Marine Scotland. Draft Sectoral Plan for Offshore Wind (Dec 2019)
Supplementary Advice to SNH Consultation Response (25 March 2020).

SNH Assessment of Potential Seascape, Landscape and Visual Impacts and Provision of Design Guidance

This document sets out SNH's Landscape and Visual Impact appraisal of each of the Draft Plan Option (DPO) areas presented in the above consultation and the opportunities for mitigating these, through windfarm siting and design. Due to its size, we are submitting it separately from our main response to the draft Plan. We had hoped to be able to submit this earlier within the consultation period and apologise that this was delayed slightly.

Our advice is in three parts:

- Part 1. Context and Approach taken to Assessment
- Part 2. DPO Assessment and Design Guidance
- Part 3. DPO Assessment and Design Guidance: Supporting Maps

Should you wish to discuss any of the matters raised in our response we would be pleased to do so. Please contact George Lees at george.lees@nature.scot / 01738 44417.

PART 1. CONTEXT AND APPROACH TAKEN TO ASSESSMENT

Background

1. In late spring 2018 SNH were invited to participate as part of a Project Steering group to input to the next Sectoral Plan for Offshore Wind Energy by Marine Scotland. SNH landscape advisors with Marine Energy team colleagues recognised this as a real opportunity to manage on-going, planned change from offshore wind at the strategic and regional level, to safeguard nationally important protected landscapes and distinctive coastal landscape character. It also reflected our ethos of encouraging well designed sustainable development of the right scale in the right place and as very much part of early engagement.

Coastal character and broad design parameters

2. Based on Marine Scotland's initial Areas of Search, we identified a number of physical and experiential criteria (stemming from our Coastal Character Assessment Guidance) which could be used to inform potential locations for the siting of development. These criteria include:

- **Complexity** - a simple coastline presents a more straightforward relationship between land and sea, such that the interaction between receptors and development is less complicated. In contrast a convoluted, intricate coastline, potentially with offshore islands, creates a more challenging seascape within which to site large scale development.

- **Scale** - larger scale seascape has a greater ability to physically and visually accommodate development with reduced level of impact. This is in contrast to a small scale, and intimate landscape which could easily become overwhelmed by the significant scale of offshore wind energy development.

- **Nationally protected landscape** - National Scenic Area (NSAs) and Wild Land Areas (WLAs) are largely defined on the west and north coasts as well as the Solway Firth - typically where these abut the coast they have special landscape qualities which reflect the coastal character.

- **Distinctive regional landscape** – coastal character which is represented and experienced at the broader scale, contributes to regional identity and thereby is important to the national landscape resource of Scotland. Cognisance of any regional or local landscape designations

is taken on board and typically these designations in part or wholly sit within this wider resource. For example the ' Scottish Firths' could contribute to a nationally important resource, (e.g. Solway Firth, Moray Firth, Cromarty Firth, Firth of Forth and Firth of Tay) and collectively have a complexity and raised sensitivity inherent from the interplay of opposite shores which typically are the focus for settlement and contribute substantially to local and regional identity. These distinctive regional landscapes are not a nationally mapped resource nor are they a 'regional level' designation. However Scottish Planning Policy (SPP) and SNH Landscape Policy allows for the protection of coasts of distinctive landscape character.

- **Focus of human activity** - areas of greater population at the coast and immediately inland are where offshore wind developments are likely to increase levels of impact on visual receptors. Conversely, less developed and isolated coast are more likely to be valued for their qualities of wildness.

- '**Frontier' coastlines** - (prospect and refuge) - coastlines which experientially represent the 'extremes' of the Scottish coastal resource, and are linked into aspects of wildness and remoteness. This characteristic is heightened by the challenge of access (either travelling long distances and/or over rugged terrain) to access the coast and a seascape that dominates over the experience of land (at a peninsula or island, where experience of surrounding land is limited). This can be enhanced by a lack of development, and includes such coastlines at Cape Wrath, Duncansby Head, Isle of May, Barra, Outer/Inner Hebrides, Mull of Kintyre, Mull of Galloway.

3. Two criteria directly influence the magnitude of extent of change that any wind energy development would introduce into a coastal landscape:

- **Distance** offshore contributes to a reduction in the magnitude of change of any development. This it is not a straightforward pro rata reduction of impact the further development is sited offshore. However distance and in particular the effects of the curvature of the earth present a significant opportunity to minimise visual impacts of large scale development along more sensitive coastlines.

- **Cumulative wind energy** - Existing and current pressures for offshore development alongside multiple onshore terrestrial development including wind farms can lead to potentially significant cumulative effects on sensitive coastal receptors, which is a material consideration when planning for large scale offshore wind projects.

Strategic Offshore Wind Visibility Mapping Project

4. SNH commissioned Aquatera consultants to undertake Zones of Theoretical Visibility (ZTV) modelling to inform the draft Sectoral Plan for Offshore Wind Energy.
5. One of several key aspects which dictate the level of landscape and visual impact from marine wind energy is distance from the coastline. Using ZTV modelling at this strategic stage has helped inform our thinking and advice on the initial location of large wind energy development offshore. We consider this early engagement and work can help substantially reduce or avoid significant landscape, visual and cumulative effects.
6. This work builds on an initial SNH landscape and visual appraisal of the Marine Scotland (MS) Areas of Search in late 2018, and was undertaken in two stages.

7. Phase 1 - Initial reverse ZTV mapping from viewpoints along 8 sections of coastline to assess 21 Areas of Search

South West (and Solway Firth)
West Scotland

North West Lewis
North Sutherland/Caithness
Orkney Islands
Shetland Islands
North East (Moray Firth)
East (Forth and Tay)

8. From each section of coastline, visibility was modelled in two scenarios:

- Distance to the horizon - the sea surface (HAT) horizon where the curvature of earth begins to limit visibility to development beyond this ZTV horizon edge; and

- Distance to 200m[1] high turbine above the horizon - where the edge of the 200m ZTV indicates where turbines would begin to be screened by, or 'disappear' over the horizon.

9. Phase 2 – Modelling of windfarm visibility in each of the 17 Draft Plan Option areas (DPOs)

10. The purpose of this was to consider scales of development (site layouts and turbines heights) of the 17 DPOs to maximise the potential for wind energy development where opportunities were identified. Modelliing of different turbine heights and distances offshore to inform the location of development within the draft plan option area areas was undertaken. Three turbine heights were modelled (populating the full extent of the DPO area) and presented in a series of wirelines from a reduced range of viewpoints within each coastal section:

    - 200m tip height
    - 250m tip height
    - 300m tip height

11. Recognising that turbines could get larger (both height and rotor swept area) 350m turbines were also modelled for sites N1 and NE4.

Summary Methodology and Outputs

The right development in the right place – thresholds of change (significance of effects)

12. Wind farms should be sited and designed so that adverse effects on landscape and visual amenity are minimised and so that landscapes which are highly valued are given due protection. If wind farms are sited and designed well the capacity of our landscape to incorporate this type of development is maximised.2

13. From the initial Phase 1 reverse ZTV modelling this clearly indicated that to remove all visibility of wind energy development from Scotland's coastline would entail development being located at considerable distances offshore. These distances increased markedly with an increased elevation of view. The sketches (Figures 1 and 2) which follow summarise this issue.

[1] 200m is used to represent blade tip height of currently available and installed WTG technology
[2] SNH Siting and Design Guidance 3rd ED 2017 (Para 1.19)

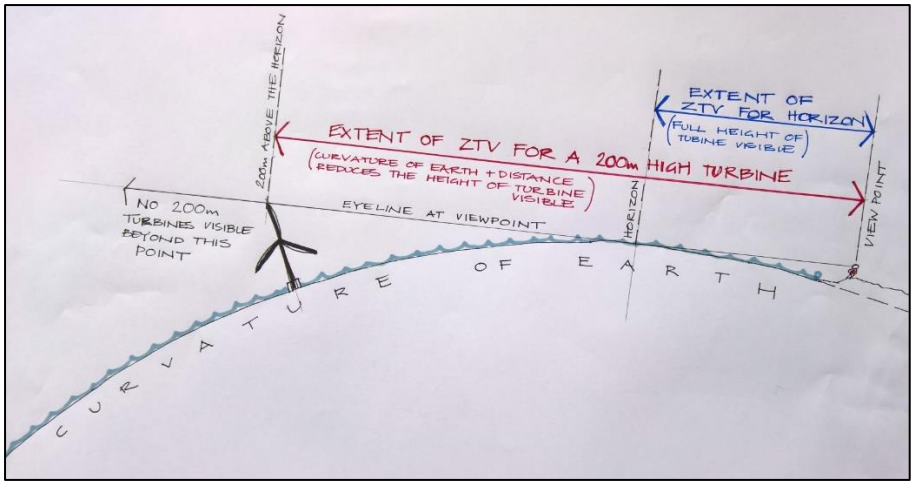


Figure 1 Low elevation of viewpoint with corresponding reduced distance to horizon

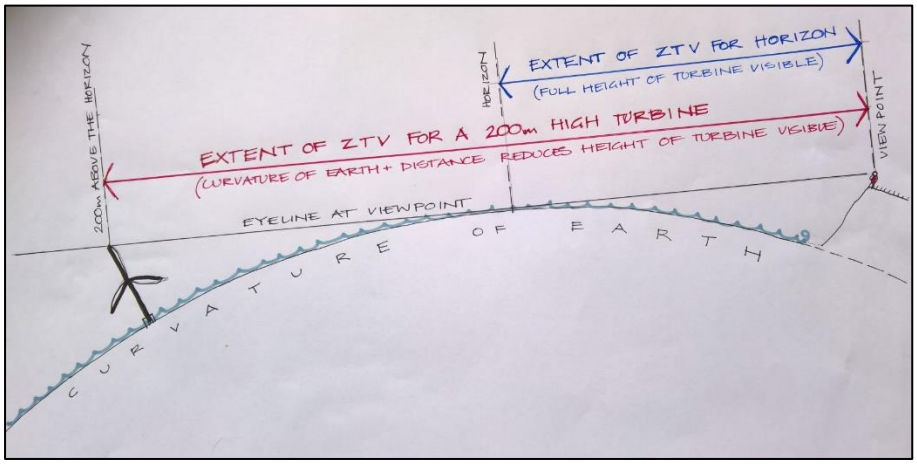


Figure 2 Higher elevation of viewpoint and corresponding increased distance to horizon

14. The increase in viewing elevation markedly increases the visual distance to the horizon (and in turn the distance at which a large commercial turbine can be screened by the curvature of earth). For example, using the West coast ZTV modelling from a low level viewpoint (see Table 2) the horizon (the point at which the curvature of the earth starts to fall away from the viewer) is approximately 6-8kms. With increasing elevation, the distance to the horizon, from a cliff or a hill/mountain top substantially increases. ZTV modelling work is presented in Figures 3 and 4.

Table 2 Influence of viewpoint elevation and distance to horizon (example West coast)

Viewpoint	Elevation (metres AoD)	Distance to horizon (where curvature of earth starts to fall away from viewer)	Distance to 200m turbine tip (where a 200m high turbine is 'hidden' by the curvature of the earth)
WS5 Baile Mor, Iona	3m	~ 8km	~ 62km
WS2 Portnahaven, Islay	107m	~ 42km	~ 83km
WS4 Paps of Jura, Jura	777m	~ 108km	~ 160km

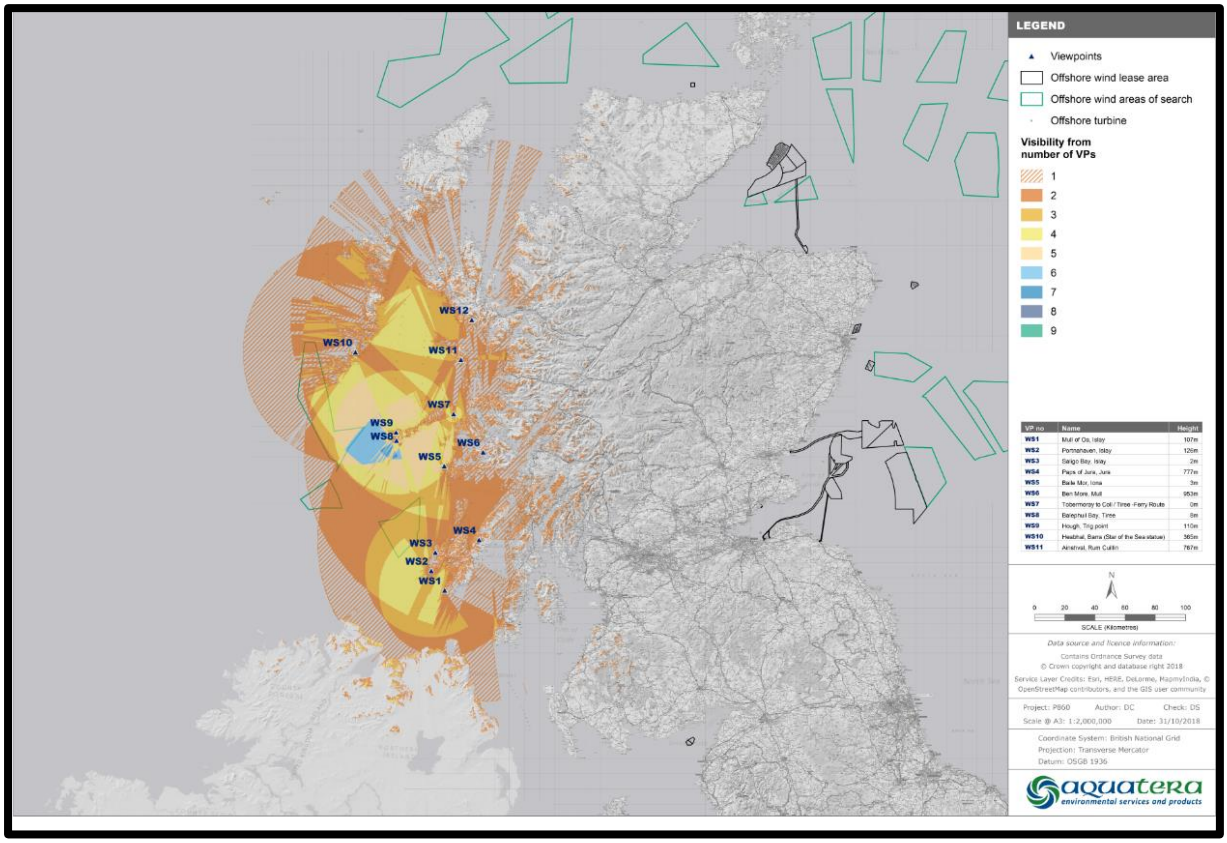


Figure 3 Reverse ZTV modelling to illustrate the horizon (from 12 selected viewpoints)

