Chapter 21 Seascape, Landscape and Visual Impacts

21.1 Introduction

1 This chapter summarises the findings of the seascape, landscape and visual impact assessment (SLVIA). The SLVIA is included in full in Appendix 21.1: Seascape, Landscape and Visual Impacts Technical Report. Due to the nature of the images used in this chapter and the requirement for the images to be reproduced at a specified size, all images are included in Appendix 21.2: Seascape, Landscape and Visual Impact Figures.

2 The SLVIA considers effects upon:

- Offshore seascape character and resources, including effects on the physical and aesthetic value of the coastal and marine seascape caused by changes in elements and qualities as a result of the offshore development;
- Onshore landscape character and resources, including effects on the physical and aesthetic value of the landscape caused by changes in its qualities as a result of the offshore development; and
- Visual amenity, including effects upon potential viewers and viewing groups (e.g., residents, visitors, tourists) caused by changes in the appearance of the landscape and/or seascape as a result of the development.

21.2 Guidance and Legislation

3 The principal guidance for undertaking SLVIA is the Landscape Institute and the Institute of Environmental Management and Assessment (2002) *Guidelines for Landscape and Visual Impact Assessment* (GLVIA) (2nd edition). Reference has been made to a number of other guidance documents and relevant publications, as noted below:

- Scottish Natural Heritage (SNH) and Marine Scotland (2011) *Advice Note: Offshore Wind Farm Landscape/Seascape, Visual and Cumulative Assessment: Recommended Outputs*;
- Landscape Institute (2011) *Photography and photomontage in landscape and visual impact assessment.* Advice Note 01/2011;
- Scottish Natural Heritage (2009) *Siting and designing wind farms in the landscape*. Version 1;
- Scottish Natural Heritage (2008) *Guidance on Landscape/Seascape Capacity for Aquaculture*;
- Horner + Maclennan and Envision (2006) *Visual Representation of Wind Farms: Good Practice Guidance*. Report for Scottish Natural Heritage, The Scottish Renewables Forum and the Scottish Society of Directors of Planning;
- Enviros (2005) *Guidance on the Assessment of the Impact of Offshore Wind Farms: Seascape and Visual Impact Report*. Prepared for the Department of Trade and Industry (DTI);
- Scottish Natural Heritage (2005) *Guidance: Cumulative Effect of Wind Farms.* Version 2 (and consultative draft of Version 3, 2011);
- Countryside Agency and Scottish Natural Heritage (2004) *Landscape Character Assessment: Guidance for England and Scotland. Topic Paper 6: Techniques and Criteria for Judging Capacity and Sensitivity*;
- Countryside Agency and Scottish Natural Heritage (2002) *Landscape Character Assessment: Guidance for England and Scotland*; and
- Countryside Council for Wales, Brady Shipman Martin, University College Dublin (2001) *Guide to Best Practice in Seascape Assessment.* Maritime Ireland / Wales INTERREG Report No. 5.

4 Since the SLVIA was undertaken, Version 3 of the Scottish Natural Heritage guidance, *Cumulative Effect of Wind Farms*, has been published (March 2012), as has a consultative draft of the 3rd edition of *Guidelines for Landscape and Visual Impact Assessment*. The SLVIA conforms to the main principles in these updated documents, which set out revised guidance rather than new approaches.

21.3 Data Sources

5 Baseline information was gathered through desk study of available published sources, which are detailed below; these were supplemented by a field survey.

21.3.1 Desk Study

21.3.1.1 Literature review

6 Published sources referred to comprise the relevant volumes of the national landscape character assessment series published by SNH (ASH Consultants, 1998a; ASH Consultants, 1998b; David Tyldesley and Associates, 1999; Environmental Resources Management, 1998; Land Use Consultants, 1999), and the *Countryside Character of England. Volume 1: North East England* landscape character assessment published by Natural England (Countryside Commission, 1996). The principal published source addressing seascape is *An Assessment of the Sensitivity and Capacity of the Scottish Seascape in Relation to Offshore Wind farms* (Scott *et al*., 2005).

7 Local plans and supplementary planning guidance documents were consulted for details of local landscape designations (Aberdeenshire Council, 2006; Aberdeenshire Council, 2010; Angus Council, 2009; Berwick upon Tweed Borough Council, 1999; East Lothian Council, 2008; Fife Council, 2009a; Fife Council, 2009b; Land Use Consultants, 2008; Scottish Borders Council, 2010; Scottish Borders Council, 2011). The *Inventory of Gardens and Designed Landscapes in Scotland* (Historic Scotland, 1987–2011) was consulted for information on nationally important designed landscapes.

21.3.1.2 Datasets and Other Sources

8 Datasets consulted included national and local landscape designations, landscape character, and access and recreation information (long-distance footpaths, cycle routes, tourist drives, country parks). Data on atmospheric visibility were obtained from the Met Office, to give a picture of the distances from which the offshore development may be visible. Information on tidal ranges was obtained to determine whether this would have an effect on the appearance of the offshore development. Other sources included Ordnance Survey mapping and aerial photography of the study area, as available online (e.g., Google Maps).

21.3.2 Design Sensitivity Analysis

9 In July 2011, a 'Design Sensitivity Analysis' was undertaken on behalf of the collaborative working group Forth and Tay Offshore Wind Farm Developers Group (FTOWDG), which examined generic layouts (regular grid, offset grid and series of arcs) for each of the offshore wind farms currently proposed in the Forth and Tay area. The resulting wirelines were reviewed independently by three landscape architects. The analysis concluded that an offset grid layout was the visually preferred layout, in the greatest number of views.

21.3.3 Field Survey

10 A preliminary field survey was undertaken to verify the baseline information gathered, and to identify the locations of visual receptors across the study area. Field surveys were also carried out to inform the assessment of seascape character. The field surveys followed the approach recommended in *Landscape Character Assessment: Guidance for England and Scotland* (Countryside Agency and Scottish Natural Heritage, 2004) and *Guidelines for Landscape and Visual Impact Assessment* (Landscape Institute and IEMA, 2002).

21.3.4 Engagement and Commitments

11 Consultations and requirements are detailed in Table 21.1, and cross-referenced to chapter sections where they are discussed in more detail.

Source	Comment	Relevance/Reference
Blue Seas Green Energy: A Sectoral Marine Plan for Offshore Wind Energy in Scottish Territorial Waters. Part A: The Plan	Offshore wind developments should, in general, take into account the existing character and quality of the seascape, how highly it is valued and its capacity to accommodate change.	Refer to Assessment of Impacts Upon Seascapes (Section 21.6.2.1).
	Offshore wind development proposals should seek to avoid or mitigate detrimental impacts on the settings of World Heritage Sites.	No World Heritage Sites are located within the study area.
	Offshore wind development should take account of the impacts on the special qualities for which a National Scenic Area (NSA) is designated. Consideration should be given to factors such as size of offshore wind devices, number of devices or scale of development, distance from the NSA and sensitivity of the NSA setting. Proposals that significantly affect NSAs should normally be permitted where they will not adversely affect the integrity of the area or the qualities for which it has been designated, or where any such adverse effects are clearly outweighed by social, environmental, climate change, or economic benefits of national importance.	No National Scenic Areas are located within the study area.
	Offshore wind developments should, where possible, incorporate advice contained in the Offshore Wind and Marine Renewables Licensing Manual in the planning and design stage.	Noted.
Scoping Opinion (SNH advice)	Landscape, Seascape and Visual Assessment chapter needs to be well structured, with the range of significant issues clearly stated.	Noted.
	Refer to SNH Guidance on Siting and Designing Wind Farms in the Landscape, and forthcoming SNH guidance on marine renewables and Landscape and Visual Impact Assessment (LVIA).	Noted. The marine renewables guidance has not been published as of February 2012.
	Chartered Landscape Architects, preferably a team of two, should carry out the landscape and visual impact assessment.	The SLVIA has been carried out by Chartered Landscape Architects.
Scoping Opinion (East Lothian Council Advice)	Recommend assessing visual impacts at long distances - at least 30 km.	A 50 km study area has been adopted (Section 21.4.3).
	Assessment of visual impacts combined with climatic and atmospheric conditions (e.g., clear day) should be undertaken.	All assessment was carried out under clear conditions with good visibility.
	Suggest viewpoints: Dunbar, summit of North Berwick Law, Doon Hill Scheduled Ancient Monument, road at West Steel, John Muir Way.	Some of these viewpoints are included in the assessment (Table 21.10). Doon Hill was omitted, as several other East Lothian viewpoints were already included. All viewpoint locations have been agreed with consultees.
	Cumulative LVIA should take account of established and proposed wind farms onshore (Skateraw, Drone Hill, and possibly Aikengall and Crystal Rig).	Noted. See cumulative baseline (Section 21.8.1).
	Suggest viewpoint from Rosyth-Europe ferry route.	This ferry route is no longer operational and has not been considered.
	LVIA of cable route onshore needs to be considered on coastline and hinterland. This should include associated infrastructure such as, substations, buildings and pylons, design, screening, mitigation and reinstatement measures.	The onshore part of the works forms a separate application, and will be subject to LVIA. Refer to Environmental Statement (ES) for onshore works.
	Shore based electrical infrastructure should be capable of expansion to accept electricity generated by other offshore wind farms and the design, visual and landscape considerations of this should be taken into account.	The onshore part of the works forms a separate application, and will be subject to LVIA. Refer to ES for onshore works.
	If a ports study is included, the landscape/visual implications of this should be considered.	No ports study is included.
Scoping Opinion (Fife Council advice)	Suggest viewpoints of St Andrews, Fife Ness and high points in Fife, and in the context of the Isle of May.	These viewpoints are included in the assessment (Table 21.10).

