from within and towards the designated area need to be understood. These effects are then considered in light of the documented "special qualities", value elements or characteristics, and purposes of the designation in order to arrive at a judgment of the effects on the designated landscape or landscape element.

9.0 Viewpoints and Visual Receptors

A wide variety of visual receptors can be anticipated to be affected by the proposed offshore wind farm. Within the baseline assessment, the ZTV studies and site visits will be used to determine which visual receptors are likely to be significantly affected and therefore merit detailed assessment. In line with guidance (GLVIA 3, 2013); both representative and specific viewpoints may be identified to inform the assessment. In general, the majority of viewpoints will be representative, i.e. 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 majority of representative viewpoints will be 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.

The types of visual receptors likely to be included within 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 (e.g. Woodland Trust, National Trust) offering free public access, and other regularly used, permitted walking routes.
- Visitors to and residents of settlements closest to the proposed development
- Visitors to specific valued viewpoints.
- Visitors to attractions or heritage assets for which landscape and views contribute to the experience
- Users of roads and identified scenic routes.
- Sea-based receptors such as sailors, ferry/boat passengers, those engaged in recreational water sports, offshore workers.

With the exception of specific viewpoints, each route, settlement or location will encompass a range of possible views, which might vary from no view of the turbines to very clear, close views. Therefore, effects are described in such a way as to identify where views towards the turbines are likely to arise and what the scale, duration and extent of those views are likely to be. This may sometimes be further informed by a nearby viewpoint and in others it will be informed with reference to the ZTVs, 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, or in that place.

10.0 Guidance Documents

The assessment methodology draws upon various established guidance documents. These are listed in date order with the most recent first:

- *'Visual Representation of Windfarms Best Practice Guidance' version 2.2 (SNH 2017). All ZTVs and wireframes produced for the assessment adhere to this guidance;*
- *'Visual representation of development proposals Technical Guidance Note 02/17' (Landscape Institute, 2017);*
- *'Guidance on Coastal Character Assessment', (Scottish Natural Heritage 2017)*
- *'Visual representation of development proposals. Technical Guidance Note 02/17' (Landscape Institute 31 March 2017);*
- *'An Approach to Landscape Character Assessment' (Natural England, 2014). This guidance establishes the approach to landscape character assessment;*
- *'Guidelines for Landscape and Visual Impact Assessment' (known as GLVIA) by the Institute of Environmental Management and Assessment (IEMA) and the Landscape Institute (LI), third edition 2013). The principles set out in this guidance on sensitivity, magnitude and significance will be followed in the assessment of potential effects of the proposed Seagreen Project;*
- *'Offshore Renewables – Guidance on Assessing the Impact on Coastal Landscape and Seascape' (Scottish Natural Heritage, March 2012). This document provides guidance on scoping an offshore assessment*

- *'Guidelines for data acquisition to support marine environmental assessments of offshore renewable energy projects'* (Cefas, May 2012, albeit published October 2012). Section 4.8 of this document records all source references relevant to seascape character and visual impact assessment;
- *'An Approach to Seascape Character Assessment'* (Natural England, October 2012). This document identifies a complementary approach to seascape characterisation that more closely follows established landscape characterisation. It requires the identification of character areas or types;
- *'Assessing the Cumulative Impact of Onshore Wind Energy Developments, version 2.2'* (SNH, 2012). This document identifies the principles of combined and sequential cumulative assessment;
- *'Photography and Photomontage in Landscape and Visual Impact Assessment. Advice Note 01/11'* (Landscape Institute, 2011);
- *'Guidance on Landscape/ Seascape Capacity for Aquaculture'*. (SNH, 2008);
- *'Guidance on the Assessment of the Impact of Offshore Wind Farms: Seascape and Visual Impact Report'* (DTI – November 2005). This is an all-encompassing document; it refers to methodologies set out in the GLVIA, SNH and GSA guidance documents (see above) specifically relating them to offshore sites and best practice. As with GSA, it requires the identification of seascape units;
- *'An assessment of the sensitivity and capacity of the Scottish seascape in relation to offshore wind farms'*. (SNH, 2005, Report No.103 (ROAME No. F03AA06);
- *'Visual Assessment of Wind Farms Best Practice'*. (SNH Report F01AA303A University of Newcastle, 2002); and
- *'Guide to Best Practice in Seascape Assessment'* (Maritime Ireland/Wales Interreg 1994 – 1999 Guidance, March 2001). Seascape character is defined and assessed at a regional scale within the study area based on this guidance and the published CCW Seascape Assessment of Wales. This methodology requires the identification of regional seascape units (RSUs

Elements of best practice and baseline information has also been adapted from previous baseline studies produced for the 2012 ES, including:

- *'Approach to Assessment of Landscape, Seascape and Visual Cumulative Effects'* (FTOWDG, 2011). This set out a methodology and approach to the assessment of cumulative impacts, which will form the basis for SLVIA for all FTOWDG developments;
- *'Regional Seascape Character Assessment'* (FTOWDG, 2011). This includes an appraisal of sensitivity to offshore wind farm development. It was undertaken by the landscape consultants representing FTOWDG. This document will serve as a baseline for assessing impacts on seascape character; and
- *'Design Sensitivity Analysis'* (SLR Consulting on behalf of FTOWDG, 2011)