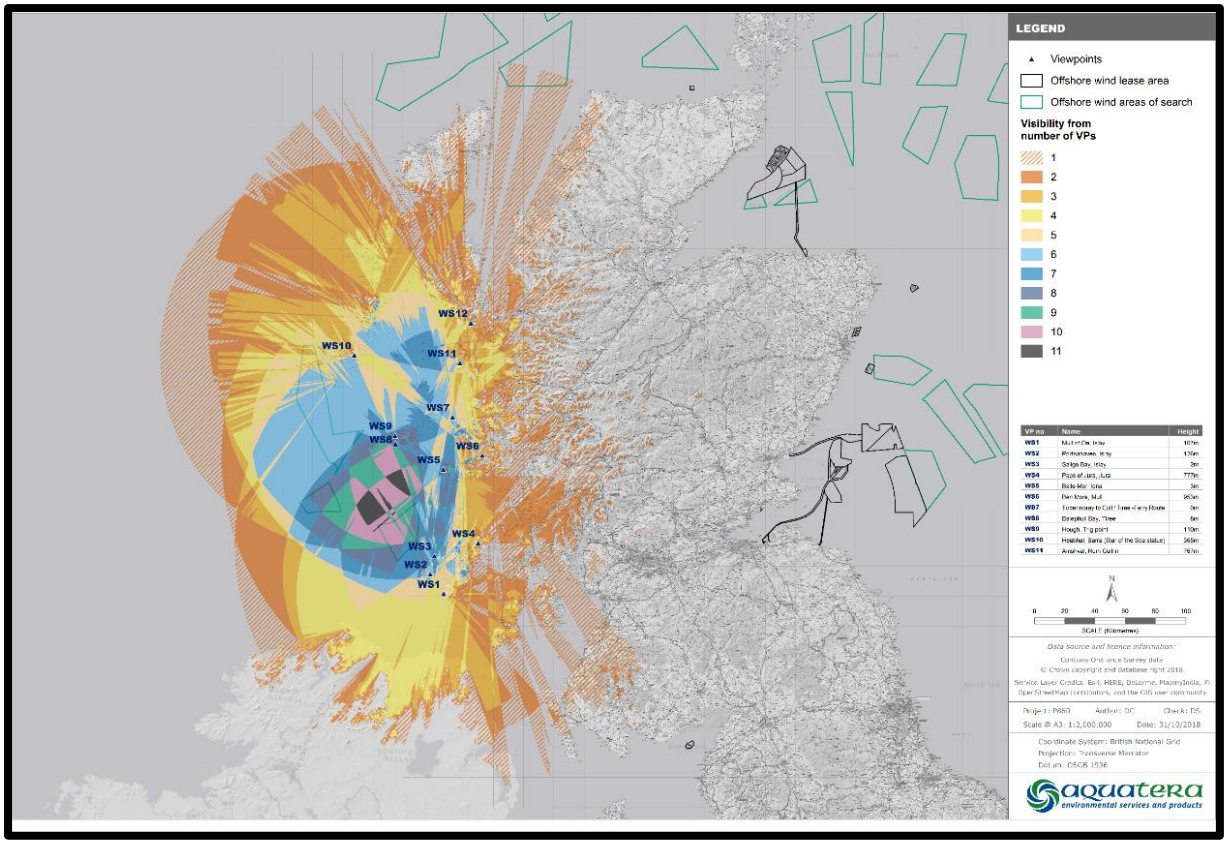


Figure 4 Reverse ZTV modelling to illustrate the horizon line beyond which 200m turbines would not be visible (from the same 12 viewpoints as in Figure 3).

15. On the basis of this ZTV modelling, to remove all theoretical visibility of offshore wind development from our coastlines (ensuring no landscape or visual impact), given the current focus on inshore development in shallower waters, is not pragmatic. Whilst in general terms visibility is typically higher on our coasts due to prevailing good meteorological conditions [3] the much wider panoramas and open wide planes of water enable greater potential to accommodate wind energy without incurring widespread significant effects.

16. **This work, therefore, is about directing change (ie development) towards DPOs, or particular regions of the DPOs, adjacent to areas of coastline which are best able to accommodate that change, whilst also safeguarding the intrinsic character and sensitivities of Scotland's coasts and seas as far as is practical.**

17. Established landscape and visual assessment methodologies (GLVIA[4]) are used to identify coastal sensitivities, to understand the magnitude of potential change from developing the full extent of each DPO, and to assess predicted potential effects of that change. In keeping with the iterative approach of GLVIA the anticipated / desired level of change within each DPO can then be adjusted (mitigation) depending on the sensitivity of the coastline and the distance of the DPO from the coast taking into account any cumulative issues arising from nearby existing or consented offshore windfarms

18. The extent to which we recommend differing levels of change in different DPOs is based on professional judgement according to the significance of that 'effect'. This allows distinctive

[3] SNH Visual Representation of Wind Farms 2017 (Para 206)
[4] Guidelines for Landscape and Visual Impact Assessment IEMA and LI 2002

and nationally protected coastlines to be safeguarded as part of SNH's national remit, whilst managing / supporting change elsewhere.

19. A framework (Table 2 below) is defined within which each DPO is assessed in relation to how much change could be accommodated in relation to underlying sensitivities defined. Again following established practice, EIA (and within this GLVIA), promotes assessment which focuses on the identification of likely 'significant effects' of any proposal. Non significant effects are typically scoped out of further assessment. Accordingly, DPO sites that are unlikely to have significant effects on coastal receptors (due to distance offshore) have not been considered further for mitigation. For sites closer to shore where potential significant effects are predicted, the framework considers a sliding scale of change within two broad scenarios:

- **Avoid significant effects** (significant effects mitigated out or removed)
- **Reduce significant effects** (substantially limiting the extent and severity of significant effects)

20. For each of the 17 DPOs we initially undertook an assessment of each site against the established coastal context analysis discussed in paragraphs 2-3 to identify opportunities and constraints for large scale offshore wind energy. The results of this assessment were then tested against the more detailed outputs from the Visibility Mapping project using the Phase 1 ZTV outputs and the Phase 2 series of wirelines.

Sensitivity of coastline

21. In detail, sensitivities were identified for each coastline assessed were identified, drawn from the assessment of coastal character using the criteria identified earlier. No absolute assessment of sensitivity is identified for each coastline (such as high, medium or low). It was considered that at this more strategic scale, given the multitude of different, sometimes opposing criteria identified (e.g large populations and high sensitivity visual receptors, versus high sensitivity remote coastal character) there was the potential for one sensitivity to 'cancel out' another, such that all the coastline would be classed as 'medium' sensitivity. The assessment is presented as a qualitative narrative summarising coastal character and sensitivities arising.

Magnitude of change (how much development)

22. This considered the spatial relationship between the site and the coastline, the size and form of the DPO site with respect to the overriding coastal character, in particular:

- whether the DPO was orientated perpendicular to the coastline (so reducing the horizontal view or visual extent of turbines in views) or ran parallel to the coastline (increasing the horizontal extent)
- the extent to which the landscape surrounded the DPO site
- the distance of the DPO site to the nearest coastline (s)
- different scales of development (turbine heights and spacing)
- extent of existing marine and terrestrial wind energy contributing to strategic cumulative effects (both from their siting and different designs)
- effects of lighting – both aviation and marine navigation.

Scenarios for change and strategic design recommendations

23. The framework table below provides the SNH advice on each DPO with design recommendations presented at the strategic scale. The matrix framework is a useful tool to explain the basis upon which judgements and recommendations have been made. Judgements presented are nuanced and are on a sliding scale between each of the broad classifications of both sensitivity and magnitude of change. This enables tailoring of the framework to the specifics of the coastal character, receptors, viewing elevations, scale of the

DPO site and spatial arrangement with respect to the coast (alignment and distance) and cumulative issues. Broadly, however, there is a correlation that with a reduction in the strategic sensitivity of the coastline, there is an increase in the opportunities presented within each DPO to optimise capacity both in terms of the extent of the DPO populated by turbines and the heights of turbines.

24. **This advice and recommendations do not, however, replace the requirement for more detailed design and assessment as part of a specific project within any one DPO.**

Table 2 Design Approach Framework

Coastal Sensitivity and Design Approach adopted (susceptibility and value)	Opportunities for development without significant landscape or visual effect (magnitude of change)
General coastal landscapes	
NO SIGNIFICANT EFFECTS PREDICTED	**Substantial opportunity for development across the entire site** ⇓ **Considerable opportunity across much of the site, with SNH's strategic design recommendations** ⇓ **Some opportunity within the site and guidance on height, distance and horizontal extent** ⇓ **Limited opportunity for development with guidance on height, distance and horizontal extent** ⇓ **Very limited opportunities for development without significant landscape / visual impacts**
Regionally important landscapes and seascapes; distinctive coastal character; **REDUCE - Significant effects** • ***35+km*** *to REDUCE significant effects of 200m turbines* • ***40+km*** *to REDUCE significant effects of 250m turbines* • ***45+km*** *to REDUCE significant effects of 300m turbines*	
Nationally important and distinctive landscape and seascapes; wildness and frontier qualities; **AVOID - Significant effects** • ***40+km*** *to AVOID significant effects of 200m turbines* • ***45+km to*** *AVOID significant effects of 250m turbines* • ***50+km*** *to AVOID significant effects of 300m turbines*	

PART 2. DPO ASSESSMENT AND DESIGN GUIDANCE

Explanation of DPO Assessment and Guidance Table

The guidance presented in the final column is developed from an understanding of the sensitivities of the coastline at the strategic level. It is expected that within each of the DPO sites, project level design iteration would be used to inform the optimum windfarm layout taking on board the landscape design parameters suggested to mitigate effects.

DPO reference	Strategic coastal context	SNH Key considerations and design approach	SNH Strategic design recommendations
MS 2019 Draft Plan option references. *Distances offshore to nearest coastline and brief summary of extent.*	*Assessment of coastal and seascape character against the criteria previously defined:* ***SENSITIVITY*** *Complexity* *Scale* *Nationally protected landscape* *Distinctive 'regional' landscape* *Focus of human activity* *Frontier coastlines* ***MAGNITUDE OF CHANGE*** *Current extent of DPO site and potential effects* *(distance, spatial relationship orientation to coastline, extent of horizontal field of view)* *Cumulative wind energy – marine and terrestrial*	*Key issues taken forward to inform design approach adopted and subsequent guidance suggested.* ***Overarching design approach for offshore wind with respect to coastal context and sensitivities identified.***	***Strategic design guidance to maximise wind energy development within DPO site, in the context of approach advocated.***

DPO Assessment and Guidance

DPO reference	Strategic Coastal Context	SNH Key considerations and design approach	SNH Strategic design recommendations
SW1 Smaller diamond shaped site located perpendicular off, but in close proximity to, the Galloway coastline between Mull of Galloway (4km) and Burrow Head (9km). Although outside the remit of SNH (and this guidance) the closest edge to the Isle of Man (Point of Ayre) is 17km and to Northern Ireland is 37km.	**SENSITIVITY** Complexity At the broad level the northern coastline of the wider Solway Firth runs east to west. However within this orientation the coastline is significantly indented with a series of pronounced bays and inlets. The complexity of character is raised by the wider views to the coastline of England and intervisibility between the individual bays. Scale The scale of the landscape varies between the large scale experienced on the outer landforms contributing to the Solway Firth and the more enclosed smaller scale of landscape experienced within the bays. The typically lower lying landform contributes to an increased appreciated of scale with openness and expansiveness increasing markedly approaching the Solway Firth. Nationally designated landscape with coastal special qualities: • Nith Estuary NSA • East Stewartry Coast NSA • Fleet Valley Distinctive 'regional' landscape Dumfries and Galloway Council have designated much of the northern Solway Coastline as a series of Regional Scenic Areas (LDP Technical Paper 2018) which have strong coastal qualities.	• Nationally protected coastline • Regionally rugged, complex, distinctive coastline along the wider Solway Firth and Mull of Galloway with heightened scenic qualities and frontier • Marked high wildness qualities of remoteness, seclusion, and naturalness combining with strong frontier qualities in particular at the Mull of Galloway • Significant focus for population and tourism and recreation activity • Inshore, proximal relationship of DPO site to the coastline with potential for widespread significant landscape and visual effects • Potential for significant effects from aviation and marine lighting • Potential for significant cumulative effects from marine wind energy at the DPO site, in addition to Robin Rigg wind farm, on the suite of NSAs	**We advise that any scale of turbine will introduce significant cumulative day and night-time effects on sensitive coastal, landscape and visual receptors.** **In the event of this site being taken forward:** **SNH Recommendation:** • a single developer should be responsible for the consideration of the detailed design with landscape architects of any wind energy proposal • early consideration of the coastal special qualities of the NSAs and RSA and distinctive coastal character • the whole DPO to be considered as part of an iterative design approach, but with the focus on developing only part of the DPO area furthest offshore • opportunity to engage in design-led

	On the outer Solway Firth at the southwestern end, the narrow rugged cliff peninsula of the Mull of Galloway has distinctive coastal character which contributes to the wider identity of the Galloway landscape. The Solway Forth contributes towards the wider collective nationally distinctive Scottish Firths landscape. Focus of human activity Significant focus for populations along the Dumfries and Galloway coastlines and immediate bays, with small towns, and a wider extent of scattered small towns and hamlets. Scenic qualities attract substantial tourism and recreational interests. Frontier coastlines Strong frontier qualities from the extremities of the coastal edges, partly tempered by the lower lying landform views to the Cumbrian coastline and the existing Robin Rigg offshore windfarm within the inner Solway Firth. Forming the northern edge to the wider Outer Solway Firth, and being the most south-westerly extremity of Scotland, the narrow, rugged Mull of Galloway peninsula has strong frontier qualities reinforced by high relative wildness and the overriding dominance of the open seascape. **MAGNITUDE OF CHANGE** Distance Smaller diamond-shaped DPO , located centrally off the south coast of Galloway between the Mull of Galloway and Burrow Head. Located in close proximity to the coastline, between 4 and 9kms, the DPO has the potential to introduce significant, widespread day and night-time effects with any scale of wind turbine assessed. Significant effects from the existing Robin Rigg offshore windfarm (58 x 149m tip height) development along much of the Dumfries coastline and National Scenic Areas. Cumulative wind energy In the immediate hinterland to the Dumfries and Galloway coast there is substantial existing large scale commercial wind energy development such that extensive areas have cumulative significant effects. Pressures for further landscape change are ongoing, with larger turbines introducing both day and night-time effects.	and distinctive regional landscape of the Inner Solway Firth • Significant cumulative effects at a more strategic level with the addition of the DPO site, to the existing and on-going pressures for terrestrial wind energy within Dumfries and Galloway Derived from the sensitive coastal context, our design recommendation would be to **Avoid Significant Effects**. However due to the **small scale of the site and the spatial arrangement and proximity of the DPO site to the coastline, extensive widespread significant effects are likely.**	approach with council, SNH, MS and community • due consideration be given to turbine heights below the 200m height to mitigate significant effects.
W1 Large pentangular shaped site located immediately off the southern Hebridean coastal islands of Colonsay (nearest 9km, furthest 49km) and Islay (nearest 3.5km, furthest 47km) and 16 km from south Iona to the northeast.	**SENSITIVITY** Complexity Highly complex and varied coastline stemming from the overriding southwest to northeast 'grain' of the interlocking land and sea. The Great Glen Fault line is represented by the long narrowing finger of water running from the Firth of Lorn north-eastwards into Loch Linne. The orientation of this is reinforced by the linear upland massif of Jura and the pronounced and recognisable profile of the Paps of Jura. To the north and south of this overriding feature are the islands of Mull and Islay – the upland massif which characterises their eastern and central areas slopes down markedly to a lower lying western coastal fringe. The ever changing interplay and balance between land and water and the character and elevations of landforms create a highly intended coastal edge. Scale Corresponding to the complexity of coastal character there is a high variation of scale, from	• Nationally protected scenic landscape • Distinctive regional coastal landscape comprising varied complex coastal character of small to medium scale – interplay between islands and water • Coastal focus of historically, culturally important settlements and communities, with substantial recreational and tourism interests • Range of viewing elevations from Paps of Jura to sea level coastal communities • Strong frontier character reinforced by tangible wildness qualities of remoteness seclusion,	**We advise that there is a limited opportunity to develop the western part of site without significant adverse landscape and visual effects:** **SNH Recommendations:** • maximum turbine height of 200m. As part of design iteration, turbines lower than 200m should be explored to further mitigate significant effects. • limit development to beyond 50km (mitigating significant effects from elevated viewpoint of Paps of Jura NSA and WLA)