Source	Comment	Relevance/Reference
Scoping Opinion (Historic Scotland advice)	Suggest assessment of following assets in terms of seascape and setting: Tentsmuir Coastal Defences (Index no. 9712); Crail Airfield, airfield 1 km east of Kirklands Farm (Index no. 6642); St Andrews Castle (Index no. 90259); St Andrews Cathedral and adjacent ecclesiastical remains (Index no. 90260); Crail Airfield, pillbox, Foreland Head (Index no. 6461); Crail Airfield, airfield 1 km east of Kirklands Farm (Index no. 6642); Isle of May, lighthouse (Index no. 887); Isle of May Priory (Index no. 883). St Andrews Harbour (HB no. 40596); Bell Rock Lighthouse (HB no. 45197). St Andrews Links; and Cambo.	The SLVIA does not assess impacts on setting of historic features, as this is considered within the cultural heritage study - refer to Chapter 19: Archaeology and Cultural Heritage. The historic character of seascape, landscape and views is considered as part of the seascape, landscape and visual baseline
	Request additional viewpoints at Tentsmuir Coastal defences and Crail Airfield control tower.	The SLVIA does not assess impacts on setting of historic features, as this is considered within the cultural heritage study – refer to Chapter 19: Archaeology and Cultural Heritage. A viewpoint at Tentsmuir has been considered in the SLVIA (refer to Table 21.10).
	Recommend cumulative viewpoints at St Andrews and Tentsmuir.	Viewpoints at St Andrews and Tentsmuir have been considered in the SLVIA (refer to Table 21.10).
Advice to FTOWDG (SNH)	Strongly recommend a cumulative SLVIA and that a coastal characterisation is required at a local/regional scale by FTOWDG.	A regional seascape characterisation has been carried out to inform the SLVIA. See Section 21.5.1.
	Guidance available: GLVIA, Siting and Designing Wind Farms in the Landscape, Visual Representation of Windfarms, SNH's Seascapes Report.	Noted.
	There is a need for agreement on a common methodology among developers for cumulative LVIA.	A common methodology has been agreed. See Section 21.4.4.
Advice to FTOWDG (Fife Council)	Guidance: Fife wind energy supplementary planning guidance.	Noted.
Advice to FTOWDG (Historic Scotland)	Suggest potential cumulative impacts on terrestrial historic environment assets are assessed in individual project ES seascape, LVIA chapters.	The SLVIA does not assess impacts on historic environment assets, as this is considered within the cultural heritage study. Impacts on views from sites of historic importance have been considered in the SLVIA, e.g., St Andrews, Arbroath Signal Tower, etc. See Table 21.10.
Marine Scotland/SNH Advice Note:	Map of search and study areas, and preliminary Zone of Theoretical Visibility (ZTV).	Noted. See cumulative baseline (Section 21.8.1) and Appendix 21.2: Seascape, Landscape and Visual Assessment Impact Figures, Figures 21.28 to 21.30.
Offshore Wind Farm Landscape/Seascape, Visual and Cumulative Assessment: Recommended Outputs	Coastal and seascape/landscape character assessment baseline information in agreed study area (map and text).	Noted. A regional assessment of seascape character and sensitivity has been undertaken (Section 21.5.1), shown in Appendix 21.2: Seascape, Landscape and Visual Assessment Impact Figures, Figure 21.8.
	Viewpoint selection (map and text).	Viewpoints, and key design viewpoints, have been agreed with consultees.
	Baseline photographs.	Viewpoint photography will be shared by all members of FTOWDG.
	Constraints (map and text).	Design constraints are discussed in Chapter 4: Site Selection, Project Alternatives and Design Evolution.
	Design concept (plan(s) and text).	A design sensitivity analysis was carried out to consider visual layout issues. See Section 21.3.2.
	Visualisations for design viewpoints (photomontages, wirelines, photographs).	Both layout scenarios are illustrated for all viewpoints, with photomontages included for key design viewpoints. See Appendix 21.2: Seascape, Landscape and Visual Assessment Impact Figures, Figures 21.10 to 21.27.
	Worst case scenario.	Two alternate scenarios are considered by the SLVIA, to cover the potential range of maximum effect. See Table 21.3.
	Post-consent process.	Noted.

Table 21.1: Strategic and site level commitments and requirements – seascape and visual impacts

21.4 Impact Assessment Methodology

12 This section summarises the approach taken to assess the impacts on seascape, landscape and views. The approach and methodology is described in greater detail in Appendix 21.1: Seascape and Landscape Visual Impact Assessment Technical Report.

21.4.1 The Rochdale Envelope

13 The offshore development, described fully in Chapter 5: Project Description, comprises offshore wind turbines and associated offshore infrastructure, located within the outer Firth of Forth. The site boundary defines an area of approximately 105 km^2. The wind farm has an indicative maximum capacity of 450 MW. At this stage, the design of the wind farm, in terms of turbine height, turbine numbers, and layout, has not been finalised. The application is therefore being progressed using a 'Rochdale Envelope' approach. A number of potential turbines are being considered by the developer, ranging in output from 3.6 MW to 7 MW. Turbine height varies between these models, as set out in Table 21.2. Turbine height is relative to Lowest Astronomical Tide (LAT) throughout.

Turbine Options	Number of turbines	Tip height above lowest astronomical tide (LAT)	Hub height above LAT	Rotor diameter
7 MW	64	197 m	115 m	164 m
6 MW	75	175.5 m	115 m	121 m
4.1 MW	109	171.25 m	115 m	112.5 m
3.6 MW	128[1]	175 m	115 m	120 m

Table 21.2 Turbine options within the Rochdale Envelope

14 It is necessary to consider a maximum effect scenario for Environmental Impact Assessment (EIA) (refer to Chapter 6: The Approach to Environmental Impact Assessment). However, in terms of SLVIA there may be no single such scenario. Initial modelling carried out prior to the SLVIA process (refer to Section 21.4.5) indicated that, while larger turbines would be visible over greater distances, a denser layout of smaller turbines may be less visually balanced.

15 For the purposes of this SLVIA, two alternative scenarios have been defined, based on the turbine options being considered: a 'maximum height' scenario, and a 'maximum density' scenario, as defined in Table 21.3.

Scenario	Turbine output	Number of turbines	Tip height above LAT	Hub height above LAT	Rotor diameter	Indicative layout	Turbine spacing (as indicative layout)
Maximum density	3.6 MW	128	175 m	115 m	120 m	A	618 m
Maximum height	7 MW	80	197 m	115 m	164 m	B	795 m

Table 21.3: Assessment scenarios

16 In the event that the 7 MW machine is chosen, 64 turbines would be constructed. However, to reflect the greater number of turbines required for a layout of lower-output machines, the indicative layout for this scenario includes 80 turbine positions. The maximum height scenario therefore uses a layout which includes more turbines than would actually be constructed, in order to assess the maximum effect. The indicative layout for this scenario is shown in Appendix 21.2: Seascape, Landscape and Visual Assessment Impact Figures, Figure 21.2.

17 The spacing distance used to generate the 128-turbine layout is 618 m. This is greater than the minimum feasible spacing, which is 480 m for this turbine (refer to Chapter 5: Project Description). It is possible that micrositing (potentially up to 500 m) will allow closer spacing of individual turbines when constructed, although the average density would not increase. For assessment purposes, this scenario is therefore considered adequate to consider the maximum overall density which is reasonably likely. In the event that the 3.6 MW machine is chosen, 125 turbines would be constructed, therefore the maximum density scenario uses a layout which includes more turbines than would actually be constructed, in order to assess the maximum effect. The indicative layout for this scenario is shown in Appendix 21.2: Seascape, Landscape and Visual Assessment Impact Figures, Figure 21.3.

18 The indicative layouts for each scenario include two substations, at locations 1 and 3, being the closest indicative locations to land.

21.4.2 The Approach to Impact Assessment

19 The approach to SLVIA is prescribed by the GLVIA (Landscape Institute and IEMA, 2002). The SLVIA methodology therefore follows this model rather than that set out in Chapter 6: The Approach to Environmental Impact Assessment. GLVIA uses the term 'sensitivity' rather than 'vulnerability' which is used elsewhere in this ES. The term 'magnitude of effect' is used, but is defined in a slightly different way.

20 GLVIA makes it clear that the assessment of landscape/seascape and visual impacts are separate but linked processes. Different criteria are therefore used to determine sensitivity and magnitude of effect for landscape/seascape and for visual amenity.

21.4.2.1 Magnitude of Effect

21 The magnitude of effect in a landscape/seascape or view depends on the nature and scale of the development, and its duration.

22 In the case of landscape/seascape impacts, other factors relevant to magnitude would include the extent of change in important landscape/seascape characteristics, the degree of fit or contrast between any new features and those existing, and the effect on the character and setting of neighbouring character areas.

23 The magnitude of effect on a view would depend on the proportion of the view that is affected and the prominence of the new features, taking into account distance and contrasts in form, colour, scale and movement. It would also depend on the nature and content of the existing view, and the extent of the view, i.e., glimpsed, framed, or panoramic.

24 Magnitude of effect is described as ***high***, ***medium***, ***low*** or ***negligible*** and these definitions are illustrated by the examples in Tables 21.4 and 21.5.

Magnitude of effect	Landscape/seascape resource
High	Clearly perceptible changes in key characteristics and character; for example introduction of new large scale features into views from a character area where these are not typical.
Medium	Perceptible changes in key characteristics, but which result in only relatively subtle changes in character; for example introduction of new large scale features into intermittent views from a character area, or where these are not out of character.
Low	Limited changes in key characteristics, which result in very subtle changes in character; for example, introduction of large scale features into distant views from a character area, where these will not be out of character.
Negligible	No change, or almost imperceptible change, in landscape/seascape character and characteristics.

Table 21.4: Magnitude of effect: seascape/landscape

[1] NB a maximum of 125 turbines will be constructed

Magnitude of effect	Visual resource/amenity
High	Notable change, affecting a substantial part of the view, and introducing clearly visible new features into an open marine view.
Medium	Clearly perceptible change in a view introducing clearly visible new features into part of the view, or a more extensive view of a less obvious change.
Low	Perceptible changes across a small area of the view.
Negligible	No change, or almost imperceptible change, in the view.

Table 21.5: Magnitude of effect: visual resources

21.4.2.2 Sensitivity

25 The sensitivity of a landscape or seascape is dependent upon the location and characteristics of the area, and its proximity to, and intervisibility with, the offshore development. It may also depend on any specific values or qualities represented by landscape designations. It is relevant to consider how widespread the type of affected landscape/seascape is in the wider area, and the degree to which any impact would affect a unique or valued resource. Sensitivity also takes account of the nature, quality and condition of the seascape/landscape, and its capacity to accommodate change of the type envisaged without adverse impacts on its character.

26 The sensitivity of a viewer (or visual receptor) depends on their viewing opportunities and the activities in which they are engaged. Hence a person partaking in an outdoor recreation of a type where the view contributes towards enjoyment, such as walking, and residents with a permanent view, are considered to be of higher sensitivity than office workers or travellers with only a passing interest in the environment. The number of people who may be affected is also relevant and this must be considered in the context of the numbers of people in the wider area and their frequency of viewing opportunity, for example, how often and how many people visit a particular location, or make use of a particular footpath. The sensitivity of a viewer also varies with the type and nature of the existing view, and the extent to which it may be affected by the offshore development.

27 In the visual assessment, viewpoints are used as a proxy for viewers. The viewpoints themselves are not considered inherently sensitive, since sensitivity resides in the viewer. Viewpoint sensitivity is based on the likely sensitivity of the people who visit each location, considering the activities in which they are engaged as set out above.

28 Sensitivity, as judged in this report, is specific to the particular type of change envisaged as a result of the offshore development. Sensitivity is described as ***low***, ***medium*** or ***high*** and these definitions are illustrated by the examples in Tables 21.6 and 21.7. Further detail on the judgement of sensitivity is given in Appendix 21.1: Seascape and Landscape Visual Impact Assessment Technical Report.

Sensitivity of Receptor	Landscape/seascape resource
High	A seascape or landscape of particularly distinctive character, which may be nationally designated for its scenic quality or where its key characteristics have limited resilience to change of the type proposed.
Medium	A seascape or landscape of notable character or where its key characteristics have some/moderate resilience to change of the type proposed.
Low	A seascape or landscape which is of low/poor scenic quality or where its key characteristics are such that they are resilient to change of the type proposed.

Table 21.6: Sensitivity of seascape/landscape resources

Sensitivity of receptor	Visual resource/amenity
High	Locations that are frequented by viewers with proprietary interest and prolonged viewing opportunities such as at residential properties or at popular recreational destinations, particularly where there are open marine views. For example: a coastal settlement; a popular beach.
Medium	Locations that are frequented by viewers with a moderate interest in their environment such as occasional travellers, or at recreational facilities when the main focus of activity is not on the surroundings, or locations frequented by viewers with more prolonged viewing opportunities, but where marine views are less important. For example: a panoramic view of which the sea forms a small part; a less frequented coastal location.
Low	Locations that are frequented by viewers with a passing interest in their surroundings and whose interest is not specifically focused on the scenery, e.g., at working premises or at locations on roads or railways passed through when travelling, or locations frequented by viewers with moderate interest, but where marine views are a minor part of the view. For example: a coastal industrial estate; an inland location with only glimpses of the sea.

Table 21.7: Sensitivity of visual resources

21.4.2.3 Overall Significance

29 The determination of levels of significance requires the application of professional judgement and experience to take on board the many different variables that need to be considered, and which, in every instance, are given different weight according to site and location specific considerations. Judgements are made on a case by case basis, as required by the GLVIA.

30 A rigid matrix-type approach, where significance is defined based on the level of sensitivity combined with the magnitude of effect, is therefore not used. As such, the conclusion on significance is not always the same. For example, a medium magnitude of change experienced by a high sensitivity receptor may be considered a major impact in some cases, and a moderate impact in others, depending on the balance of variables.

31 The terms major, major-moderate, moderate, moderate-minor, minor, minor-none and none are used to describe levels of significance in this SLVIA. Moderate or greater impacts are considered to be significant in the terms of the EIA Regulations. These levels represent stages in a continuum, and the given grade is based on many variables, weighed up by the application of professional judgement and experience. Each impact is evaluated on a case by case basis using the diagram shown in Figure 21.0 as a guide.

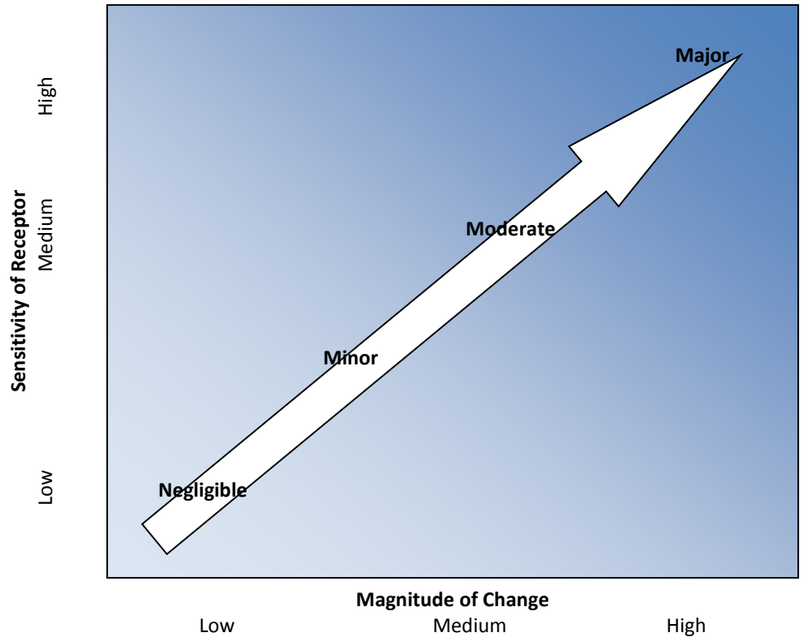

Figure 21.0: Guide to levels of significance of landscape and visual impacts

21.4.3 Study Area

32 The study area for the SLVIA has been defined as a radius of 50 km from the development site boundary, not including the cable route (refer to Figure 21.1). For the purposes of cumulative assessment, a search area of 65 km radius has been adopted. These distances have been adopted on the advice of SNH, and agreed with SNH and local authorities.

21.4.4 Cumulative Impact Assessment Approach

33 The cumulative SLVIA methodology has been developed by FTOWDG in consultation with SNH and other consultees (refer to Table 21.1). The discussion document 'Approach to Assessment of Landscape, Seascape and Visual Cumulative Effects' (March 2011), and subsequent meetings, forms the basis of the methodology set out in this section.

34 Cumulative SLVIA is concerned with identifying the additional effects that may arise as the result of a development being added into a situation where one or more other developments are also present or proposed.

35 Current guidance (Scottish Natural Heritage, 2005) describes three types of potential visual effects:

- Simultaneous (or combined) visual effects – where two or more wind farms are visible from a fixed viewpoint in the same arc of view;
- Successive visual effects – where two or more wind farms are visible from a fixed viewpoint, but the observer needs to turn to see the different sites; and
- Sequential visual effects – where one or more wind farms will be seen in sequence as the observer moves along a linear route, for example, a road or long-distance footpath.

36 The assessment of cumulative impacts is similar to the assessment of the impacts of the individual proposal, and assessed on the basis of three stages:

- Prediction of the magnitude of additional effect resulting from the change in the landscape or the view;
- Classification of the sensitivity of the seascape/landscape and visual receptors to the proposed development (sensitivity in relation to cumulative effects will be the same as sensitivity in relation to the stand-alone effects of the proposed development); and
- Evaluation of the significance of cumulative impact based on the sensitivity of the receptor and the magnitude of effect.

21.4.4.1 Magnitude of Cumulative Effect

37 Magnitude of effect was assessed by considering the relationship between the other developments in the baseline, and the potential effects arising from the addition of Neart na Gaoithe. Assessment takes into account the following:

- The arrangement of wind farms in the view, e.g., developments seen in one direction or part of the view, or seen in all directions;
- The relationship of scale of the wind farms, including turbine size and number of turbines;
- The position of the wind farms in the view, e.g., on the skyline, against the backdrop of land; and
- The apparent distances, from the viewer, and between wind farms.

38 Magnitude of effect is described as high, medium, low or negligible and these definitions are illustrated by the examples in Tables 21.8 and 21.9

Magnitude of cumulative change	Landscape/seascape resource
High	Considerable additional changes in seascape or landscape key characteristics.
Medium	Moderate additional changes in seascape or landscape key characteristics.
Low	Small additional changes in seascape or landscape key characteristics.
Negligible	No perceptible additional changes in seascape or landscape key characteristics.

Table 21.8: Magnitude of cumulative effect: seascape/landscape

Magnitude of cumulative change	Visual resource/amenity
High	Notable additional changes in view, which may be visible for a long duration, facing the change, or which may be in stark contrast with the existing view, or obstruction of a substantial part or important elements of views towards the development area.
Medium	Clearly perceptible additional changes in views, or visible for a moderate duration, perhaps at a slight angle, where changes may be in contrast with the existing view, or obstruction of a noticeable part or elements of views towards the development area.
Low	Perceptible additional changes in views, or visible for a short duration, perhaps at an oblique angle, or which may blend to an extent with the existing view.
Negligible	Additional change which is barely visible, or visible for a very short duration, perhaps at an oblique angle, or which may blend with the existing view, usually at some distance from the development.

Table 21.9: Magnitude of cumulative effect: visual resource

21.4.4.2 Significance of Impact

39 The level of significance of cumulative impact was judged on the basis of information from the Cumulative Zones of Theoretical Visibility (CZTVs), wirelines and fieldwork. Overall, the cumulative impact was judged using a multifaceted assessment based on the magnitude of change and the relationships between the wind farms (illustrated by the computer modelling), consideration of potential sensitivity of the receptor, and professional judgement. Each impact is evaluated on a case by case basis using the diagram shown in Figure 21.0 as a guide.

21.4.5 Visualisations

21.4.5.1 Zone of Theoretical Visibility (ZTV)

40 The ZTV is the area within which a proposed development is theoretically visible, and therefore where it may have an effect upon visual amenity and/or landscape character. ZTVs were generated according to good practice guidance, and do not take into account factors such as detailed landform (e.g., manmade cuttings and embankments), vegetation, buildings or atmospheric conditions. Theoretical visibility does not imply visual impact.

41 ZTVs were generated to tip and hub heights for each of the two alternative scenarios (refer to Table 21.3) to illustrate the potential range of visibility across the Rochdale Envelope. A comparative ZTV has also been produced. These are shown in Appendix 21.2: Seascape, Landscape and Visual Assessment Impact Figures, Figures 21.4 to 21.6.

21.4.5.2 Wirelines and Photomontages

42 Visualisations (wirelines and photomontages) were generated to illustrate potential views of the offshore development from each of the assessment viewpoints. The production of the wirelines and photomontages, and the layout of the figures, was carried out in accordance with the SNH guidance *Visual Representation of Wind Farms* (H+M and Envision, 2006). For each viewpoint, 90 degree views are included to show the context, as well as 50 degree views, which are included in order to show image heights and viewing distances above the minimum recommended in the SNH guidance. Full details of the methodology used to prepare wirelines and photomontages are given in Appendix 21.1: Seascape, Landscape and Visual Impacts Technical Report.

43 Wireline views are provided for all viewpoints, with photomontages for selected viewpoints. Visualisations are presented in Appendix 21.2: Seascape, Landscape and Visual Assessment Impact Figures, Figures 21.10 to 21.27.

21.5 Baseline Description

44 The baseline considered in the SLVIA includes information about:

- The seascape character of the coastal part of the study area;
- The landscape character of the landward part of the study area;
- Landscape designations within the study area; and
- Existing visual amenity.

21.5.1 Seascape Character

45 The baseline seascape character is described in 'Seascape Character Assessment: Aberdeen to Holy Island', included as Annexe 2 to Appendix 21.3: Regional Seascape Characterisation Report. This document has been prepared specifically to inform the SLVIA of offshore wind farms in the Forth and Tay area.