	the larger scale of landscape experienced on the western lower lying coastal fringes of the offshore islands, to the lower medium scale experienced moving eastwards where the increasing dominance of more elevated landform encloses and frames views to the coast. Nationally designated landscape with coastal special qualities: • Jura NSA • Loch an Kael, Isle of Mull NSA (• Scarab, Lunge and The Garvellachs NSA • Knapdale NSA Nationally protected landscape with coastal attributes and qualities: • Jura, Scarba, Lunga and The Garvellachs WLA 5 • Ben More WLA 8 (surrounding) Distinctive 'regional' landscape Argyll and Bute Council has identified Areas of Panoramic Quality (LDP SG 2016) which are areas of regional importance in terms of their landscape quality, and defined Isolated Coasts on Mull and on Jura and Islay, both of which convey the sensitive coastal qualities. . The complex character and variety of scales of landscape, combined with the wide interplay and experiences of water enclosed by upland massive contribute to distinctive regional character. Individually and cumulatively, the variation in size and character of the islands have distinctive scenic and cultural qualities, such as Iona, Colonsay and Oronsay. Strong qualities of wildness, seclusion and remoteness, in particular apparent on the outer islands are reinforced by the mode of ferry transport. Focus of human activity Towns and small scale settlements form the focus of populations along the narrow seaboards, many of which area intimate and small scale, with inherent scenic qualities focussed on a harbour and thereby having a strong relationship with the sea. Significant recreational and tourist interests. Frontier coastlines Strong frontier qualities in particular from the outer islands which, by their very nature as islands off the western extremities of the mainland, increases their qualities of remoteness. The greater dominance of water with open expansive views considerably enhances these frontier qualities. **MAGNITUDE OF CHANGE** Distance Larger pentangular DPO site with sides of the site running parallel to and in close proximity to shorelines of Islay, Colonsay and Mull, with the potential to increase the horizontal field of view of development At distances ranging from 3.5km to 16km there is the potential for this DPO to introduce significant adverse landscape and visual effects from all turbines scenarios onto a range of coastal receptors. Potential for impacts from maritime and aviation lighting. Cumulative wind energy No notable commercial marine or terrestrial wind energy development.	isolation, naturalness • Larger scale of DPO site and inshore spatial relationship to nearest coastlines • Very close proximity of DPO site to coastlines with the potential for extensive significant effects • Potential to introduce significant effects from both marine and aviation navigation lighting • Onshore cable landing and grid connection could potentially impact on scenic and wild coastal character. **Design approach advised – Avoid significant effects**	• limit development to beyond 35km from Colonsay and Islay • limit development to beyond 35km from all surrounding coastal edges to reduce effects on distinctive coast character, strong frontier qualities and culturally important features such as Iona. • limiting the extent of development within the DPO site reduces the dominating horizontal extent and field of view of turbines, mitigating significant effects in views from the lower lying coastal fringes and from the Paps of Jura. • at the project level, we encourage a single developer to take forward a design led approach to further mitigate effects.
N1	**SENSITIVITY** Complexity	Considerable variation in complexity of coastal character, both along the Orkney and North Sutherland Coasts, which significantly influences experience of seascape	**We advise that there is some opportunity for development, without significant landscape or visual effect, limited to the**

Larger more contained area located centrally off the north Sutherland and Orkney coastlines. Closest distance to Strathy Point 20km, furthest 62km. Closest to Rora Head (Hoy) 23km, furthest 62km.	Sutherland – broad east to west coastal alignment, but variation and complexity of coastal character increases markedly from east to west along north Sutherland, with pronounced promontories, incised Kyles into the hinterland and offshore islands and skerries. Medium to large scale of character tempered in east with views to Orkney islands and in east and in west from more intricate and complex landform. Orkney – simpler coastal character on the west of Orkney comprising the west coasts of Mainland Orkney (Stromness peninsula) and the more elevated and rugged upland Hoy landform. Scale Broad medium scale tempered by the more complex coastline and smaller beaches which punctuate the largely cliff and rocky coastal landform increasing from east to west. The scale of coastal landscape is medium to large along the Orkney edge, reinforced by the simplicity of the coastal alignment with respect to wide open sea. Variation in experience in particular on Hoy from open wide expansiveness on cliffs to enclosed intimate character at Rackwick. Views to the Scottish mainland from south Hoy temper expansiveness. Nationally designated landscape with coastal special qualities • Hoy and West Mainland NSA • Kyle of Tongue NSA Range of viewing distances/elevations and character of views within NSAs - from panoramic views from the summit of Ward Hill and at a distance from Ben Loyal and Ben Hope; to strongly framed views of the sea 5m AoD at Rackwick, and as experienced along the Kyle of Tongue. Recognition of unique approaches to Hoy NSA, as Thurso – Stromness ferry runs to the immediate west of NSA coastline. Distinctive 'regional' landscape Abrupt change from settlement agricultural landscape of Caithness to wilder and more rugged grazed heather moorland landscape of North Sutherland. Distinctive mountainous landscape with Ben Hope and Ben Loyal. The coastline extending between the two NSAs and eastward beyond the Kyle of Tongue is designated at the local level. Focus of human activity Principally in the east and central North Sutherland coast with a series of small towns and scattered settlements punctuating the coast and immediate hinterland. Settlement principally on the west Orkney Mainland west and north of Stromness. More intimate historical small settlements and crofting townships focussed around harbours along Sutherland and Hoy (Rackwick). Frontier coastlines Overriding dominating frontier qualities experienced at Cape Wrath, Faraid Head. Less so where Orkney Islands appear in views to the east. **MAGNITUDE OF CHANGE** One of the larger DPO sites in a pentangular shape running parallel to the north Sutherland coast, and parallel to the west Orkney coast. Located 20km from Strathy Point (Highland) and 25km from Hoy (Orkney) which could increase the field of view of turbines. Development in the south-west, south or south-east has the potential to introduce significant day and night-time effects from all ranges of turbines considered. Cumulative wind energy Further east into Caithness, there are existing and on-going pressures for terrestrial wind energy development. Most current development is of a scale where no lighting is required so	and coastal edge with a range of viewing heights. Typically a medium to large scale coastal character, but some significant contrasts in scale experienced influenced by variation in coastal complexity. Several nationally protected areas with coastal special qualities and attributes (NSAs and WLAs) and unique approach to NSA by ferry. Distinctive regional character formed by the complex coastal character, with pronounced frontier and wildness qualities. Views for travellers along the North Coast 500 Route. • Scale of the development, proximity and spatial relationship with coastlines of Highland and Orkney • Cumulative impacts for landscape and visual with onshore developments in Caithness Onshore cable landing and grid connection could potentially impact on scenic and wild coastal character. **Design approach advised – Avoid significant effects**	**north and west of the DPO** **SNH recommendation:** • Maximum 200m high turbines • Limit development to >40km from north coast to ensure that views of turbines do not impinge in views or dominate and detract from offshore islands (e.g. Rabbit Islands, Kyle of Tongue) in views from the A836. • Limit development to >40km from Cape Wrath and Cape Faraid (sensitive coasts from where turbines would be most dense) At a project design level – to mitigate significant effects of the SLQ of Rackwick within the NSA, visibility of turbines to be removed from framed views.

	still relatively dark skies. Significant offshore wind development existing and consented on the east Caithness and Sutherland coast – contributing to wider strategic sequential cumulative issues.		
N2 Large triangular site located offshore approximately equidistant between (nearest and further distances respectively) Cape wrath to the east (25km and 59km) and Butt of Lewis to the west (30km and 81km).	**SENSITIVITY** Complexity Complex varied indented coastal character, broadly running east to west, but with some promontories and remote sandy beaches. Broad medium scale tempered by the more complex coastline and smaller beaches which punctuate the largely cliff and rocky coastal landform. Nationally designated landscape with coastal special qualities • Kyle of Tongue NSA • North West Sutherland NSA. Nationally protected landscape with coastal attributes and qualities • WLA 40 Cape Wrath, • WLA 37 Foinaven – Ben Hee; • WLA 13 Ben Hope – Ben Loyal. Remoteness, naturalness and ruggedness with lack of lighting in particular on Cape Wrath. Access to Cape Wrath WLA is challenging – long hike or ferry or private minibus across an area described as 'moorland wilderness' elevated views from coastal edge. Beyond these WLA, high relative wildness character along coast. Distinctive 'regional' landscape The coastline extending between the two NSAs and eastward beyond the Kyle of Tongue is designated at the local level. Focus of human activity Cape Wrath north coast uninhabited. Small focus of settlement at Port of Ness on North Lewis. Frontier coastlines Overriding dominating frontier qualities experienced at Cape Wrath, Faraid Head, Butt of Lewis. **MAGNITUDE OF CHANGE** Medium sized triangular site, situated in the open waters centrally off the coasts of Lewis and NW Sutherland. The triangular formation entails that the horizontal field of view will be limited from the relatively peninsular extremities of the coastline. From 30km from Lewis and 25km from Cape Wrath there is the potentiall to introduce significant effects from all turbines heights considered. Cumulative wind energy No existing or consented marine wind energy Limited terrestrial domestic scale wind energy	• Complex coastal character • Medium to large scale with expansive open waters • Nationally protected and designated landscapes with NSA and WLAs • Strong overriding wildness and frontier qualities, remote inaccessible • Coastal landscape has distinctive regional character • Proximity of DPO site has potential to introduce significant effects on landscape character • Potential to introduce significant effects from aviation lighting • Onshore cable landing and grid connection could potentially impact on scenic and wild coastal character. **Design approach advised – Avoid significant effects**	**We advise that there is a limited opportunity to develop the northwest of the site without significant landscape or visual effect** **SNH recommendation:** • maximum 200m turbines limit development to beyond 45km from Cape Wrath
N3	**SENSITIVITY** Complexity	• Simple coastal character with large scale where open vast seascape dominates experience	**We advise that there is considerable opportunity for development across much of the site without widespread significant**

Elongated pentagonal large site located offshore north of the Butt of Lewis (closest edge 26km, furthest 58km)	Simple uniformly linear coastal edge orientated southwest to northeast. Culminating in the apex peninsula of the Butt of Lewis projecting into a much wider seascape. Scale Large scale experience of seascape at the northern end of the Lewis landscape. Heightened by the peninsula of land of the Butt in proportion to the extent of open water surrounding the viewer on 3 sides and the uniformity of the coastal edge and simplicity of lowlying landform. Nationally protect landscape No national designations. Distinctive 'regional' landscape Regionally distinctive character formed by the heightened frontier qualities and most northerly point on the Outer Hebrides. Views across to the Scottish mainland enhance local identity. Focus of human activity Settlement limited to western seaboard of Lewis in scattered small townships and focus at Port of Ness and harbour. Frontier coastlines Strong frontier qualities to the north and west, particularly prevalent at the Butt of Lewis. **MAGNITUDE OF CHANGE** Distance Offshore nearest edge is 26km offshore so there is the potential to introduce significant effects of wind energy development of all heights of turbines. The spatial arrangement of the DPO with respect to the coastline, entails that only a limited extent of the coastline would be at this proximity, with the land falling away to the south and east at a greater distance. Cumulative wind energy No marine wind energy. No significant onshore development.	• Distinctive coastal character with scattered settlement (north west Lewis) and heightened frontier qualities. • Coastline not nationally designated • Onshore cable landing and grid connection potentially impact on scenic and wild coastal character. • The northern tip of Lewis is relatively accessible in the local, Western Isles, context, though the Butt of Lewis does have strong frontier qualities • Visibility of the array could be restricted to views from the NW-SE stretch of the road or even from the very tip by the lighthouse **Design approach advised - Reduce significant effects**	**adverse landscape and visual effects.** **SNH recommendation:** • maximum turbine height of 200m • development limited to beyond 35km mitigating significant effects on frontier qualities at the Butt of Lewis
N4 Smaller site running parallel to the north western coast of Lewis. Located inshore within 12nm, closest edge to coast at Labost 4.5km, furthest edge 13.5km.	**SENSITIVITY** Complexity Simplicity and uniformity of north west Lewis coast starts to change to a more indented coastal edge from Barvas southwards, albeit with the same overriding northeast southwest orientation. At Carloway the coastline becomes highly varied, complex, with offshore islands and skerries, the distinctness of which contributes to the high scenic qualities associated with the northern edge of the NSA. Scale Large scale experience of seascape at the northern end of the Lewis landscape. Heightened by the peninsula of land of the Butt in proportion to the extent of open water surrounding the viewer on 3 sides. Travelling south west the large open pan of water is typically present in views west, although the scale of landscape and coastal edge reduces with increased complexity of the landform. Views from the main route A858 down and along the myriad of access roads facing west emphasis the reduction in scale. Nationally protected landscape with coastal special qualities • South Lewis, Harris and North Uist NSA Strong regionally distinctive character formed by the heightened frontier qualities and most northerly point on the Outer Hebrides. Focus of human activity Settlement limited to western seaboard of Lewis in scattered small townships typically on the	• Inshore site and proximity to the overriding low lying flat plain of Lewis entails that effects on coastal and interior landscape character and visual receptors will be significant, widespread and extensive from all three turbine heights modelled. • Very different set of landscape and visual issues arising from the siting of this relatively smaller DPO so closely inshore (in comparison to the majority of larger DPO sites further offshore) . • Potential for significant effects on NSA nationally designated • Focus of scattered populations and small scale hamlets • Tangible frontier qualities from western coastal extremities with attributes of remoteness and seclusion • Potential for significant effects from aviation and marine lighting;	**We advise that any scale of turbine will introduce widespread significant day and night-time effects on sensitive coastal, landscape and visual receptors.** **In the event of this site being taken forward,** **SNH Recommendation:** • a single developer should be responsible for the consideration of the detailed design with landscape architects of any wind energy proposal • early consideration of the coastal special qualities of the South Lewis, Harris and North Uist NSA in any design iteration • the whole DPO to be considered as part of an iterative design approach, but with the focus on developing only part of the DPO area