46 The seascape character assessment defines 21 regional seascape units along the coast, and includes an assessment of each area's sensitivity to offshore wind farm development. There are 16 regional seascape units within the Neart na Gaoithe study area. The seascape character assessment is discussed in Appendix 21.1: Seascape, Landscape and Visual Impacts Technical Report. Regional seascape units considered in the assessment are listed in Table 21.10 and are shown in Appendix 21.4: Regional Seascape Characterisation Areas.

Regional seascape unit	Summary of key characteristics
SA4: Montrose	Long, sweeping beach backed by cliffs to the north around St Cyrus, and by low-lying coastal settlement and promenade at Montrose.
SA5: Long Craig	Rocky headland and associated agricultural hinterland that stretches between Scurdie Ness in the north and Lunan Bay to the south.
SA6: Lunan Bay	Broad sandy beach between Boddin Point and the Lang Craig, backed by dunes and framed by low cliffs the north and south.
SA7: Lang Craig to the Deil's Head	Continuous stretch of sea cliffs, reaching up to 50 m, and associated rocky coastline between Lang Craig and Whiting Ness.
SA8: Arbroath to Monifieth	Low-lying coast with rock-cut platforms, areas of dunes, and backed by settlement.
SA9: Dundee	Developed and settled coastal edge between Monifieth and Invergowrie, centred on Dundee.
SA10: Inner Firth of Tay	The Inner Firth of Tay includes a narrow strip of land adjacent to the southern coastline and the extensive area of predominantly low-lying farmland of the Carse of Gowrie.
SA11: St Andrews Bay	Large stretch of sandy coastline backed by dunes and forestry between Tayport and St Andrews.
SA12: St Andrews to Fife Ness	Gently sloping agricultural hinterland, rocky coastline and low cliffs stretching between St Andrews and Fife Ness.
SA13: East Neuk of Fife	Rocky coastline and shingle beaches between Fife Ness and Earlsferry, including agricultural hinterland and fishing villages.
SA14: Kirkcaldy and Largo Bay	Generally low-lying coast of sandy beaches and bays, backed by large coastal settlements with an industrial character.
SA16: Edinburgh to Gullane	Broad bay including the built-up shoreline of Portobello, Musselburgh, Cockenzie and Port Seton, as well as the less developed East Lothian coast around Gullane.
SA17: Eyebroughy to Torness Point	Generally low-lying coast, with an alternation of rocky headlands and sandy pocket bays, backed by relatively unfragmented agricultural land and towns.
SA18: Torness Point to St Abb's Head	Coastline formed by high, near vertical cliffs, with a barren, exposed character and dramatic open views.
SA19: St Abb's Head to Eyemouth	Diverse coastal landscape of rugged sea cliffs with sheltered folds and valleys, rising to the dramatic St Abb's Head.
SA20: Eyemouth to Berwick upon Tweed	Linear coastline of rocky cliffs and several small headlands, with undulating hinterland and major transport corridor close to the coast.

Table 21.10: Regional seascape units

21.5.2 Landscape Character

47 The landscape character of the onshore part of the study area is defined in a series of landscape character assessments published by SNH, covering Aberdeenshire, Angus, Fife, The Lothians and The Borders (ASH Consultants, 1998a; ASH Consultants, 1998b; David Tyldesley and Associates, 1999; Environmental Resources Management, 1998; Land Use Consultants, 1999), and in the *Countryside Character of England, Volume 1: North East England* landscape character assessment published by Natural England (Countryside Commission, 1996).

48 A total of 31 landscape character types (LCTs) are present in the study area. In order to focus on potentially significant effects, the LCTs were examined to identify those in which marine views are important. This involved a review of the written descriptions in the published landscape character assessment (LCA) reports to ascertain whether marine or coastal views are identified as a key characteristic of each unit, followed by verification in the field. A further cross-check was undertaken with the ZTV to identify any units which have only limited visibility of the offshore development.

49 LCTs with no or very limited theoretical visibility of the development were excluded from the baseline. LCTs with some view, but where marine views are not characteristic, were also excluded. This scoping exercise, set out in detail in Appendix 21.1: Seascape, Landscape and Visual Impacts Technical Report, concluded that 16 LCTs had coastal/marine views or characteristics, and were within the ZTV. These LCTs form the landscape character baseline, and are described further in Appendix 21.1: Seascape, Landscape and Visual Impacts Technical Report. LCTs considered in the assessment are listed in Table 21.11 and are shown on Figure 21.8.

21.5.3 Landscape Designations

50 The seascape of the study area is not designated for visual or aesthetic reasons. Only onshore landscape designations are therefore considered. Landscape designations are shown on Appendix 21.2: Seascape, Landscape and Visual Assessment Impact Figures, Figure 21.7.

51 There are no National Scenic Areas or Areas of Outstanding Natural Beauty within the study area.

52 There are 53 sites listed on the *Inventory of Gardens and Designed Landscapes in Scotland* within the study area (Historic Scotland, 1987-2011). As with LCTs, a scoping exercise was undertaken, set out in detail in Appendix 21.1: Seascape, Landscape and Visual Impacts Technical Report, to identify those Gardens and Designed Landscapes (GDLs) which are within the ZTV, and from which marine views are important, as described in the inventory descriptions. A total of 15 GDLs were included within the baseline, and are listed in Table 3.3 in Appendix 21.1: Seascape, Landscape and Visual Impacts Technical Report.

53 A total of 12 local landscape designations were identified as being relevant to the assessment. One of these is in Fife, nine are in East Lothian, one is in the Scottish Borders, and one (the Lammermuir Hills) is located across the boundary between East Lothian and the Scottish Borders. These are listed in Table 3.4 in Appendix 21.1: Seascape, Landscape and Visual Impacts Technical Report.

54 All landscape designations considered in the assessment are listed in Table 21.12, and are shown in Appendix 21.2: Seascape, Landscape and Visual Assessment Impact Figures, Figure 21.7.

Landscape character type	Summary of key characteristics
Coastal Hills Headlands Plateaux and Moorlands	Expansive, flat to gently rolling coastal plateau, with predominantly large, open, undulating arable fields, coarse grassland, and heather moorland. Limited woodland cover, infrequent settlements. A medium to large-scale, open or exposed coastal landscape.
Coastal Margins	Transitional landscape between hills and sea, ranging from rolling hills to virtually flat coastal plain. Medium to large arable fields and extensive estate woodlands, wind-sculpted coastal woods, scattered hedgerow trees and shelterbelts. Distinctive coastal settlements and man-made features.
Coastal Raised Beaches and Terraces	Mostly flat or gently sloping landform, forming a transition between hills and coastal flats. Open, arable fields with some hedgerows, or stone dykes or post and wire fencing. Limited woodland cover except policy planting and shelterbelts, some built-up areas.
Dipslope Farmland	Land generally sloping down towards the coast, from low outlying hills. Productive agricultural land, with woodland cover limited to shelterbelts, except on large estates and along river corridors. Dispersed settlement pattern.
Fife Lowland Farmland	Varied and subtle landform, predominantly large, open, regular arable fields. Extensive woodland on lower ground. Dispersed farmsteads and occasional villages and towns well related to the landscape.
Foothills	Highly conspicuous hills, forming a backdrop in wider views. Modest in height, the foothills are occasionally steep-sided and rugged. A mix of arable and pastoral farmland, with burns in gullies or small valleys. General lack of settlement.
Low Coastal Farmlands	Strongly varied topography with rock outcrops, mounds, and rolling terrain interrupted by narrow, deeply incised valleys. Land cover of arable and pastoral fields, with rough pasture and scattered gorse scrub on steep ground. Coastal villages and scattered small farms and cottages, and transport corridors.
Lowland Coastal Flats Sands and Dunes	Flat, low-lying, large-scale, exposed coastal landscapes. Intensively cultivated landscape of geometrical arable fields and extensive forestry plantations. Industrial and other man-made developments including golf courses.
Lowland Hills (South)	Distinctive hills, aligned east-northeast, with prominent northwest-facing crags. Arable land with grazing on upper slopes, and scattered areas of deciduous woodland. Limited development aside from farmsteads.
Lowland Plains	Extensive, gently undulating plain, interrupted by rugged volcanic hills. Checkerboard pattern of large arable fields with pasture on higher ground, and prominent policy woodlands. Dispersed settlement pattern with larger settlements having extensive 20th-century housing developments.
Lowland River Valleys	Small twisting rivers within shallow, narrow incised valleys. Arable land on gentler slopes, with pasture on the valley floor. Clipped hedges with hedgerow trees. Extensive mixed and broadleaf woodlands, including policy woodlands. Small villages.
Narrow Wooded River Valleys	Narrow, deep, gorge-like valleys cut into surrounding hills by fast flowing burns. Semi-natural woodlands on the steeply sloping banks. Occasional small villages and many historic buildings.
Pronounced Hills	Pronounced, often distinctive hills protruding high above the lowlands. Steep rugged hilltops, with more vegetated and more intensively used lower slopes. Mixed woodlands and burns in valleys. Farmsteads and quarries.
Upland Fringe Moorland and Grassland: the Lammermuir, Pentland and Moorfoot Hills	Steep hills and flat or gently rolling plateau, descending to low rounded hills dissected by incised valleys. Some arable on lower ground but predominantly pasture and rough grazing. Stone walls and occasional hedges with hedgerow trees. Ancient woodland along narrow valleys. Limited settlement.
Upland Hills: the Lammermuir, Pentland and Moorfoot Hills	Smooth convex hills and level-topped ridges forming a broad, gently undulating plateau, dissected by small and large incised valleys. Peatland, heather and grass moorland, with occasional improved pasture in valleys. Very limited tree cover aside from coniferous plantations. Few farms or roads, overhead power lines are prominent.

Table 21.11: Landscape character types

Designation name	Designation	Description
Balgay Park	GDL	An early 19th-century landscape, reformed in the later 19th century as a public park and garden cemetery. Balgay Park dominates Dundee's cityscape.
St Andrews Links	GDL	Some of the oldest public links golf courses in the world, renowned as the Home of Golf. Provides an important coastal scenic setting for St. Andrews.
Cambo	GDL	Good example of late 18th and early 19th-century coastal policies embracing model farms, picturesque estate layout, mid-20th-century golf course and gardens of botanical and horticultural interest.
Balcaskie	GDL	Outstanding late 17th century landscape with later overlays, notable for the main axial view focusing on Bass Rock in the Firth of Forth.
Kellie Castle	GDL	Early example of Sir Robert Lorimer's work, containing several features designed by the sculptor Hew Lorimer.
Balcarres	GDL	The spectacular formal gardens and designed landscape of Balcarres have played a formative role in the landscape development of Colinsburgh and make skillful use of the surrounding topography.
Charleton	GDL	Early to mid-18th century formal landscape which continues to form a strong landscape structure in the modern day landscape.
Lahill	GDL	A good example of a mid-19th century villa set within a contemporary 'gardenesque' landscape. Relatively rare and modest in scale, with a marked contrast between the inner parkland and panoramic views.
Wemyss Castle	GDL	A coastal 18th-19th century landscape park overlying an earlier formal landscape associated with the 15th century West Wemyss Castle and Chapel tower-house. The picturesque character and structure survives today.
Grey Walls	GDL	An important example of Edwin Lutyens' 20th century design style.
Leuchie	GDL	An early 19th century informal landscape of parkland, woodland, lawns and walled garden that together form an attractive setting for Leuchie House.
Tyninghame	GDL	Outstanding landscape which still has its 18th century structure, within which can be seen 19th century development and the particularly fine 20th century gardens.
Biel	GDL	A beautiful designed landscape particularly notable for the terraced gardens, arboretum and outstanding architectural features. Makes an important contribution to the surrounding scenery.
Broxmouth Park	GDL	A remarkable example of late 17th/early 18th century formal landscape associated with the Battle of Dunbar, laid out around a series of long-distance vistas.
Dunglass	GDL	A fine example of the late 18th century picturesque style of landscape design. Of particular value are the gorges, woods, rocks and water features seen as early sublime features in the picturesque design.
East Fife	AGLV	Very extensive area covering the coast of Tentsmuir and the East Neuk, along with much of the hinterland of rolling farmland and low hills.
Longniddry to North Berwick Coast	AGLV	Low-lying coast of extensive tidal flats, beaches, dunes and rocky headlands, with a narrow hinterland of woodland and golf courses.
North Berwick to Dunbar Coast	AGLV	Rocky coast with cliffs and small bays, including the broad estuary of the Tyne, and associated dunes and low-lying farmland
Barns Ness Coast	AGLV	Narrow, generally low-lying coastal strip of rocky foreshore with some small sandy bays.
Thorntonloch Coast	AGLV	Broad sandy bay at Thorntonloch, together with rocky foreshore and farmland below Dunglass.
Garleton Hills and Kilduff Hill	AGLV	Prominent volcanic hills aligned east-west, with grazing and gorse scrub on steeper areas. Woodlands and prominent monument.
Traprain Law	AGLV	Prominent volcanic outcrop standing alone within agricultural plain. Distinctive flat-topped outline.
North Berwick Law	AGLV	Prominent and distinctive conical volcanic outcrop dominating the small town of North Berwick. Summit viewpoint offers broad views.
Balgone	AGLV	Wooded designed landscape of Balgone house, located on a steep ridge. Includes policy woodland, parkland and lochs.
Lammermuir Hills	AGLV	Extensive upland area of open moors and hills, dissected by burns in steep cleughs. Mostly grazing and heather moorland with some forestry and wind turbines. Prominent as a backdrop to East Lothian and with many broad outward views.
Berwickshire Coast	AGLV	Dramatic rocky coast and coastal moorland, with distinctive cliffs at St Abbs Head and small fishing villages.

Table 21.12: Landscape designations

21.5.5 Visual Amenity

21.5.5.1 Visibility

55 The Met Office records visibility on a regular basis. Data were obtained from the Met Office, giving average visibility, recorded at Leuchars over a 10 year period from January 2001 to December 2010. These data are presented in Table 2.1 in Appendix 21.1: Seascape, Landscape and Visual Impacts Technical Report. They show that visibility reduces steadily with distance from the observation point. The following observations can be made:

- There is no visibility beyond 15.5 km for 18% of the time, suggesting that the wind turbines would not be visible from Fife Ness on 62 days per year;
- There is no visibility beyond 30 km for 46% of the time, suggesting that the turbines would not be visible from Angus or East Lothian on 168 days per year; and
- There is no visibility beyond 50 km for 80% of the time, suggesting that the turbines would not be visible from the outer edge of the study area on 292 days per year.

56 This information is noted for each viewpoint in Appendix 21.1: Seascape, Landscape and Visual Impacts Technical Report. While this information provides background data, it is acknowledged that many viewers, particularly recreational users, will be active when conditions and hence visibility are better. Therefore all assessment work has been carried out in good visibility, and these conditions are considered in the assessment of impacts.

21.5.5.2 Visual Receptors

57 Likely viewers or visual receptors of the offshore wind farm include:

- Residents living in any of the settlements or individual residences across the area which lies within the ZTV of the wind farm;
- Tourists visiting, staying in, or travelling through the area within the ZTV;
- Recreational users of the landscape, including those using golf courses, cycle routes and footpaths;
- Recreational users of the marine environment, including those involved in yachting, angling, people on boat trips to the Isle of May, and passengers on ships;
- Travellers (tourists, workers, visitors or local people) using transport (road and rail) routes passing through the study area;
- People working in the countryside or in any of the towns, villages or settlements and residences across the area lying within the ZTV of the wind farm; and
- People working in the marine environment, such as fishermen and crews of ships.

58 Detailed consideration of the most sensitive visual receptors is included in Appendix 21.1: Seascape, Landscape and Visual Impacts Technical Report.

21.5.5.3 Viewpoints

59 Assessment viewpoints were selected to be representative of the landward, coastal and, to a lesser extent, seascape areas within the 50 km radius study area, reflecting places and routes frequented by the public. They were chosen through field work and a study of maps, to represent key locations where the public may view the offshore development.

60 The viewpoints were selected in consultation with interested statutory consultees (including SNH and Marine Scotland) and local authorities (Aberdeenshire, Angus, Dundee, Fife, East Lothian, Scottish Borders and Northumberland councils), initially as cumulative viewpoints. A total of 21 viewpoints were selected, of which 18 are within the Neart na Gaoithe study area. These are set out in Table 21.13, and are illustrated on Appendix 21.2: Seascape, Landscape and Visual Assessment Impact Figures, Figure 21.4. For ease of reference, the original numbering of the viewpoints has been retained, and viewpoint numbers 1, 3 and 4 are not used.

61 As a result of consultation with SNH and local authorities, the following viewpoints have been adopted by all FTOWDG developments as 'key design viewpoints' (Scottish Natural Heritage and Marine Scotland, 2011). These have been used to examine how views may vary between different layout patterns:

- Viewpoint 7 Arbroath;
- Viewpoint 13 Fife Ness; and
- Viewpoint 21 St Abb's Head.

62 Wireline visualisations of each of the two scenarios have been prepared for all viewpoints. In addition, rendered photomontages have been produced for each of the two scenarios for seven viewpoints: the three 'key design viewpoints' (7, 13, and 21), and the four other viewpoints that are located 30 km or less from the site boundary (12, 14, 16, and 18). These seven locations are highlighted in bold in Table 21.10. Viewpoint locations are shown on the ZTV maps (Appendix 21.2: Seascape, Landscape and Visual Assessment Impact Figures, Figures 21.4 to 21.6). Visualisations are included in Appendix 21.2: Seascape, Landscape and Visual Assessment Impact Figures, Figures 21.10 to 21.27.

No.	Viewpoint	Distance from site boundary (km)	Reason for selection
2	Beach Road, Kirkton, St Cyrus	49.0	Car park offering beach access, and wide elevated views over Montrose Bay, on a coastal footpath.
5	Dodd Hill	43.9	Inland location on walking route offering views across Angus to the coast.
6	Braehead of Lunan	39.0	Representative of views from a hamlet, located on National Cycle Network (NCN) Route 1, enables views south over Red Head.
7	**Arbroath**	30.8	Listed building with an elevated platform and historic connection to the Bell Rock, now a museum.
8	Carnoustie	31.7	Recently upgraded promenade with car parking and beach access.
9	Dundee Law	44.9	Most prominent viewpoint in Dundee, a popular recreational location with large numbers of visitors, and long views down the Firth of Tay.
10	Tentsmuir	31.8	Forestry Commission car park in a popular recreational area. Views across sandbanks. Located on Fife Coastal Path and NCN Route 1.
11	Strathkinness	33.1	Within coastal hills, small settlement overlooking St Andrews and the Firth of Tay.
12	**St Andrews, East Scores**	28.2	Popular location within the town, by the abbey, overlooking St Andrews Bay, on the Fife Coastal Path.
13	**Fife Ness, Lochaber Rock**	15.5	Easternmost point of Fife, unobstructed views across the outer Firth and Tay, on the Fife Coastal Path.
14	**Anstruther Easter**	21.8	Representative of views from a coastal settlement at a local play park with foreshore access, on the Fife Coastal Path.
15	Largo Law	36.8	Elevated location, enabling wide views across the Firth of Forth, on a locally-signposted footpath.
16	**Isle of May**	16.3	The island is a popular day-trip destination, and a useful proxy for marine views.
17	North Berwick Law	33.0	Popular walking destination close to North Berwick, enabling wide views over the Firth of Forth.
18	**Dunbar**	28.0	Marked as a viewpoint on an Ordnance Survey (OS) map, representative of views from coastal settlement, on John Muir Way.
19	West Steel	34.9	Elevated viewpoint enabling views across the coastal plain to the Firth of Forth.
20	Coldingham Moor	32.8	Elevated headland with wide seaward views, enabling northward views over the Firth of Forth.
21	**St Abb's Head**	33.0	Marked as a viewpoint on OS map, within National Trust for Scotland access land, offering extensive coastal views.

Table 21.13: Assessment viewpoints

Note: 'Key design' viewpoints and viewpoints that are within 30 km of the site boundary are shown in bold

21.6 Impact Assessment

21.6.1 Impact Assessment – Construction

63 Impacts on seascape/landscape and visual amenity may arise as a result of the following construction activities:

- Movement of boats, cranes and other equipment visible in and around the site area;
- Views of turbines and other structures under construction; and
- Laying of the undersea cable, particularly where this connects to the onshore cable.

64 Construction activities may affect landscape and seascape resources and views, in areas where they can be seen. The ZTV maps (Appendix 21.2: Seascape, Landscape and Visual Assessment Impact Figures, Figures 21.4 and 21.5) indicate the extent of theoretical visibility of the proposed offshore wind farm. The extent of theoretical visibility for the site during construction would initially be much smaller, being limited to areas with direct views of the site area. As construction progresses, visibility of the works will increase as more turbines are erected. As such, potential impacts arising from the construction phase of the offshore development will never be significantly greater than those arising from the operational phase.

65 The pattern of any impacts would be the same for construction activities as it would be for operational activities. While it is acknowledged that there are likely to be significant effects arising from views of the wind farm under construction, they have not been assessed separately.

66 Cable laying will be carried out from a vessel working between the wind farm site and the landfall at Thorntonloch, near Torness in East Lothian. The options available for landing the cable at Thorntonloch beach are dependent on ground conditions. The preferred option is for horizontal directional drilling (HDD) from close to the location of the transition pit to below the low water mark. This would enable the cable to be buried without disturbing the surface of the intertidal area, including the beach. Forthcoming geotechnical investigations will confirm feasibility of this approach. Alternatively, it may be necessary to trench the beach either with excavators or a plough and then backfill after burial.