	coast edge facing west. Frontier coastlines Strong frontier qualities to the north and west. **MAGNITUDE OF CHANGE** Distance Offshore nearest edge 4.5km, so significant adverse landscape and visual effects are predicted from all scales of wind turbines. At this proximity the effects difficult to mitigate. Cumulative wind energy No marine wind energy. No significant onshore development.	Derived from the sensitive coastal context, our design recommendation would be to **Avoid Significant Effects**. However due to the **small scale of the site and the spatial arrangement and proximity of the DPO site to the coastline, extensive widespread significant effects are likely.**	• opportunity to engage in design-led approach with council, SNH, MS and community • due consideration be given to turbine heights below the 200m height to mitigate significant effects.
NE1 Extensive elongated curved site located offshore of the Shetland Islands running northeast to southwest. Closest edge to Burray 23km, Whalsay 28km, Isle of Noss (off Bressay) 21.5km.	**SENSITIVITY** Complexity Highly complex and varied, intricate and irregular coastline of the Mainland Shetland coast and varying sizes of inhabited and uninhabited islands and skerries. Irregular pattern of islands creates a series of sounds, voes, firths and wicks, contributing to a complex spatial arrangement and ever changing interplay between land and water experienced. **Scale** Rapidly changing scale from the edge of the eastern coastal extremes where there is a much greater extent of open water. Experience of scale reduces moving westwards into the archipelago where the landform begins to enclose and surround the water - a more intimate interplay of water to land. The overriding horizontal landform typically increases the experience of scale on the eastern seaboard. Nationally protect landscape Areas which comprise the NSA, located on the north, west coasts and southern islands only. Distinctive 'regional' landscape The intricate complex, varied coastal character comprised of the interplay between the islands, mainland and skerries creates a distinctive coastal character. Focus of human activity Many of the offshore islands beyond mainland Shetland are inhabited with small towns and a scattered population. Isle of Noss is an NNR with the east coast uninhabited. Frontier coastlines The remoteness of the Shetland archipelago entails that many of the outlying inhabited islands and coast of the west mainland have strong frontier qualities. The northernmost coast of Unst has acute frontier qualities and the most northerly inhabited point of the British Isles. Less so on the east, but with some frontier qualities on outlying eastern coasts. **MAGNITUDE OF CHANGE** Extensive elongated curved site running broadly north to south in parallel with the overriding north to south orientation of the archipelago, significantly increasing horizontal field of view of turbines. Distance of nearest DPO edge ranges from 20km off Noss to 40km off Fetlar and potentially introduces significant daytime and night-time effects from the range of turbine heights modelled. The 'curved' footprint of DPO site contributes to a significant variation in the windfarm composition experienced from the coast, with a marked increase in density of turbines visible in the southern extent.	• Complex coastal character with foreground islands and skerries, entail varying combinations of views to islands and skerries in the archipelago • Variation in scale of landscape from small to large – some frontier and tangible wildness qualities from the outer islands' east coast • Scattered settlements and residences with recreational sensitivities • Distance offshore with DPO at closest of 22.5km potential to introduce significant effects. • Impacts of the development increased by DPO site running parallel to the coastline. • Potential to increase significant effects from aviation lighting • Increase of effects from current DPO footprint contributing to poor design composition from the marked change in the visual density of the development – from simple widely spaced turbines on distant horizon in views from the north, to overlapping cluttered arrangement extending towards the receptor in the south. **Design approach advised – Reduce significant effects**	**We advise there is some opportunity to develop part of the DPO site to the north and east without significant widespread adverse landscape and visual effects.** **SNH Recommendations:** • reducing the linear extent of the development area so reducing the horizontal field of view • development edge pulled back by >35km from the coastline to the south west improving consistency and uniformity of turbine composition and distance to turbines in views; • 200m turbines populate the western extent of the area

	Cumulative wind energy Consented large scale Viking Wind Farm (103 turbines x 155m tip height) requires aviation lighting) and on-going pressures for terrestrial wind energy development widespread across mainland Shetland and Yell No existing planned marine wind energy.		
NE2 Broadly triangular site located centrally off Mainland Orkney. Closest edge to Deerness peninsula 15km, furthest edge 40km.	**SENSITIVITY** Complexity Highly complex coastline combining the mainland island of Orkney, offshore islands, small holms and skerries, giving complex and variable interplay of land and water. This is tempered by the low lying landform of the island such that the landscape is experienced as a series of overlapping and interlocking thin slivers, where it is difficult to appreciate where one island stops and another starts. Scale The Orkney Islands are relatively small in plan giving a more intimate landscape, however, the low lying form entails that the sea and sky are the dominant elements in most views giving a large experience of scale, openness and exposure. Within this, vertical features are typically emphasised and existing domestic and small commercial turbines are highly visible. Nationally protected landscape The Hoy and West Mainland NSA is situated on the West Coast. The Hoy WLA 41 covers part of Hoy on the West Coast. Distinctive 'regional' landscape The Orkney Archipelago as a whole could be experienced as one distinctive landscape at the regional level. Focus of human activity There are several main settlements within Orkney including Kirkwall. However, much of Orkney is populated by scattered small towns, hamlets and individual residences both inland and along the coasts. Frontier coastlines There is some experience of frontier qualities to the north and north east coastlines. From the west and southwest views to mainland Scotland are surprisingly clear. **MAGNITUDE OF CHANGE** Broadly triangular site located centrally off Mainland Orkney the closest edge 15km with the potential to introduce significant daytime and night-time effects with all scales of wind turbine development assessed. Narrowest point of the DPO site located nearest to the coastline reduces horizontal field of view, but creates varied wind turbine composition from variation in turbine density across the array. Cumulative wind energy Orkney has an abundance of domestic and small scale wind turbines across the landscape. There are also several smaller clusters of commercial turbines on mainland Orkney and some of the islands., with pressures for further commercial scale developments of very large scale turbines.	• Complex regionally distinctive landscape • Medium to large scale landscape, tempered by low lying horizons where vertical elements are especially visible / noticeable. • Coastal landscape not nationally designated • Scattered populations with visual impacts on receptors likely to be high. • Proximity of DPO to the Orkney coastline • Spatial arrangement of DPO with respect to coastline and potential for increased effect due to variation in visual density apparent • Potential significant effects from aviation lighting • Significant terrestrial wind energy development **Design approach advised – Reduce significant effects**	**We advise that there is some limited opportunity for development across the far eastern part of the DPO without widespread adverse significant landscape and visual effects.** **SNH recommendations:** • limit development to > 35km from Orkney coastline • maximum turbine height of 200m
NE3	**SENSITIVITY** Complexity	• Some complexity of coastal character tempered by larger scale of coastal landscape.	**We advise that there is considerable opportunity to develop the entire site without widespread significant adverse**

Elongated linear site running north to south, located off the coast of Caithness east of the outer Moray Firth waters. Nearest edge to Duncansby Head 40km, furthest 64km.	Broadly this section of coastline has a relatively simple form running northeast to southwest as part of the wider East Sutherland coast. At a more local level the coastline is characterised by complex indented coastline with cliff, stacks and skerries. Scale Large landscape, the scale of which is reinforced by the broad simplicity of the coastal edge, the broad, flat, low lying coastal seaboard is open and exposed, with views out to sea of simple wide open plains of water. Nationally protect landscape No national designations. Landscape designated at the local level for the scenic qualities of the Duncansby Cliffs. Distinctive 'regional' landscape Landscape designated at the local level for the scenic qualities of the Duncansby Cliffs. Distinctive for the most north-easterly point of the Scottish mainland tied into the popularity of travelling to John o' Groats. Strong wildness qualities along the coastline. Focus of human activity Focus of human activity is along the eastern seaboard with scattered crofting townships and larger settlements. John o' Groats is a key focus for tourism. Frontier coastlines There are frontier qualities to the Duncansby Head coastline in particular where the sea stack and dramatic cliffs are viewed southwards. **MAGNITUDE OF CHANGE** Smaller rectangular DPO site located parallel to the coastline with the potential to increase the horizontal field of view where the turbines are visible. Distance - The nearest edge of the DPO site is located 40km off the coastline at Duncansby Head. Despite this distance there is the potential for significant landscape and visual effects on the coastline from the larger turbines modelled. Cumulative wind energy In and around the Caithness coast and immediate hinterland there are several commercial scale wind energy developments and recently constructed and operational marine developments. Existing and consented cluster of marine wind energy spanning between Inner and Outer Moray Firth Waters: • BOWL - 85 turbines x 182m tip height (existing) • Moray East - 99 turbines x 194m tip height (construction) • Moray West - 85 turbines x 285m tip height (consented)	• Elevated cliff top views • Wildness, scenic and frontier qualities • Adjacent scattered population and towns • Smaller DPO site located a minimum of 40km off the coastline. • Potential for significant effect from larger turbines modelled **Design approach advised – Reduce significant effects**	**landscape and visual effects.** **SNH Recommendations:** • a maximum of 250m height turbines Project level design iteration should consider reducing significant effects in particular from Duncansby Head either through a change of turbine heights and/or focussing development in the central and eastern part of the DPO, avoiding the part of the site closest to the coastline.
NE4 Smaller elongated site orientated north to south, abutting BOWL and Moray East windfarms to the west. Abutting DPO NE5 to the west. Distance of northern	**SENSITIVITY** Complexity Broadly the Moray Firth (inner and outer) has a simple form with relatively uniform coastlines. Complexity is introduced further west and into the inner firth where the relationship between opposing shorelines becomes stronger and contributes to a greater experience of enclosure. Scale Typically the scale of the Moray Firth is large, emphasised by the open flat plain of water and the lower lying landscapes, in particular to the south in Moray and Aberdeenshire. The scale of the seascape reduces with the increased enclosure experienced in the inner Moray Firth.	• Distinctive regional character of Moray Firth with views to the opposing shorelines, tempered by the large scale of the landscape • Distinctive regional character of East Sutherland Coast • Heavily populated coastlines, with high historic, scenic recreational interest and popularity both in Highland and Aberdeenshire	**We advise that there are considerable opportunities to develop most of the DPO site to read as a well-designed extension to the existing BOWL and Moray East developments, avoiding further widespread significant cumulative effects.**: SNH Recommendations: • to the north of the DPO site limit development edge to reduce horizontal extent of DPO (in combination with

edge to Wick 22km, and southern edge to Rosehearty 38km.	Nationally protected landscape with coastal special qualities • Dornoch NSA Distinctive 'regional' landscape Collectively the Scottish Firths are considered to have a distinctive regional landscape character which contributes to the identity and distinctiveness of the Scottish landscape at the national level, especially in relation to the settled populations which run along the coastline. The East Sutherland Coast is considered to have a regionally distinctive landscape character. Both stretches of the Highland, Moray and Aberdeenshire coastlines are designated for their scenic qualities at the local level. Focus of human activity Significant focus of populations with the City of Inverness at the inner apex, several large towns e.g. Brora, Wick, and historic scenically and culturally sensitive settlements with harbours and scattered residence. High tourism pressures with recreational pressures. Frontier coastlines Some frontier qualities expressed from the Tarbat Ness lighthouse on the outer Dornoch Firth peninsula. **MAGNITUDE OF CHANGE** Smaller elongated linear DPO site running perpendicular to both the Highland and Aberdeenshire coastlines therefore reducing horizontal field of view (individually). At 22km the nearest DPO edge to Caithness has the potential to introduce significant daytime and night-time landscape and visual effects onto the Caithness coastline from all scales of turbines assessed. At 35kms the proposed DPO site would potentially introduce significant effects onto the Aberdeenshire coastline from the larger turbines modelled. Cumulative wind energy Significant existing and ongoing pressures from terrestrial commercial scale wind energy in the immediate hinterland and along the coast at Caithness. Some coastal development along the Aberdeenshire coast. Significant cumulative daytime and night-time effects along the East Sutherland coast from existing BOWL and Moray East, and consented Moray West. • BOWL - 85 turbines x 182m tip height (existing) • Moray East - 99 turbines x 194m tip height (construction) • Moray West - 85 turbines x 285m tip height (consented)	• Smaller scale of the DPO sits perpendicular to and within the Outer Firth • Arrangement abutting the existing developments at BOWL and Moray East which cumulatively could increase extent of significant effects along Caithness coast • Increasing extent of night-time impacts of aviation lighting on well populated landscape • Existing and consented maritime wind energy comprising 200m turbines within the Moray firth already contributing to significant cumulative effects on a considerable length of the Highland coast of the Firth **Design approach advised – Avoid significant additional cumulative effects**	BOWL) avoiding cumulative significant effects. • to reduce impacts and maintain a cohesiveness in design and composition with neighbouring developments we suggest a maximum of 250m turbine heights. However this should be considered at a project level, informed by the consideration of cumulative in combination wind energy development. • to the south of the DPO site, pull back development edge to 40km from coastline and limit turbine height to 250m to reduce the extent of significant cumulative effects with Moray West on the Moray and Aberdeenshire coastline. • consideration should also be given to the DPO strategic design recommendations for NE5.
NE5 Elongated linear site located within the Inner Moray Firth, abutting the existing complex comprising the BOWL and Moray East windfarms and consented Moray West wind farm to the north. Abutting	**SENSITIVITY** Complexity Broadly the Moray Firth (inner and outer) has a simple form with relatively uniform coastlines. Complexity is introduced further west and into the inner firth where the relationship between opposing shorelines becomes stronger and contributes to a greater experience of enclosure. Scale Typically the scale of the Moray Firth is large, emphasised by the open flat plain of water and the lower lying landscapes, in particular to the south in Moray and Aberdeenshire. The scale of the seascape reduces with the increased enclosure experienced in the inner Moray Firth. Nationally protected landscape with coastal scenic qualities • Dornoch NSA	• Distinctive regional character of Moray Firth contributing to collection Scottish Firths landscape. • Simple open large scale landscape, tempered by the closer opposing shorelines and views across the Inner Firth • Heavily populated coastlines, with high historic, scenic recreational interest and popularity • Large scale of the DPO situated within the Inner Moray Firth	**We advise that there is a limited opportunity to develop a small part of the site in the north without introducing significant landscape and visual effects onto the Moray coastline. This should read as a small well designed extension to the BOWL and Moray East and consented Moray West wind farms.** **SNH Recommendations :** • limit development in the DPO site to beyond 40km from the Aberdeenshire and Moray coastline. to avoid