67 If HDD is used, the drill will pass from the agricultural land to the west of the beach, to below the low water mark, i.e., within the water, and is anticipated to take 4 months in total. No direct impacts on the landscape resource are predicted.

68 If open trenching is required, Thorntonloch beach will be directly affected by excavation and burial works. The short-term impact will be of major significance due to the high sensitivity of the beach, and would last up to 4-5 months (allowing a weather contingency of 2 months).

69 Recreational and residential viewers at this location are considered to have a high sensitivity to change. Short term visual impacts of major significance will occur in views from the vicinity of the intertidal works, including from the beach, caravan park, nearby properties and from the John Muir Way.

70 Should the HDD method be used, this would remove the visual intrusion of construction activities on the beach. However, construction activities would be visible onshore, and in water below low tide. Impacts from both the HDD and open trenching methods are predicted to be of locally major significance. This impact will be temporary, and as above, will be of shorter duration should HDD be adopted.

21.6.2 Impact Assessment – Operation and Maintenance

71 Impacts on seascape/landscape and visual amenity may arise as a result of the following aspects of the offshore development:

- Introduction of wind turbines within an area of formerly open sea;
- Introduction of associated structures, including a substation; and
- Operational activities such as boat movements and lighting.

72 This would result in potential changes to the perception of seascape and landscape character, and to the amenity of viewer groups, within the study area. There will be direct effects on an area of open sea, upwards of 15 km from shore. There will be no direct effects on the seascape closer to the shore (as explored through the seascape units defined in baseline studies) or upon landscape character, as represented by the landscape character units described by SNH. The assessment is therefore primarily concerned with indirect impacts, arising from physical changes occurring at a distance. The assessment is informed by the ZTV maps (Appendix 21.2: Seascape, Landscape and Visual Assessment Impact Figures, Figures 21.4 and 21.5), and by the visualisations of the wind farm presented in Appendix 21.2: Seascape, Landscape and Visual Assessment Impact Figures, Figures 21.10 to 21.27.

73 Other features of the operating wind farm that are relevant to the assessment include:

- The turbines will be painted a pale grey colour (RAL 7035);
- Navigation lighting will be required on at least some of the turbines, as set out in Appendix 18.2: Aviation Lighting and Marking Requirements. Navigation lights, likely to be mounted on the corner turbines, will have a nominal range of five nautical miles (9.26 km), with intermediate lights of nominal range two nautical miles (3.7 km). These nominal ranges represent the minimum required visibility, but the upper limit of visibility depends on a range of factors, and cannot be precisely determined. It is therefore assumed that lighting will be visible from any location where visibility of the tower would be expected. This has been considered in the assessment of effects on views; and
- Aviation lighting will be required on at least some of the turbines, as set out in Appendix 18.2: Aviation Lighting and Marking Requirements. Aviation lighting is expected to be in the form of directional 'uplighting', which would not be visible to observers on the ground or those in vessels. Aviation lighting has not been considered in the assessment of effects on views.

74 Maintenance activities will require regular boat movements to and from the wind farm. Boat movements at the wind farm site will not result in landscape and visual impacts. However, increased boat movements at an onshore base may have some effects. At present, the location of the onshore base, and the extent of boat movements, is undetermined. Increases in boat movements would be seen in the context of existing port activity, and are unlikely to have a significant effect.

21.6.2.1 Impacts on Seascape Character

75 The SLVIA has identified significant (moderate) impacts on two regional seascape units: SA12 St Andrews to Fife Ness; and SA13 East Neuk of Fife (refer to Figure 21.8 in Appendix 21.2: Seascape, Landscape and Visual Impact Figures). These areas are the closest to the site, and have a generally open outlook towards the turbines. Impacts on all other regional seascape units are assessed as minor or none. The detailed assessment is set out in Table 5.3 in Appendix 21.1: Seascape, Landscape and Visual Impacts Technical Report.

76 Impacts on seascape character are summarised in Table 21.14.

Regional seascape unit	Sensitivity	Magnitude of effect	Indirect impact
SA4: Montrose	High	Low to negligible	Minor to none
SA5: Long Craig	Medium	Negligible	None
SA6: Lunan Bay	High	Negligible	None
SA7: Lang Craig to the Deil's Head	High	Low to negligible	Minor to none
SA8: Arbroath to Monifieth	Medium	Low to negligible	Minor to none
SA9: Dundee	Low	Negligible	None
SA10: Inner Firth of Tay	Low	Negligible	None
SA11: St Andrews Bay	High	Low to negligible	Minor to none
SA12: St Andrews to Fife Ness	High	Medium	Moderate
SA13: East Neuk of Fife	High	Medium	Moderate
SA14: Kirkcaldy and Largo Bay	Medium	Low to negligible	Minor to none
SA16: Edinburgh to Gullane	Medium	Low to negligible	Minor to none
SA17: Eyebroughy to Torness Point	Medium	Low to negligible	Minor to none
SA18: Torness Point to St Abb's Head	Medium	Low to negligible	Minor to none
SA19: St Abb's Head to Eyemouth	High	Low to negligible	Minor to none
SA20: Eyemouth to Berwick upon Tweed	Medium	Negligible	None

Table 21.14: Impacts on seascape character

21.6.2.2 Impacts on Landscape Character

77 The SLVIA has identified no significant impacts on LCTs. Impacts on four LCTs were assessed as minor, with no impacts on other areas (refer to Figure 21.8 in Appendix 21.2: Seascape, Landscape and Visual Impact Figures). This reflects the limited effect of the offshore development on the character of inland areas. The detailed assessment is set out in Table 5.4 in Appendix 21.1: Seascape, Landscape and Visual Impacts Technical Report.

78 Impacts on landscape character are summarised in Table 21.15.

Landscape character type	Sensitivity	Magnitude of effect	Indirect impact
Coastal hills, headlands, plateaux and moorlands	Medium	Low to negligible	Minor to none
Coastal margins	Medium	Low to negligible	Minor to none
Coastal raised beaches and terraces	High	Negligible	None
Dipslope farmland	Medium	Negligible	None
Fife lowland farmland	Medium	Low to negligible	Minor to none
Foothills	Medium	Negligible	None
Low coastal farmlands	Medium	Low to negligible	Minor to none
Lowland coastal flats, sands and dunes	High	Negligible	None
Lowland hills (south)	Low	Negligible	None
Lowland plains	Low	Negligible	None
Lowland river valleys	Low	Negligible	None
Narrow wooded river valleys	Low	Negligible	None
Pronounced hills	Low	Negligible	None
Upland fringe moorland and grassland: the Lammermuir, Pentland and Moorfoot Hills	Medium	Negligible	None
Upland hills: the Lammermuir, Pentland and Moorfoot Hills	Medium	Negligible	None

Table 21.15: Impacts on landscape character

21.6.2.3 Impacts on Landscape Designations

79 The SLVIA has identified minor impacts on the landscape character of two sites listed on the *Inventory of Gardens and Designed Landscapes in Scotland*: St Andrews Links and Cambo. No impacts were predicted on other GDLs.

80 No significant impacts were predicted on local landscape designations. The eastern part of the East Fife Area of Great Landscape Value (AGLV) is within the area where ***moderate impact*** on landscape character may be anticipated. However, ***no significant overall impact*** on the designation was identified. The detailed assessment is set out in Table 5.5 in Appendix 21.1: Seascape, Landscape and Visual Impacts Technical Report.

81 Impacts on landscape designations are summarised in Table 21.16.

Landscape designation	Sensitivity	Magnitude of effect	Indirect impact
Balgay Park GDL	High	Negligible	None
St Andrews Links GDL	High	Low	Minor
Cambo GDL	High	Low	Minor
Balcaskie GDL	High	Negligible	None
Kellie Castle GDL	High	Negligible	None
Balcarres GDL	High	Negligible	None
Charleton GDL	High	Negligible	None
Lahill GDL	High	Negligible	None
Wemyss Castle GDL	High	Negligible	None
Grey Walls GDL	High	Negligible	None
Leuchie GDL	High	Negligible	None
Tyninghame GDL	High	Low	Minor
Biel GDL	High	Negligible	None
Broxmouth Park GDL	High	Negligible	None
Dunglass	High	Negligible	None
East Fife AGLV	Medium	Medium, reducing to minor and negligible	Overall minor
Longniddry to North Berwick Coast AGLV	Medium	Low to negligible	Minor to none
North Berwick to Dunbar Coast AGLV	Medium	Low to negligible	Minor to none
Barns Ness Coast AGLV	Medium	Low to negligible	Minor to none
Thorntonloch Coast AGLV	Medium	Low to negligible	Minor to none
Garleton Hills AGLV and Kilduff Hill AGLV	Medium	Negligible	None
Traprain Law AGLV	Medium	Negligible	None
North Berwick Law AGLV	Medium	Negligible	None
Balgone AGLV	Medium	Negligible	None
Lammermuir Hills AGLV	Medium	Negligible	None
Berwickshire Coast AGLV	Medium	Low to negligible	Minor to none

Table 21.16: Impacts on landscape designations

21.6.2.4 Impacts on Visual Amenity

82 In the viewpoint assessment, summarised in Table 21.17, significant impacts on viewers have been predicted at viewpoints located at up to around 33 km from the offshore development, depending on the sensitivity of the viewer, and the magnitude of effect. Significant impacts at this distance would be restricted to high-sensitivity viewers with clear unobstructed seaward views, in conditions of good visibility during which the turbines would be clearly perceptible.

83 These distances are greater than those at which significant impacts would normally be expected to occur as a result of an onshore wind farm. This is because of the lack of intervening landform and vegetation, which would screen many views of an onshore wind farm within 5 to 10 km. It also reflects the unusual appearance of large vertical structures, including lighting which may be visible at night, in the marine environment where manmade structures are an unexpected element in the view.