DPO NE4 to the east. Closest edge 26km from Lossiemouth and 30km from Cullen.	Distinctive 'regional' landscape Collectively the Scottish Firths are considered to have a distinctive regional landscape character which contributes to the identity and distinctiveness of the Scottish landscape at the national level, especially in relation to the settled populations which run along the coastline. The East Sutherland Coast is considered to have a regionally distinctive landscape character. Some sections of the Highland, Moray and Aberdeenshire coastlines are designated for their scenic qualities at the local level. Focus of human activity Significant focus of populations with the City of Inverness at the inner apex, several large towns e.g: Wick, Brora and historic scenically and culturally sensitive settlements with harbours and scattered residence. High tourism pressures with recreational pressures. Frontier qualities Some qualities expressed from the Tarbat Ness lighthouse at the outer Dornoch Firth peninsula. **MAGNITUDE OF CHANGE** Elongated linear site located within the Outer Moray Firth running parallel to the Moray and Aberdeenshire coastline with the potential to substantially introduce turbines across the extensive horizontal field of view and horizon. The closest edge to Aberdeenshire is 25km with the potential to introduce significant daytime and night-time effects. DPO abuts the existing Moray Firth cluster comprising the BOWL and Moray East windfarms and consented Moray West wind farm to the north. Abutting DPO NE4 to the east. Cumulative wind energy Significant existing and ongoing pressures from terrestrial commercial scale wind energy in the immediate hinterland – and some coastal development along the Aberdeenshire coast. Impacts from the consented Moray West marine development predicted. • Moray West - 85 turbines x 285m tip height (consented)	• DPO abutting the existing complex of developments at BOWL and Moray East which would read as an extension to existing development. • Coast parallel alignment to the Moray/Aberdeenshire coastline such that significant effects would be introduced by the wide horizontal spread of wind energy development. • Night-time impacts of lighting on well populated landscape. **Design approach advised – Avoid significant additional cumulative effects**	introduction of significant cumulative effects • 250m maximum height, considered at the project level cumulatively with Moray West, Moray East and BOWL • Avoiding increasing wide horizontal field of view beyond that established by the consented Moray West wind farm. • Consideration should also be given to the strategic design recommendations for DPO NE4
NE6 Large rectangular site located just beyond the outer waters of the Moray Firth. Nearest edge 35km from Fraserburgh, furthest point 60km.	**SENSITIVITY** Complexity A relatively simple coastline comprising the northeast corner of Buchan, forming the outer edge of the Moray Firth to the south. The coastline is characterised by a series of broad elevated headlands (eg. Rattray Head) within which span broad soft sandy beaches. Scale Typically extensive low lying landform, the large scale of which is enhanced by the narrowing landform extending northeast out into a much wider expanse of open water. Views to open water dominate the appreciation of this landscape. Nationally protect landscape None. Distinctive 'regional' landscape Much of the coastline is designated at the local level for its scenic qualities. The coastal edge of the Banff and Buchan coastline to Fraserburgh forms the wider southern edge of the Outer Moray Firth. Focus of human activity	• Simplicity and large scale of coastal character which extends out into wide open expanse of water • Substantial focus of human activity • Spatial relationship of northeast corner of Buchan coastline to DPO • At this distance offshore - 35km, the potential for significant landscape and visual effects on the coastline will increase with larger turbines. • Significant cumulative terrestrial wind energy • At a more strategic level significant clusters of marine wind energy to the south, and the northwest such that this area currently affords an area of respite.	**We advise that there is considerable opportunity for development across much of the site without widespread significant adverse landscape and visual effects.** **SNH recommendations:** • to avoid introducing significant strategic cumulative effects, limit development to beyond 40km from the coastline within the DPO site • maximum turbine height of 250m.

	Significant focus of human activity within the harbour settlements of Fraserburgh and Peterhead, around which are scattered populations and smaller, more scenically historic, settlements. Frontier coastlines Some frontier qualities associated with the extremity of the northeast corner of Aberdeenshire jutting out into wider North Sea – however experienced tempered by considerable human activity in area. **MAGNITUDE OF CHANGE** Distance Despite this distance there is the potential for significant landscape and visual effects on the coastline from the larger turbines modelled. Larger rectangular DPO site located off the north east corner of Buchan. This spatial arrangement of DPO with respect to the coastline, entails that only a limited extent of the coastline would be at this proximity, with the land falling away to the west and south increasing the distance to the DPO. Cumulative wind energy Substantial existing terrestrial wind energy associated with agricultural heartlands with some single turbines and small clusters along the sea board. To the south there is the existing cluster of marine developments • Existing Aberdeen Bay EOWDC 11 turbines 191m tip height 5km inshore from nearest coast • Existing Kincardine OWF – single 106m turbine, 6 x 191m turbines • Existing Hywind OWF – 5 x 175m turbines • Consented Inch Cape 2014 layout 110 x 215m turbines (Variation Inch Cape layout 2018 72 x 301m turbines) • Consented Seagreen layout - 114 x 209m turbines Around the coast to the northwest within the Moray Firth there is the cluster of: • BOWL - 85 turbines x 182m tip height (existing) • Moray East - 99 turbines x 194m tip height (construction) • Moray West - 85 turbines x 285m tip height (consented)	**Design approach advised – Reduce significant effects**	
NE7 Situated within open waters eastwards and beyond the outer Moray Firth waters. 100kms nearest edge to Wick, and 78km distance to Fraserburgh.	**SENSITIVITY** Complexity Relationship of land to sea appears simplistic due to the context of this DPO site dominated by the vastness of the open water. Limited presence of land altering experience of scale. Scale Large scale due to the much greater extent of open water within the context of this DPO site. Nationally protect landscape Dornoch Firth NSA (small section of coastline within Inner Moray Firth). Distinctive 'regional' landscape Moray Firth (Inner and Outer Firth) contributes to the collective national firth landscapes. Sections of Highland, Moray and Aberdeenshire Coasts designated at the local level. Focus of human activity Eastern seaboard of the Moray Firth is well settled with several large towns and main truck	• DPO sited at substantial distance offshore, with no perceptible visual impacts (non significant effects) from modelling of 300m high turbines. • Such is the distance offshore of NE7 that this development is not likely to add to any cumulative effect of operational / consented wind farms at other DPOs. **No significant effects predicted.**	**Due primarily to the extensive distance offshore, we advise that there are substantial opportunities for the development of the whole site, without significant landscape or visual impact.** **SNH recommendation:** • 300m+ turbines potentially feasible across the whole DPO

	road and railway route corridors. Good grid transmission. Shipping movements. Daytime and night-time activity prevalent – views across the firth from shore to shore, lighting evident at night. Frontier coastlines Strong frontier qualities on the outer firth edges particularly acute on the northeast highland coast. **MAGNITUDE OF CHANGE** Distance DPO sited at substantial distance offshore, with no perceptible visual impacts from modelling of largest 300m turbines. Given the distance offshore there is no tangible spatial relationship between the DPO site and the nearest coastline. Cumulative wind energy Highland and Grampian coastlines incurring significant cumulative impacts from existing/proposed terrestrial and marine wind energy development. Existing and consented cluster of marine wind energy spanning between Inner and Outer Moray Firth Waters: • BOWL - 85 turbines x 182m tip height (existing) • Moray East - 99 turbines x 194m tip height (construction) • Moray West - 85 turbines x 285m tip height (consented) Existing and on-going pressures for terrestrial development in particular around Caithness. Onshore cable landing sites and grid connection needs to be taken account of.		
NE8 Situated within open waters eastwards and beyond the outer Moray Firth waters. Nearest edge 81km to Fraserburgh.	**SENSITIVITY** Complexity Relationship of land to sea appears simplistic due to the context of this DPO site dominated by the vastness of the open water. Limited presence of land altering experience of scale. Scale Large scale due to the much greater extent of open water within the context of this DPO site. Nationally protect landscape • Dornoch Firth NSA (small section of coastline within Inner Moray Firth). Distinctive ‘regional’ landscape Moray Firth (Inner and Outer Firth) contributes to the collective national firth landscapes. Sections of Highland, Moray and Aberdeenshire Coasts designated at the local level. Focus of human activity Eastern seaboard of the Moray Firth is well settled with several large towns and main truck road and railway route corridors. Good grid transmission. Shipping movements. Daytime and night-time activity prevalent – views across the firth from shore to shore, lighting evident at night. Frontier coastlines Strong frontier qualities on the outer firth edges, particularly acute on the northeast highland coast.	• DPO sited at substantial distance offshore, with no perceptible visual impacts (non significant effects) from modelling of 300m high turbines. • Such is the distance offshore of NE8 that this development is not likely to add to any cumulative effect of operational / consented wind farms at other DPOs. **No significant effects predicted.**	**Due primarily to the extensive distance offshore, we advise that there are substantial opportunities for the development of the whole site, without significant landscape or visual impact.** **SNH recommendation:** • 300m+ turbines potentially feasible across the whole DPO

	MAGNITUDE OF CHANGE Distance DPO sited at substantial distance offshore, with no perceptible visual impacts from modelling of largest 300m turbines. Given the distance offshore there is no tangible spatial relationship between the DPO site and the nearest coastline. Cumulative wind energy Highland and Grampian coastlines incurring significant cumulative impacts from existing/proposed terrestrial and marine wind energy development. Existing and consented cluster of marine wind energy spanning between Inner and Outer Moray Firth Waters: • BOWL - 85 turbines x 182m tip height (existing) • Moray East - 99 turbines x 194m tip height (construction) • Moray West - 85 turbines x 285m tip height (consented) Existing and on-going pressures for terrestrial development in particular along Aberdeenshire sea board.		
E1 Extensive site extending perpendicular from the Angus/Aberdeenshire coastline – nearest edge 60km, furthest edge 160km (measured from Stonehaven).	**SENSITIVITY** Complexity Simple coastline running in northeast to southwest orientation, comprising long sections of cliff interspersed with broad sandy beaches. Scale Larger scale heightened by the lower lying landscape (long stretches of beach and cliff) relative to the wide panoramas of water Nationally protected landscape No NSA/WLA designation Much of coastal edge between settlements designated at the local level (Special Landscape settlement Areas) Distinctive 'regional' landscape Dunnottar Castle is a key cultural and recreational focus of national importance contributing substantially to the distinctive regional character of the immediate and wider coastal landscape. In addition the coastal character contributes to the setting of Stonehaven, the visual containment of which is already encircled by existing and consented terrestrial wind energy development. The coastline character of Stonehaven and Dunnottar imparts a strong and nationally recognised identity to south Aberdeenshire. Focus of human activity Substantial focus for human activity and recreation – cities and towns, scattered settlements and residence Beaches, formal and informal recreation and tourism interests. Frontier coastlines No distinctive frontier qualities **MAGNITUDE OF CHANGE**	• Simple large scale coastline • Focus for cities, large towns, and wider scattered settlements • Coastline not designated at the national level • Distinctive regional character and Dunnottar Castle • Considerable distance offshore **No significant effects predicted.**	**Due primarily to the extensive distance offshore, we advise that there are substantial opportunities for the development of the whole site, without significant landscape or visual effects.** **SNH recommendation:** • 300m+ turbines potentially feasible across the whole DPO

	Extensive site, which sits perpendicular to the coast, which limits horizontal field of view. Located at minimum of 60km from coastline, such that there is unlikely to be significant effect from any scale of development considered (height and extent, up to 350 m turbines) Cumulative existing and consented wind energy Aberdeen Bay - 11 turbines of 191m tip height 5km from coast. Marine and navigation lighting both clearly vsible from shoreline. Kincardine Floating WF - existing single 106m turbine (with 6 x 191m tip height) turbines consented). Aberdeen and Aberdeenshire coastline is highly populated with a range of settlements from large to small, affected by combined and sequential cumulative impacts from existing/proposed terrestrial wind energy development. (Capacity Study identifies and 'landscapes with wind turbines')		
E2 Narrow 'L' shaped site extending perpendicular from northeast Aberdeenshire coast. Nearest point 60km furthest 135km (measure from Peterhead).	**SENSITIVITY** Complexity Simple coastline running in northeast to southwest orientation, comprising long sections of cliff interspersed with broad sandy beaches. Scale Larger scale heightened by the lower lying landscape (long stretches of beach and cliff) relative to the wide panoramas of water Nationally protected landscape No NSA/WLA designation Much of the coastal edge between settlements designated at the local level (Special Landscape Areas) Distinctive 'regional' landscape Dunnottar Castle is a key cultural and recreational focus of national importance contributing substantially to the distinctive regional character of the immediate and wider coastal landscape. In addition the coastal character contributes to the setting of Stonehaven, the visual containment of which is already encircled by existing and consented terrestrial wind energy development. The coastline character of Stonehaven and Dunnottar imparts a strong and nationally recognised identity to south Aberdeenshire. Focus of human activity Substantial focus for human activity and recreation – cities and towns, scattered settlements and residence Beaches, formal and informal recreation and tourism interests. Frontier coastlines No distinctive frontier qualities **MAGNITUDE OF CHANGE** Distance To existing wind energy Aberdeen Bay 11 turbines x 191m tip height Kincardine Floating –operational single 106m high turbine (consented 6 x 191m high turbines) Larger DPO site sitting perpendicular (in an L shaped plan layout) to coastline, which substantially limits horizontal field of view.	• Simple large scale coastline • Focus for cities, large towns, and wider scattered settlement • Coastline not designated at the national level • Considerable distance offshore. **No significant effects predicted.**	**Due primarily to the extensive distance offshore, we advise that there are substantial opportunities for the development of the whole site, without significant landscape or visual effects.** **SNH recommendation:** • 300m+ turbines potentially feasible across the whole DPO

	Located at a minimum of 60km from coastline such that there is unlikely to be significant effect from any scale development considered (height and extent). Cumulative wind energy Aberdeen Bay EOWDC comprises 11 turbines of 198m tip height 5km from coast. Marine and navigation lighting both clearly visible from shoreline. Aberdeen and Aberdeenshire coastline is highly populated with a range of settlements from large to small, affected by combined and sequential cumulative impacts from existing/proposed terrestrial wind energy development. (Capacity Study identifies and 'landscapes with wind turbines')		
E3 Smaller site located perpendicular to the coastline of Aberdeen City and Shire. From Balnagask nearest point 20km, 30km from Dunnottar Castle, furthest point is 56km.	**SENSITIVITY** Complexity Simple coastline running in northeast to southwest orientation, comprising long sections of cliff interspersed with broad sandy beaches. Scale Larger scale heightened by the lower lying landscape (long stretches of beach and cliff) relative to the wide panoramas of water Nationally protected landscape No NSA/WLA designation Much of the coastal edge between settlements is designated at the local level (Special Landscape Areas) Distinctive 'regional' landscape Dunnottar Castle is a key cultural and recreational focus of national importance contributing substantially to the distinctive regional character of the immediate and wider coastal landscape. In addition the coastal character contributes to the setting of Stonehaven, the visual containment of which is already encircled by existing and consented terrestrial wind energy development. The coastline character of Stonehaven and Dunnottar imparts a strong and nationally recognised identity to south Aberdeenshire. Focus of human activity Substantial focus for human activity and recreation – cities and towns, scattered settlements and residence Beaches , formal and informal recreation Harbour and settlement lit. Movement and docking of ships offshore contribute to presence of lighting in baseline. Frontier coastlines No distinctive frontier qualities **MAGNITUDE OF CHANGE** Smaller DPO site which sits perpendicular to the coastline, reducing horizontal field of view. Distance to sensitive coastal receptors ranging between 20 and 30km, therefore there is the potential for development in the western parts of the DPO to introduce significant effects from all ranges of turbine heights considered. Cumulative Kincardine Floating Wind Farm - operational single 106m high turbine (consented 6 x 191m	• Relatively simple large scale coastal character • Coastal character not nationally designated • Distinctive regional coastal character • National importance of Dunnottar Castle in coastal setting contributing to distinctiveness and identity of coastline, • Focus for towns and scattered settlements, attracting recreation and tourism • Potential for significant cumulative day and nighttime effects on sensitive coastal receptors **at** ranges of between 20km to 30kms distance to shore with a range of viewing elevations. • potential significant and cumulative design effects in combination and overlapping with in-construction Kincardine Floating Wind Farm • At a more strategic scale along the Aberdeenshire coastline potential for significant cumulative effects with Aberdeen Bay EOWDC and to the south the substantial consented cluster of large scale offshore wind at Inch Cape and Seagreen and terrestrial development **Design approach advised – reduce significant effects**	**We advise that there is considerable opportunity to develop the eastern part of the DPO site, without widespread significant landscape or visual effect** **SNH recommendations:** • limit development to beyond 45km towards the eastern extent of the DPO site locating turbines further offshore • maximum 250m high turbines We advise that any consideration of leasing which is in the area closest to shore and the existing Kincardine Wind farm will require to consider the setting and views from Dunnottar Castle. Further design iteration at a project level, needs to address design and scale relationship of turbine heights and horizontal extent between any development in the DPO site and the closer 191m turbines of Kincardine Floating Wind Farm.