No.	Viewpoint	Distance from site boundary (km)	Sensitivity	Magnitude of effect	Significance of impact
2	Beach Road, Kirkton, St Cyrus	49.0	High	Negligible	None
5	Dodd Hill	43.9	Medium	Negligible	None
6	Braehead of Lunan	39.0	High	Low	Moderate-minor
7	Arbroath	30.8	High	Medium-low	Moderate
8	Carnoustie	31.7	High	Medium-low	Moderate
9	Dundee Law	44.9	Medium	Negligible	None
10	Tentsmuir	31.8	High	Medium-low	Moderate
11	Strathkinness	33.1	High	Low-negligible	Minor
12	St Andrews, East Scores	28.2	High	Low	Moderate
13	Fife Ness, Lochaber Rock	15.5	High	High	Major
14	Anstruther Easter	21.8	High	High	Major
15	Largo Law	36.8	Medium	Negligible	None
16	Isle of May	16.3	High	High	Major
17	North Berwick Law	33.0	High	Low	Moderate
18	Dunbar	28.0	High	Medium	Major-moderate
19	West Steel	34.9	Medium	Low	Minor
20	Coldingham Moor	32.8	Medium	Medium-low	Minor
21	St Abb's Head	33.0	High	Medium-low	Moderate

Table 21.17: Viewpoint assessment summary

21.6.3 Impact Assessment - Decommissioning

84 The lease is valid for 50 years but it is anticipated that the offshore infrastructure will be removed and replaced around 25 years after construction (refer to Chapter 5: Project Description). Decommissioning is likely to involve the removal of all offshore structures, and is expected to follow the reverse of the construction activity, as described in Chapter 5: Project Description. As described above, the potential impact of these activities would always be less than the operational impacts. Decommissioning impacts have not therefore been considered further in this SLVIA.

21.7 Mitigation

85 It is acknowledged that traditional methods of landscape and visual mitigation, such as screen planting, are ineffective for offshore wind farm development. Mitigation for wind farms is generally limited to the reduction of potential direct effects through detailed siting, and the reduction in adverse aesthetic effects through wind farm design. This is made clear in *Siting and Designing Wind Farms in the Landscape* (Scottish Natural Heritage, 2009).

86 The marine horizon is flat and uninterrupted, and all offshore wind farms are seen as rows of turbines. Simple, regular patterns are therefore preferred, as identified within the Design Sensitivity Analysis discussed in Section 21.3.2, in contrast to the more organic layouts sought for onshore schemes. Detailed siting of offshore turbines is driven by a range of physical and environmental constraints including localised geological conditions, ecology, aviation, navigation, wind resource, and marine archaeology. These constraints have led to the indicative offset grid layouts which have been assessed. The finalised layout may differ, within the parameters of the Rochdale Envelope, but the assessment has concluded that the findings of the SLVIA are unlikely to vary.

21.8 Cumulative Impacts

21.8.1 Cumulative Baseline

87 A total of 56 wind farms were identified within the 65 km radius study area, including operational and consented wind farms, and proposals at application and scoping stage. These are illustrated in Appendix 21.2: Seascape, Landscape and Visual Assessment Impact Figures, Figure 21.28 and include Firth of Forth Round 3 Zone 2 Phase 1 development only. Of these, the wind farms which are most likely to give rise to significant cumulative impacts were selected for inclusion in the detailed assessment. This scoping process included consideration of the scale and location of each proposal, and its distance from the offshore development, and is described in full in Appendix 21.1: Seascape, Landscape and Visual Impacts Technical Report. A list of all developments within the 65 km study area is provided in Appendix 21.1: Seascape, Landscape and Visual Impacts Technical Report, with reasons for their inclusion, or exclusion, in the detailed assessment.

88 Of the 56 wind farms, 38 are included within the wireline views. Of these, 18 wind farms are included in the cumulative ZTVs which illustrate the theoretical extent of visual interactions between Neart na Gaoithe and the selected offshore and onshore wind farms and show the number of wind farms theoretically visible. Cumulative ZTVs are included in Appendix 21.2: Seascape, Landscape and Visual Assessment Impact Figures, Figures 21.35 to 21.41.

89 Several wind farms were not included in the cumulative ZTVs due to the limited direct interaction, but were included in wirelines if they were relatively close to a viewpoint location. Cumulative wireline visualisations have been generated for each of the 18 assessment viewpoints (Table 21.10), showing 38 existing and proposed wind farms, including smaller proposals not included on cumulative ZTVs. Cumulative wirelines are included in Appendix 21.2: Seascape, Landscape and Visual Assessment Impact Figures, Figures 21.43 to 21.60. Cumulative photomontages have been generated for the three 'design viewpoints', and are included in Appendix 21.2: Seascape, Landscape and Visual Assessment Impact Figures, Figures 21.45, 21.51 and 21.59.

21.8.2 Cumulative Impacts on Seascape and Landscape Resources

90 Significant cumulative impacts on seascape character are predicted to be limited to the eastern tip of Fife Ness, where the nearby presence of Neart na Gaoithe, in addition to the likely presence of Inch Cape, would affect the perception of character along the coastal edge of two regional seascape units (***moderate*** impact). Views of Neart na Gaoithe with the more distant Firth of Forth Round 3 Zone 2 wind farm would be less likely to give rise to significant impacts due to the separation between the two sites.

91 The landscape impact assessment has not identified any significant impacts upon landscape character areas from Neart na Gaoithe. Due to its offshore location, there is no potential for the presence of Neart na Gaoithe to transform any LCT into a 'wind farm landscape'. Given the low magnitude of effect identified in the stand-alone assessment, and the limited potential for offshore development to give rise to cumulative impacts on landward character, no detailed assessment of cumulative effects on onshore landscape character, as represented by LCTs, has been undertaken.

92 No significant cumulative impacts were predicted on landscape designations.

93 Significant cumulative impacts (***moderate*** or greater) are predicted at 7 of the 18 assessment viewpoints. All of these are high sensitivity viewpoints. ***Major*** cumulative impacts are predicted at two locations (VP 13 Fife Ness and VP 16 Isle of May), where Neart na Gaoithe will be seen at 15-16 km, and simultaneously with Inch Cape. ***Moderate*** and ***major-moderate*** cumulative impacts are predicted on four other viewpoints, where Neart na Gaoithe will be seen at up to 33 km, and simultaneously with Inch Cape.

94 Significant sequential impacts are predicted to affect walkers using the Fife Coastal Path (***major-moderate***) and the John Muir Way (***moderate***), as well as passengers on the Isle of May Ferry (***major***) and visitors on the Fife Tourist Route (***moderate***).

95 Cumulative impacts are set out in summary Tables 21.18 and 21.19.

21.9 Summary and Conclusions

96 It is generally recognised that some impacts on seascape/landscape and views are an inevitable consequence of wind energy development. The SLVIA has identified limited potential for significant effects on the seascape character of the study area, and no significant effects on the landscape character of the landward part of the study area, as a result of the offshore development. No significant effects would occur on nationally designated landscapes.

97 Significant effects on views are predicted to be more widespread, although they are only likely to occur at open coastal locations scattered across the study area.

98 The SLVIA has considered maximum effect scenarios, with all assessment work being carried out under conditions of good or very good visibility. In reality, as noted in Section 21.5.4, atmospheric conditions are likely to obscure the offshore development almost half of the time when viewed from 30 km.

99 The examination of two alternative layouts has concluded that the precise layout of the development, within the parameters defined in the Rochdale Envelope, is unlikely to vary the findings of the SLVIA.

100 The findings of the SLVIA are summarised in Tables 21.18 and 21.19.

Source	Receptor	Impact significance (impact of Neart na Gaoithe alone)	Qualification of significance	Cumulative impact significance (contribution of Neart na Gaoithe to combined impacts of all other cumulative wind farms)	Qualification of significance
Presence of offshore turbines	**Regional seascape units**				
	SA4: Montrose	Minor to none		None	No cumulative impact due to distance of Neart na Gaoithe in contrast to Inch Cape.
	SA5: Long Craig	None		None	
	SA6: Lunan Bay	None		None	
	SA7: Lang Craig to the Deil's Head	Minor to none		Moderate-minor	Presence of Neart na Gaoithe, considering the likely presence of other wind farms, may slightly affect the perception of the currently undeveloped seaward character.
	SA8: Arbroath to Monifieth	Minor to none		Moderate-minor	Presence of Neart na Gaoithe, considering the likely presence of other wind farms, may slightly affect the perception of the currently undeveloped seaward character.
	SA9: Dundee	None		None	
	SA10: Inner Firth of Tay	None		None	
	SA11: St Andrews Bay	Minor to none		Moderate-minor	Neart na Gaoithe will increase the presence of offshore development, which is likely to be noticeable in this open seascape.
	SA12: St Andrews to Fife Ness	**Moderate**	Offshore turbines at around 15-20 km offshore will have a pervasive influence on the character of areas where coastal views are available.	**Moderate**	Offshore turbines at relatively close range will have a pervasive influence on the character of areas where coastal views are available.
	SA13: East Neuk of Fife	**Moderate**	Offshore turbines at around 15-20 km offshore will have a pervasive influence on the character of areas where coastal views are available.	**Moderate**	Offshore turbines at relatively close range will have a pervasive influence on the character of areas where coastal views are available.
	SA14: Kirkcaldy and Largo Bay	Minor to none		None	Neart na Gaoithe is unlikely to impact upon the character of this area, even considering the likely presence of all other wind farms.
	SA16: Edinburgh to Gullane	Minor to none		None	Views of Neart na Gaoithe will be very limited, and the potential for cumulative effects on the character of the seascape is remote.
	SA17: Eyebroughy to Torness Point	Minor to none		Minor- none	
	SA18: Torness Point to St Abb's Head	Minor to none		Minor- none	
	SA19: St Abb's Head to Eyemouth	Minor to none		None	Limited visibility of cumulative wind farms from this area.
	SA20: Eyemouth to Berwick upon Tweed	None		None	
	LCTs				
	Coastal hills, headlands, plateaux and moorlands	Minor to none		Not assessed	
	Coastal margins	Minor to none		Not assessed	
	Coastal raised beaches and terraces	None		Not assessed	
	Dipslope farmland	None		Not assessed	
	Fife lowland farmland	Minor to none		Not assessed	
	Foothills	None		Not assessed	
	Low coastal farmlands	Minor to none		Not assessed	
	Lowland coastal flats, sands and dunes	None		Not assessed	
	Lowland hills (south)	None		Not assessed	
	Lowland plains	None		Not assessed	
	Lowland river valleys	None		Not assessed	