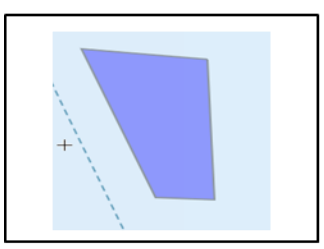
	high turbines) Aberdeen Bay EOWDC - operational 11 turbines x 191m 5km from coast. Marine and navigation lighting both clearly visible from shoreline. Aberdeen and Aberdeenshire coastline is highly populated with a range of settlements from large to small, affected by combined and sequential cumulative impacts from existing/proposed terrestrial wind energy development. (Capacity Study identifies and 'landscapes with wind turbines')		

National Scenic Area (NSA) and / or Wild Land Area (WLA)

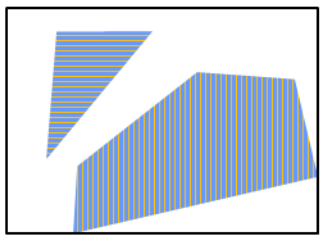
National landscape designation / sensitivity

Limit horizontal spread of development

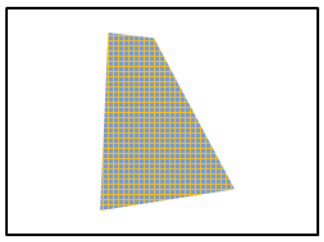
Design recommendation



No shading - area with no (or minimal) constraints

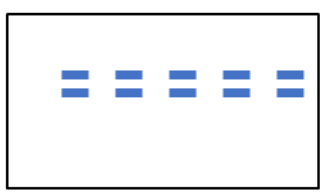


Areas impacted by one landscape and / or visual constraint



Area impacted by two or more landscape and / or visual constraints

Key landscape and visual sensitivity / site (where a specific constraint is highlighted)



Recommended INDICATIVE limit of development within DPO to reduce / avoid significant landscape and / or visual impacts

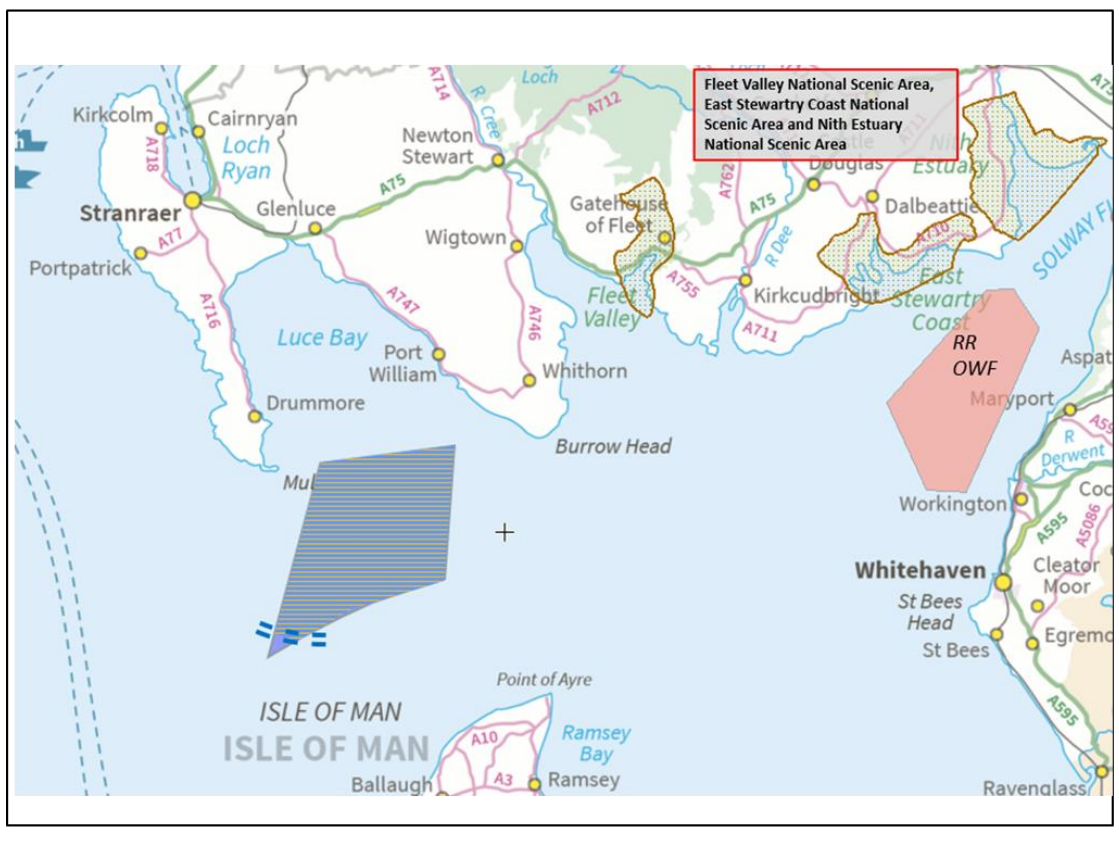
OWF – Offshore Wind Farm

Existing and consented OWFs:

- AB OWF - Aberdeen Bay (EOWDC)
- B OWF - Beatrice
- IC OWF - Inch Cape
- K OWF- Kincardine
- ME OWF - Moray East
- MW OWF - Moray West
- NnG OWF - Neart Na Gaoithe
- RR OWF - Robin Rigg
- SG A&B OWF - Seagreen

DPO SW1

Avoid significant effects on views from coast



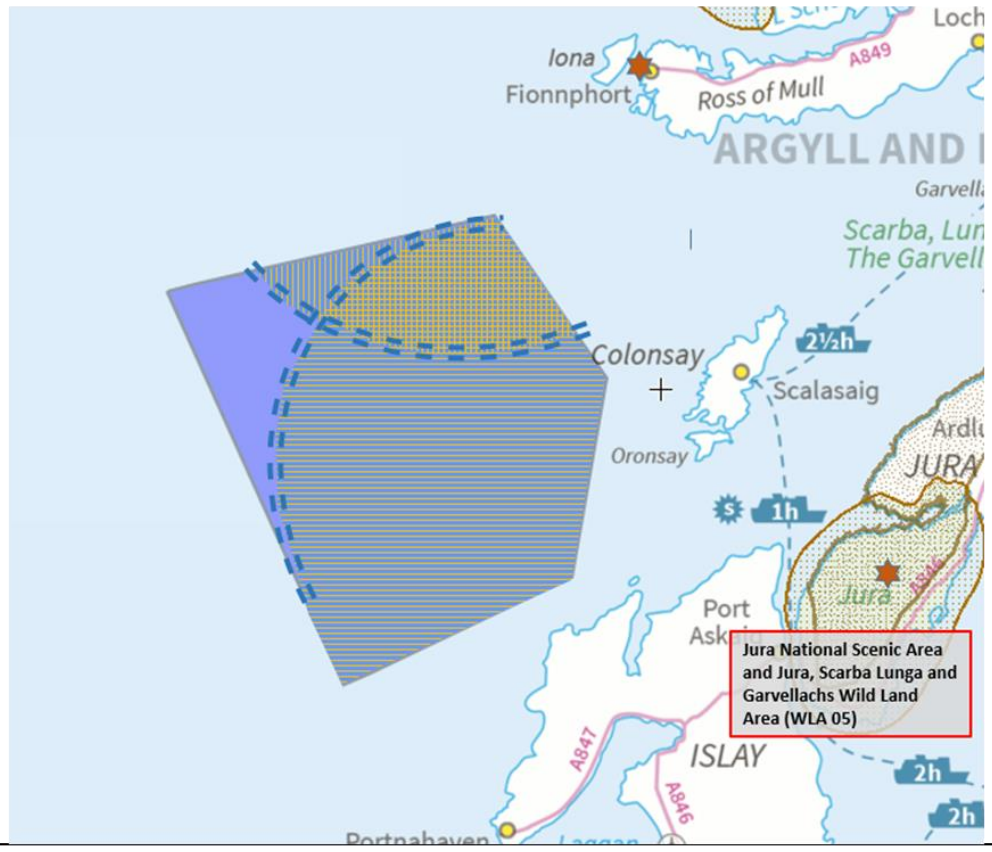
Avoid significant effects on sensitive views across bays and Solway Firth to existing focii of views (Galloway headlands, Cumbria coast and Isle of Man)

Due to proximity to coast it is unlikely that significant landscape and visual effects can be avoided for turbines of 200m or above.

SNH recommends that this DPO would benefit from a project level design solution with site specific mitigation.

DPO W1

Limit development in north east to reduce visibility from Fionnphort to Iona Ferry



Focus development towards west to avoid significant impact on views from islands and ferries and to reduce perception of wind farm seascape in views from Paps of Jura

There is a limited opportunity for development in the west of this site without significant landscape and visual impacts.

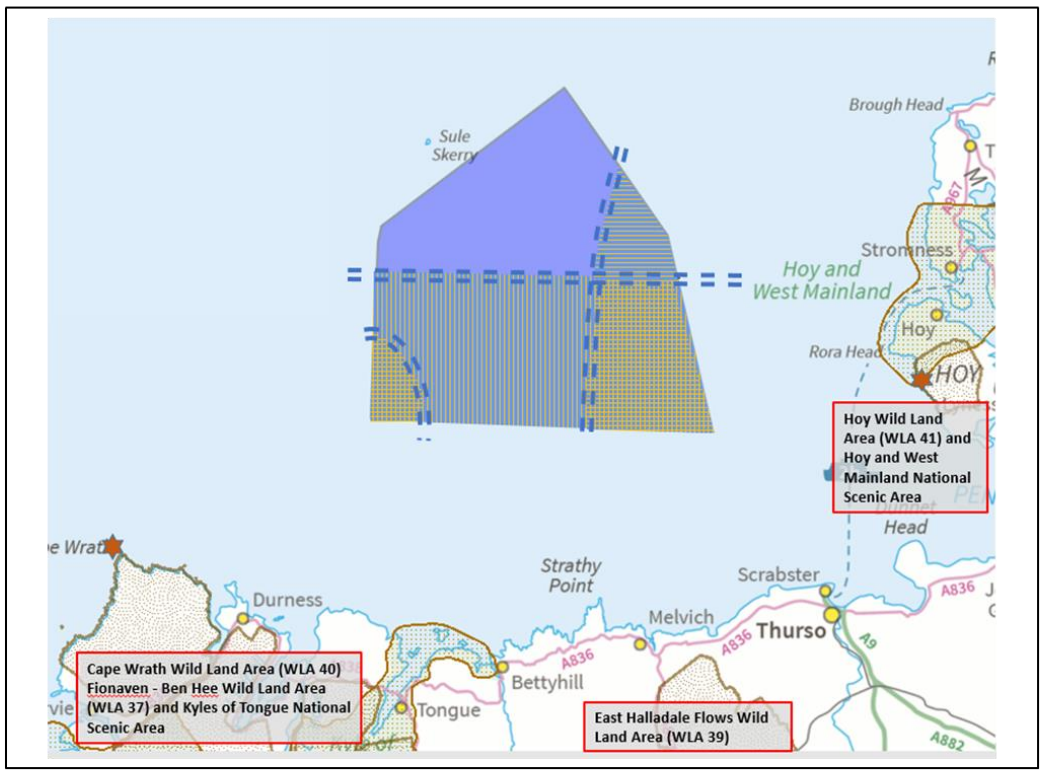
To avoid significant effects SNH recommends:

- 200m maximum turbines
- > 50km from Paps of Jura (NSA)
- Limit horizontal extent

DPO N1

Limit development to >40 km from sensitive coast (also reduce 'corridor effect')

Limit south development to >40 km from sensitive Cape Wrath to avoid significant effects on views and perception of wildness



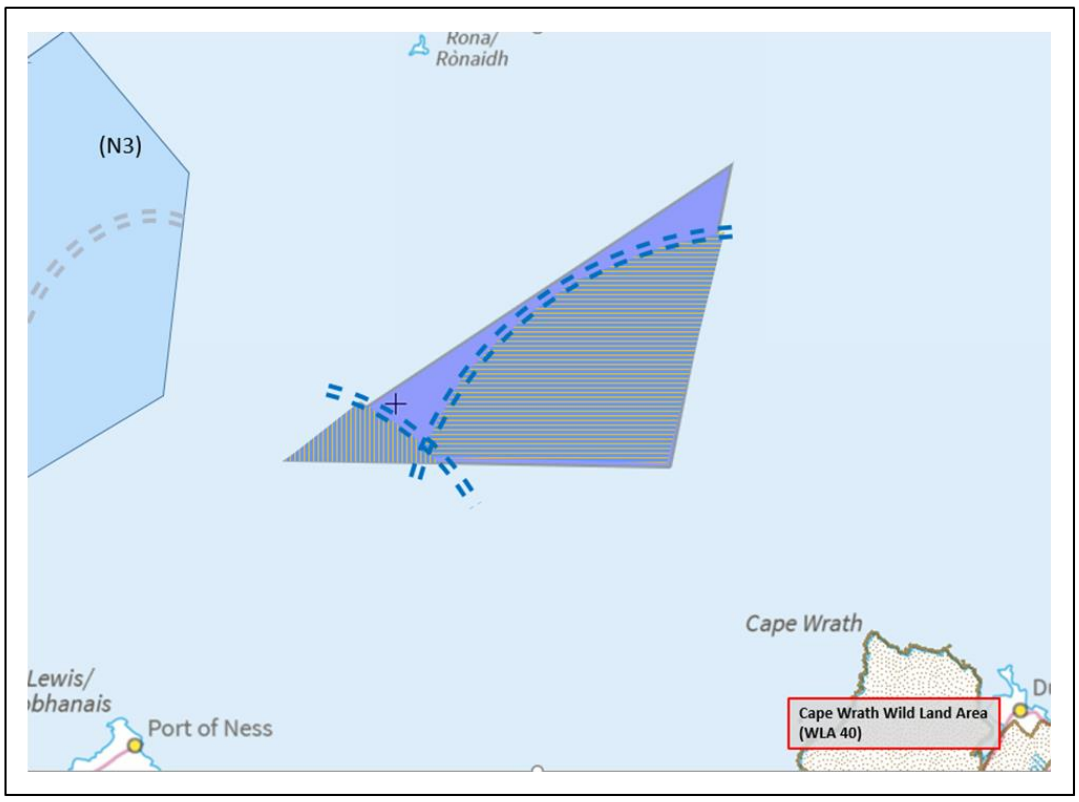
Limit development to >40 km from sensitive north coast to avoid impact on views and perception of wildness

There is some opportunity for development within the site, without significant landscape and visual impacts.