Source	Receptor	Impact significance (impact of Neart na Gaoithe alone)	Qualification of significance	Cumulative impact significance (contribution of Neart na Gaoithe to combined impacts of all other cumulative wind farms)	Qualification of significance
	Narrow wooded river valleys	None		Not assessed	
	Pronounced Hills	None		Not assessed	
	Upland fringe moorland and grassland: the Lammermuir, Pentland and Moorfoot Hills	None		Not assessed	
	Upland hills: the Lammermuir, Pentland and Moorfoot Hills	None		Not assessed	
	Landscape designations				
	Balgay Park GDL	None		Not assessed	
	St Andrews Links GDL	Minor		None	Cumulative wind farms are unlikely to have significant effects on this landscape.
	Cambo GDL	Minor		None	Glimpsed views of Neart na Gaoithe are unlikely to give rise to cumulative changes in landscape character.
	Balcaskie GDL	None		Not assessed	
	Kellie Castle GDL	None		Not assessed	
	Balcarres GDL	None		Not assessed	
	Charleton GDL	None		Not assessed	
	Lahill GDL	None		Not assessed	
	Wemyss Castle GDL	None		Not assessed	
	Grey Walls GDL	None		Not assessed	
	Leuchie GDL	None		Not assessed	
	Tyninghame GDL	Minor		None	Glimpsed views of Neart na Gaoithe at 30 km offshore are unlikely to give rise to cumulative change to the designed landscape.
	Biel GDL	None		Not assessed	
	Broxmouth Park GDL	None		None	
	Dunglass GDL	None		Not assessed	
	East Fife AGLV	Minor		Minor-none	Considering the likely presence of the other wind farms, the construction of Neart na Gaoithe would increase the presence of turbines in views, but is unlikely to give rise to further effects on landscape character. Across the majority of the large AGLV, there would be no cumulative effect.
	Longniddry to North Berwick Coast AGLV	Minor to none		None	Given the lack of visibility of Neart na Gaoithe over the majority of this area, it is unlikely that the offshore development would give rise to cumulative changes in landscape character.
	North Berwick to Dunbar Coast AGLV	Minor to none		Minor-none	
	Barns Ness Coast AGLV	Minor to none		Minor-none	
	Thorntonloch Coast AGLV	Minor to none		Minor-none	
	Garleton Hills AGLV and Kilduff Hill AGLV	None		Not assessed	
	Traprain Law AGLV	None		Not assessed	
	North Berwick Law AGLV	None		Not assessed	
	Balgone AGLV	None		Not assessed	
	Lammermuir Hills AGLV	None		Not assessed	
	Berwickshire Coast AGLV	Minor to none		Minor-none	

Table 21.18: Summary table of seascape and landscape impacts

Source	Receptor		Significance	Qualification of significance	Cumulative impact significance (additional impact of Neart na Gaoithe in addition to all other cumulative wind farms)	Qualification of significance
Views of offshore turbines	**Viewpoints**					
	2	Beach Road, Kirkton, St Cyrus	None		Minor	
	5	Dodd Hill	None		Minor	
	6	Braehead of Lunan	Moderate-minor		Moderate-minor	
	7	Arbroath	**Moderate**	Turbines will be seen by residents and visitors, in the middle distance, in the open sea.	Moderate-minor	
	8	Carnoustie	**Moderate**	Turbines will be seen by residents and visitors, in the middle distance, in the open sea.	Moderate-minor	
	9	Dundee Law	None		Minor	
	10	Tentsmuir	**Moderate**	Turbines seen within the centre of open sea views, by recreational users.	**Major-moderate**	Neart na Gaoithe and Inch Cape equally distant, both occupying the more open sea.
	11	Strathkinness	Minor		Moderate-minor	
	12	St Andrews, East Scores	**Moderate**	Large number of high sensitivity visitors and residents will have slightly restricted views of the turbines beyond headland to east.	**Major-moderate**	Neart na Gaoithe and Inch Cape equally distant, with the latter occupying the more open sea.
	13	Fife Ness, Lochaber Rock	**Major**	Relatively close range view of turbines within the open sea, will be seen by visitors and a small number of residents.	**Major**	Neart na Gaoithe likely to be viewed at relatively close range with other offshore developments visible behind.
	14	Anstruther Easter	**Major**	Relatively close-range view of turbines occupying the open sea between Fife Ness and the Isle of May. Relatively few residents and visitors would experience this impact as the town is focused on the harbour which looks predominantly southeast.	**Major-moderate**	Neart na Gaoithe likely to be viewed at relatively close range with other offshore developments only partly visible behind.
	15	Largo Law	None		Minor	
	16	Isle of May	**Major**	Relatively close range views from a presently remote location. Few viewers will experience this effect, and largely in the summer months when tourist trips are scheduled.	**Major**	Neart na Gaoithe likely to be viewed at relatively close range with other offshore developments visible behind.
	17	North Berwick Law	**Moderate**	Distant views of the turbines will be seen by visitors who come to appreciate the broad sea views.	Moderate-minor	
	18	Dunbar	**Major-moderate**	Turbines will be seen by large numbers of residents and visitors, in the central part of the view.	**Moderate**	Neart na Gaoithe likely to be viewed with other offshore developments visible behind.
	19	West Steel	Minor		Minor	
	20	Coldingham Moor	Minor		Moderate-minor	
	21	St Abb's Head	**Moderate**	Turbines will be seen by recreational users, looking to the north away from the open sea.	Moderate-minor	
	Impacts on routes					
	Fife Coastal Path		**Major**	Passes relatively close, with continuous views towards the proposed offshore development.	**Major-moderate**	Neart na Gaoithe likely to be viewed at relatively close range with other offshore developments visible behind.
	John Muir Way		**Moderate**	Continuous but oblique views of the proposed offshore development.	**Moderate**	Neart na Gaoithe likely to be viewed with other offshore developments visible behind.
	Southern Upland Way		Minor-none		Minor	
	NCN Route 1		**Moderate**	Continuous but oblique views of the proposed offshore development.	Moderate-minor	
	NCN Route 76		**Moderate**	Continuous but oblique views of the proposed offshore development.	Moderate-minor	
	East Coast Main Line		Minor		Minor	
	A1/A198		Moderate-minor		Moderate-minor	
	Fife Tourist Route		**Moderate**	Passes relatively close, with continuous views towards the proposed offshore development.	**Moderate**	Neart na Gaoithe likely to be viewed with other

Source	Receptor	Significance	Qualification of significance	Cumulative impact significance (additional impact of Neart na Gaoithe in addition to all other cumulative wind farms)	Qualification of significance
					offshore developments visible behind or adjacent.
	Angus Tourist Route	Minor		Moderate-minor	
	Isle of May Ferry	**Major**	Continuous relatively close-range views of the proposed offshore development.	**Major**	Neart na Gaoithe likely to be viewed at relatively close range with other offshore developments visible behind or adjacent.
	Cruise ship passengers	None		Minor	
	Aeroplane passengers	None		None	
Intertidal cable laying	**Intertidal Zone**				
	Recreational and residential viewers	**Major**	The short-term impact will be of major significance due to the high sensitivity of the beach, and would last up to 4-5 months (allowing a weather contingency of 2 months). Short term visual impacts of major significance will occur in views from the vicinity of the intertidal works, including from the beach, caravan park, nearby properties and from the John Muir Way.	N/A	N/A

Table 21.19: Summary table of visual impacts

21.10 References

Aberdeenshire Council, 2006. *Aberdeenshire Local Plan.*

Aberdeenshire Council, 2010. *Proposed Aberdeenshire Local Development Plan.*

Angus Council, 2009. *Angus Local Plan Review.*

ASH Consultants, 1998a. *The Borders Landscape Assessment.* Scottish Natural Heritage Review No 112.

ASH Consultants, 1998b. *The Lothians Landscape Character Assessment*. Scottish Natural Heritage Review No 91.

Berwick upon Tweed Borough Council, 1999. *Berwick upon Tweed Borough Local Plan.*

Countryside Agency and Scottish Natural Heritage, 2002. *Landscape Character Assessment: Guidance for England and Scotland.*

Countryside Agency and Scottish Natural Heritage, 2004. *Landscape Character Assessment: Guidance for England and Scotland. Topic Paper 6: Techniques and Criteria for Judging Capacity and Sensitivity.*

Countryside Commission, 1996. *Countryside Character of England.* Volume 1: North East England.

Countryside Council for Wales, Brady Shipman Martin, University College Dublin, 2001. *Guide to Best Practice in Seascape Assessment.* Maritime Ireland / Wales INTERREG Report No. 5.

David Tyldesley and Associates, 1999. *Fife Landscape Character Assessment*. Scottish Natural Heritage Review No 113.

East Lothian Council, 2008. *East Lothian Local Plan.*

Environmental Resources Management, 1998. *South and Central Aberdeenshire: Landscape Character Assessment.* Scottish Natural Heritage Review No 102.

Enviros, 2005. *Guidance on the Assessment of the Impact of Offshore Wind Farms: Seascape and Visual Impact Report.* Prepared for DTI.

Fife Council, 2009a. *St Andrews and East Fife Local Plan.*

Fife Council, 2009b. *Mid Fife Local Plan.*

H+M and Envision, 2006. *Visual Representation of Wind Farms: Good Practice Guidance.* Report for Scottish Natural Heritage, The Scottish Renewables Forum and the Scottish Society of Directors of Planning.

Historic Scotland, 1987–2011. *An Inventory of Gardens and Designed Landscapes in Scotland.* Available online from: http://data.historic-scotland.gov.uk/pls/htmldb/f?p=2400:10:0 [accessed Oct 2011].

Landscape Institute and the Institute of Environmental Management and Assessment, 2002. *Guidelines for Landscape and Visual Impact Assessment (2nd edition).* Spon Press.

Landscape Institute, 2011. *Photography and photomontage in landscape and visual impact assessment*. Advice Note 01/2011.

Land Use Consultants, 1999. *Tayside Landscape Character Assessment.* Scottish Natural Heritage Review No 122.

Land Use Consultants, 2008. *Fife Local Landscape Designation Review*. Fife Council. Land Use Consultants in association with Carol Anderson and the Small Town and Rural Development Group

Scott, K.E., Anderson, C., Dunsford, H., Benson, J.F. and MacFarlane, R., 2005. *An Assessment of the Sensitivity and Capacity of the Scottish Seascape in Relation to Offshore Wind farms*, Scottish Natural Heritage commissioned report 103.

Scottish Borders Council, 2010. *Scottish Borders Consolidated Local Plan*.

Scottish Borders Council, 2011. *Supplementary Planning Guidance: Draft Local Landscape Designations.*

Scottish Natural Heritage, 2005. *Guidance: Cumulative Effect of Wind Farms.* Version 2.

Scottish Natural Heritage, 2008. *Guidance on Landscape/Seascape Capacity for Aquaculture.*

Scottish Natural Heritage, 2009. *Siting and Designing Windfarms in the Landscape.*

Scottish Natural Heritage, 2011. *Guidance: Cumulative Effect of Wind Farms.* Version 3 Consultative Draft.

Scottish Natural Heritage and Marine Scotland, 2011. *Advice Note: Offshore Windfarm Landscape/Seascape, Visual and Cumulative Assessment: Recommended Outputs.*

Appendices

Appendix 21.1: Seascape, Landscape and Visual Impacts Technical Report
Appendix 21.2: Seascape, Landscape and Visual Impacts Assessment Figures
Appendix 21.3: Regional Seascape Character Assessment
Appendix 21.4: Regional Seascape Character Areas