To avoid significant effects SNH recommends:

- 200m maximum turbines
- >40km

DPO N2



Very limited opportunity for development at this site without significant landscape and visual impacts.

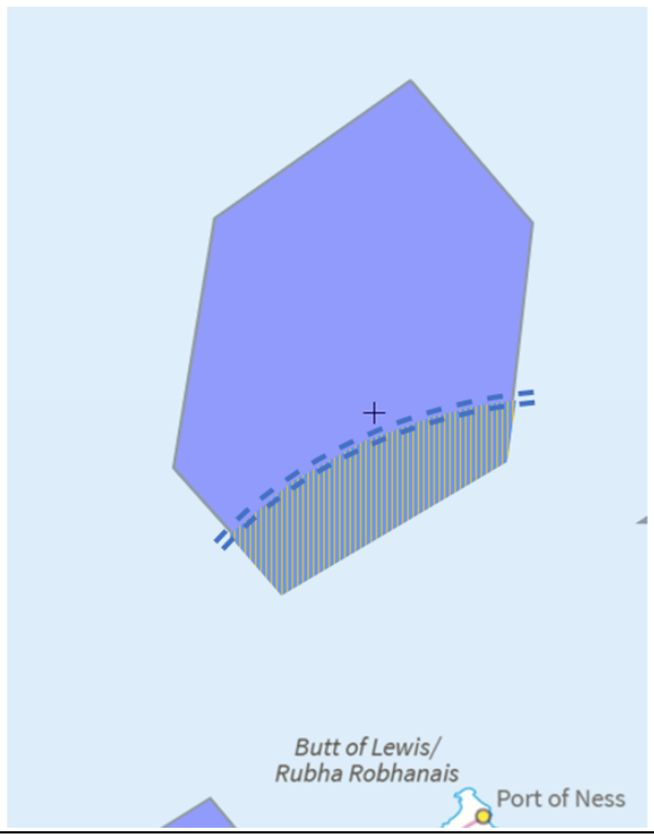
To avoid significant effects SNH recommends:

- 200m maximum turbines
- >45km from Cape Wrath

Reduce visibility from Lewis and avoid cumulative visual impacts with DPO N3

Avoid visibility from sensitive Cape Wrath of wind turbines of all heights

DPO N3



There is considerable opportunity for development across much of the site without significant landscape and visual impacts.

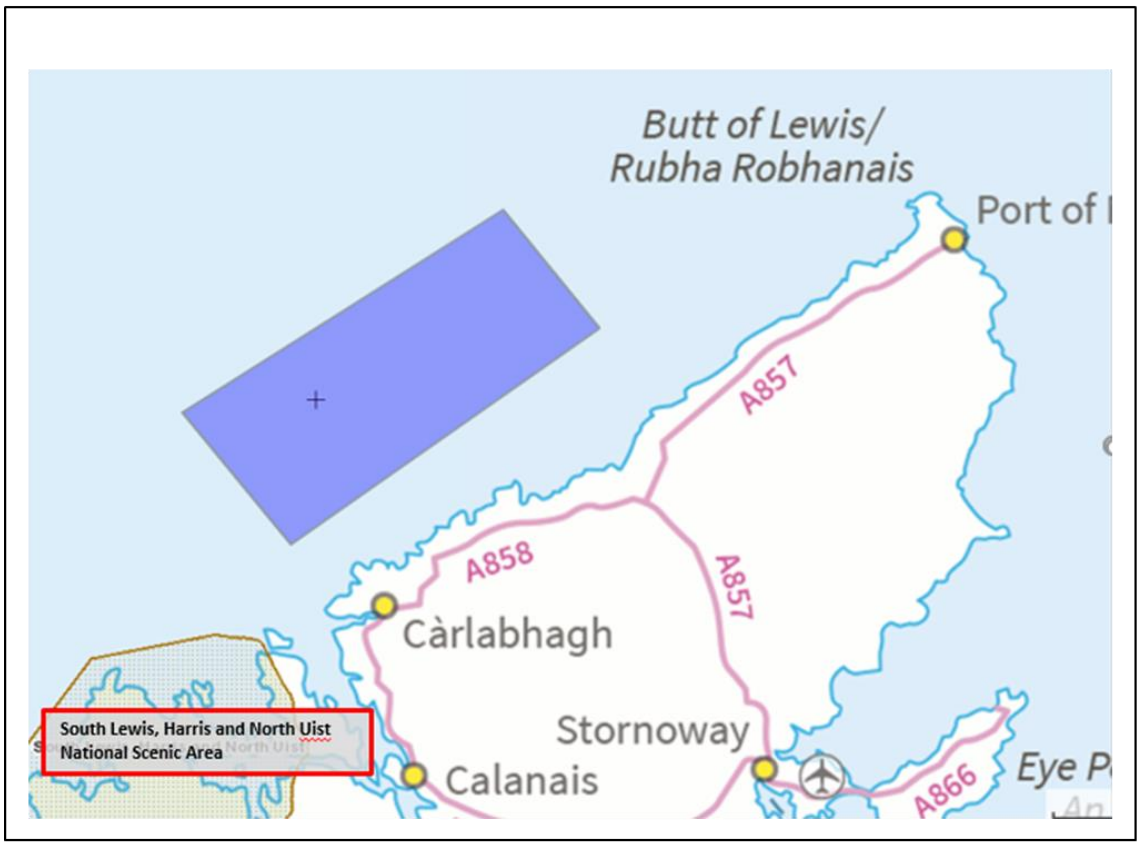
To reduce significant effects SNH recommends:

- 200m maximum turbines
- > 35km

Limit development to >35km to reduce visibility from coastal roads and Butt of Lewis

DPO N4

Site <4km from coast extending for 20 km parallel to coast



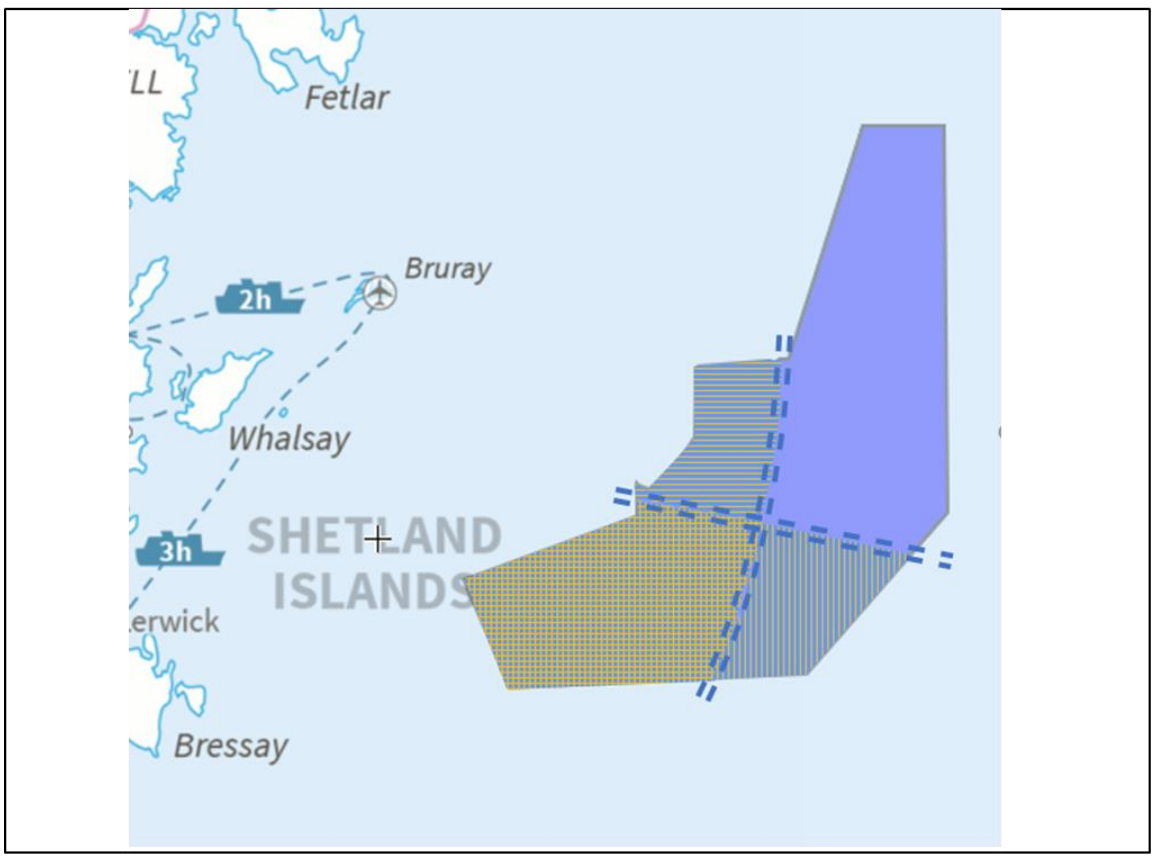
Due to proximity to coast (4 – 14km) and lateral extent (20km) it is unlikely that significant landscape and visual effects can be avoided for turbines of 200m or above.

SNH recommends that this DPO would benefit from a project level design solution with site specific mitigation.

Entire site is within 12nm

DPO NE1

Limit development to beyond 35 km from the coast and islands



There is some opportunity for development within the site without significant landscape and visual impacts.

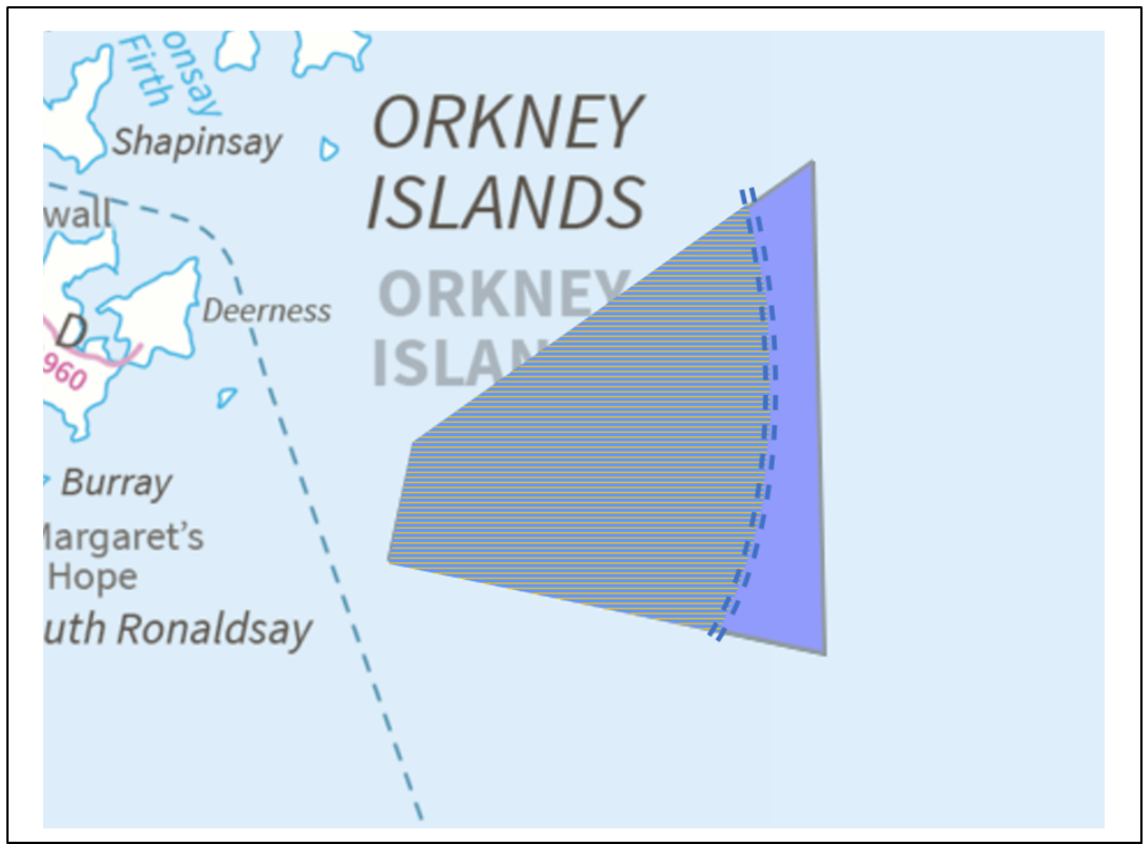
To reduce significant effects SNH recommends:

- 200m turbines
- > 35km
- Limit horizontal extent

Limit development to reduce horizontal extent of array in views from coast and islands and to improve consistency of density

DPO NE2

Limit development to 35 km to avoid significant effects on views from sensitive coastal islands



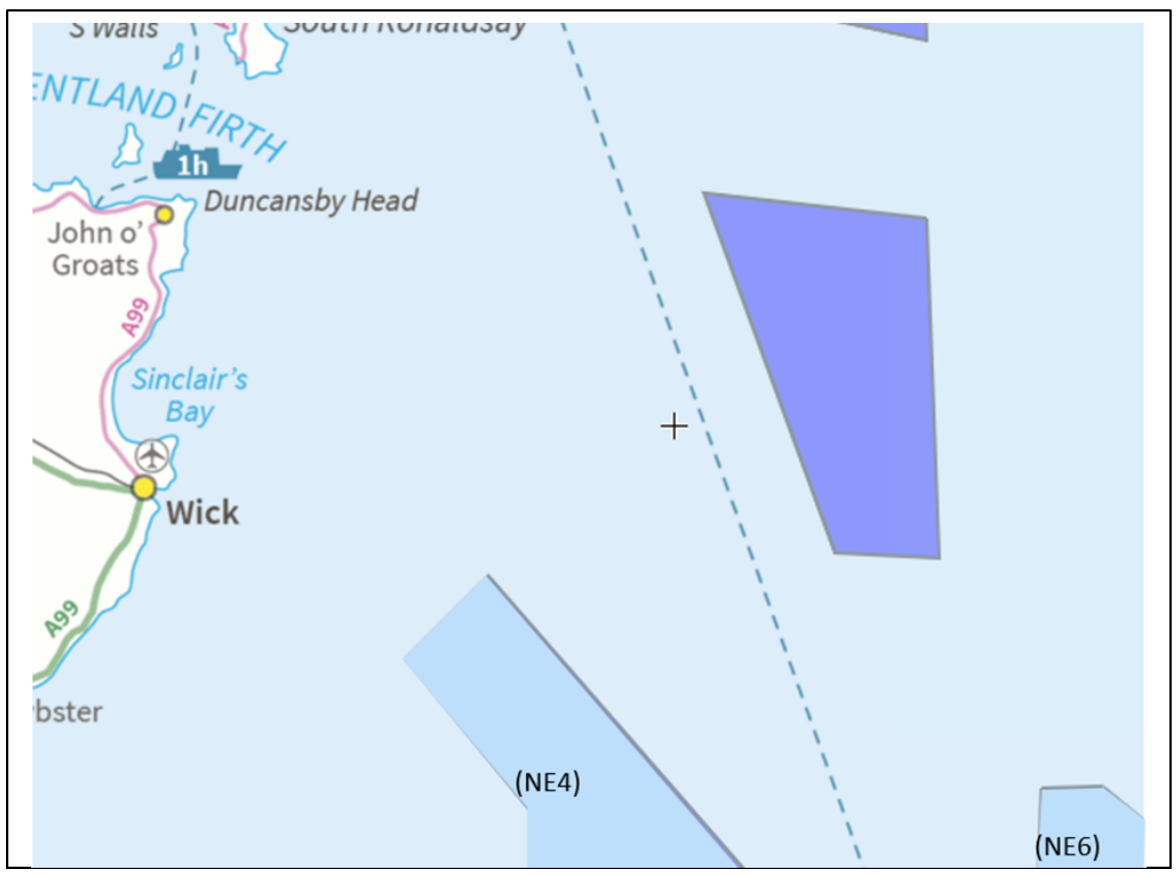
There is a limited opportunity for development in the eastern part of the site without significant landscape and visual impacts.

To reduce significant effects SNH recommends:

- 200m maximum turbines
- >35km

DPO NE3

Limit impacts on 'frontier qualities' at Duncansby Head



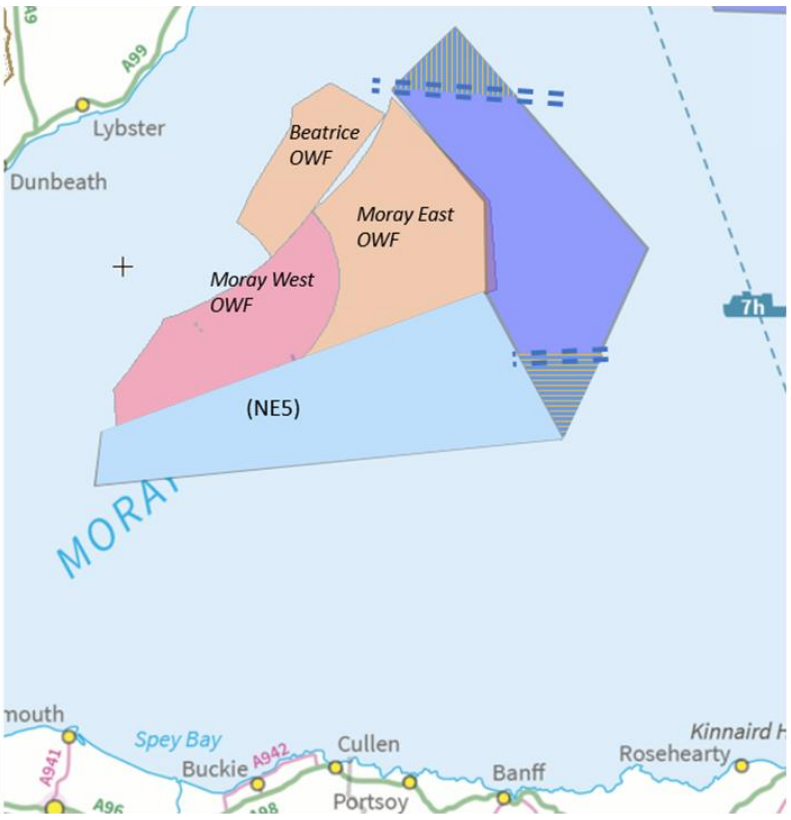
There is substantial opportunity for development across the entire site without significant landscape and visual impacts.

To reduce significant effects SNH recommends:

- 250m turbines
- >40km

DPO NE4

Limit horizontal spread of development in views from Caithness coast



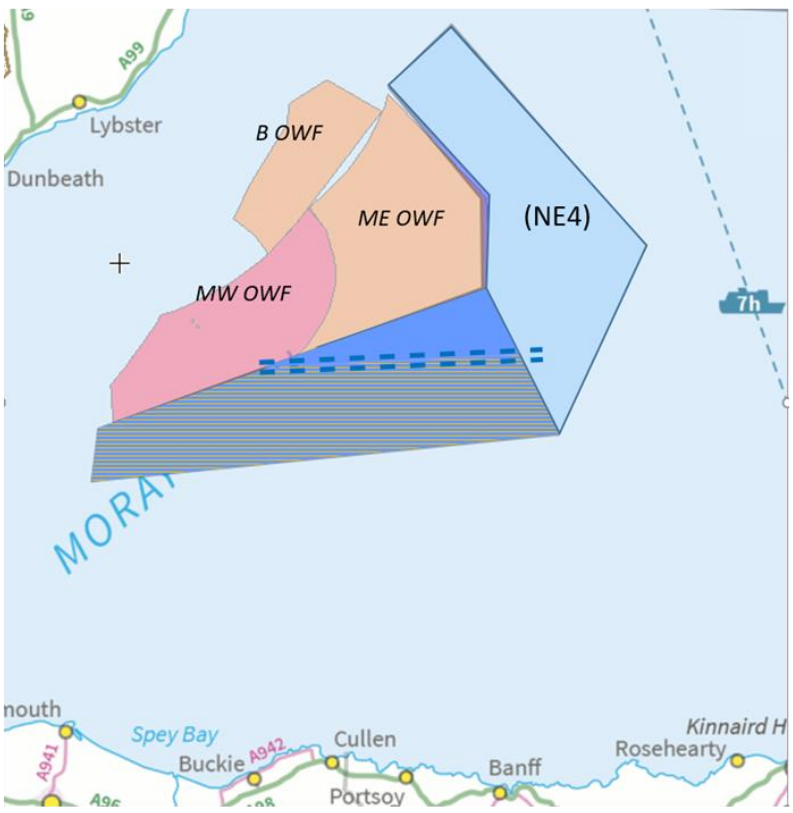
Limit significant effects on views from north Grampian and wider Moray Firth landscape

There is considerable opportunity for development across much of this site without significant landscape and visual impacts.

To reduce significant effects SNH recommends:

- 250m maximum turbines
- >40km
- Limit horizontal extent

DPO NE5



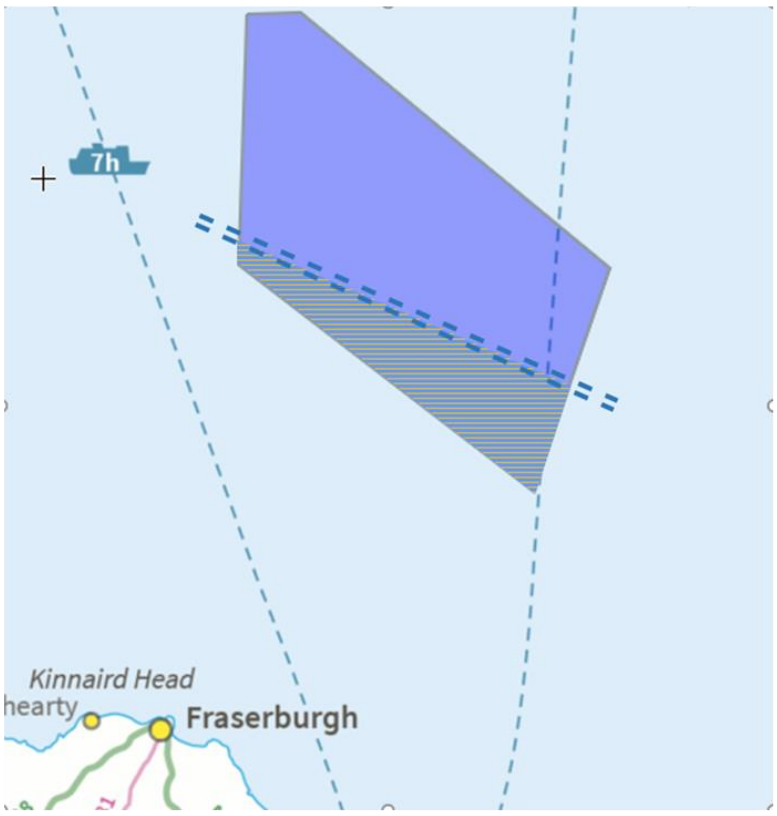
Limit significant cumulative effects on views from north Grampian and on wider Moray Firth landscape

There is limited opportunity for development at this site without significant landscape and visual impacts.

To avoid significant cumulative effects SNH recommends:

- 200m maximum turbines
- >40km

DPO NE6

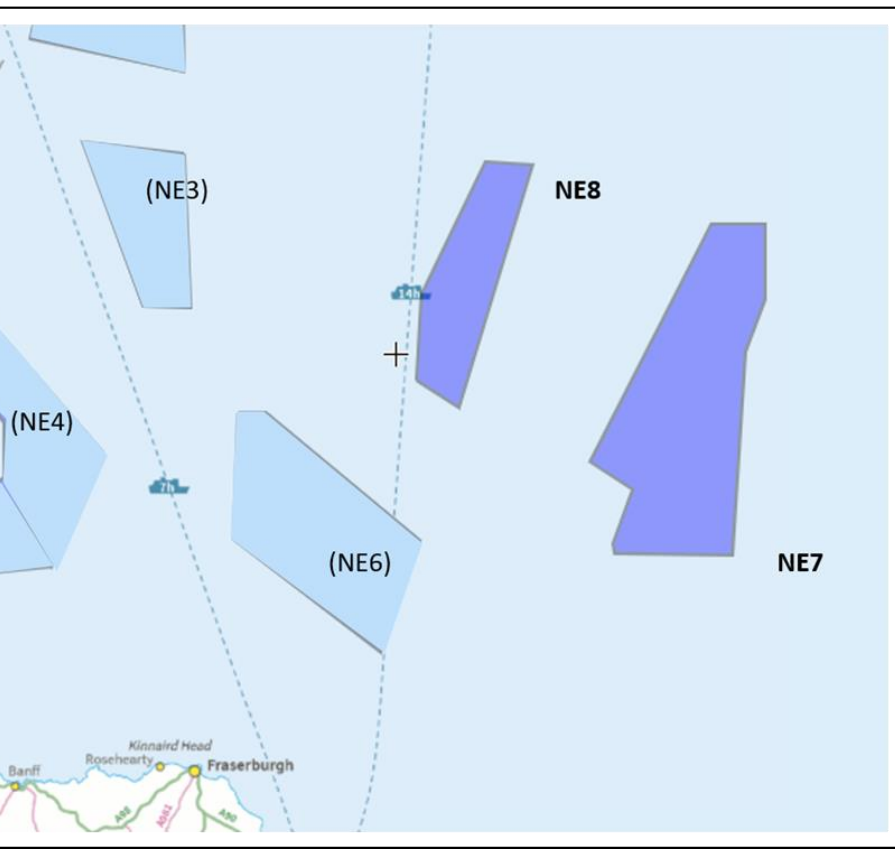


There is considerable opportunity for development across much of the site without significant landscape and visual impacts.

To reduce significant effects SNH recommends:

- 250m turbines
- > 40km

DPOs NE7 & NE8

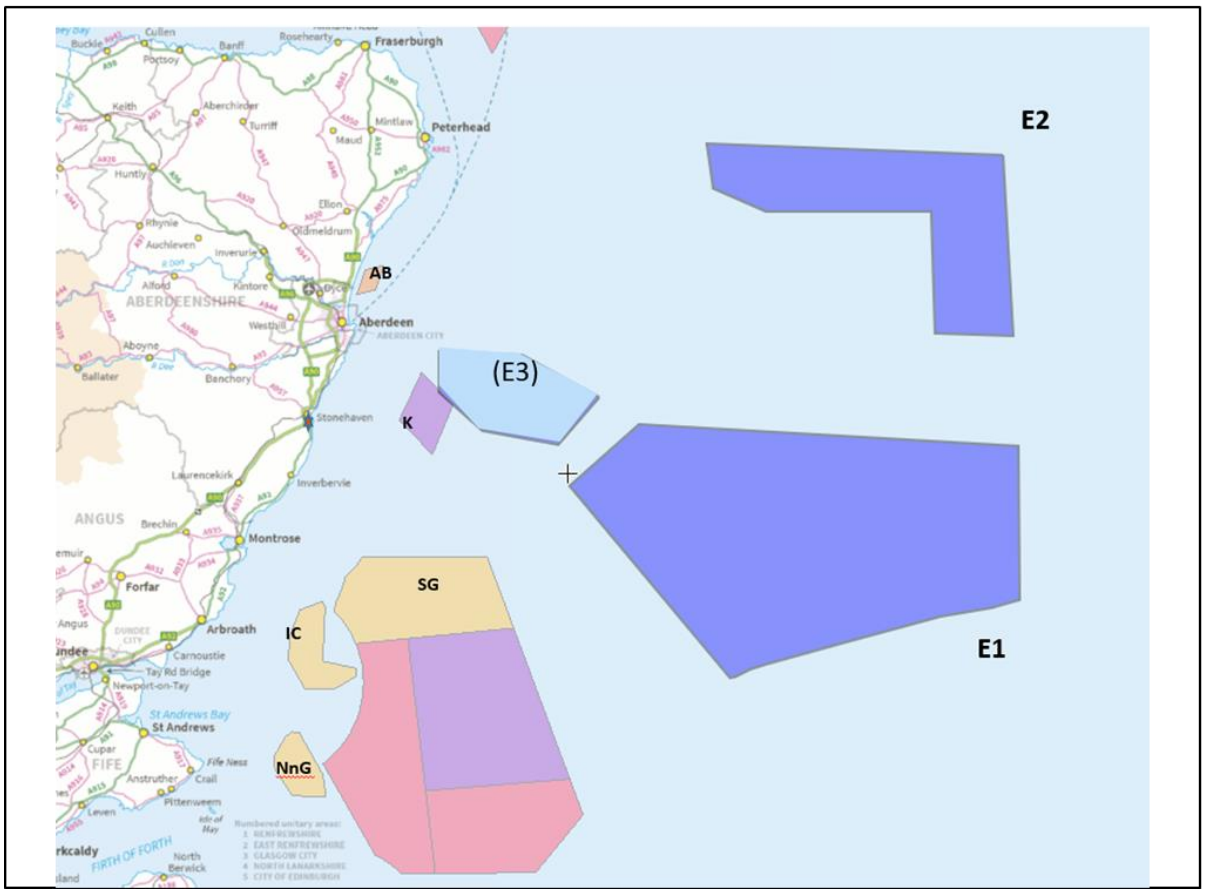


Substantial opportunity for development across both sites without significant landscape and visual impacts.

SNH recommends that , in terms of landscape and visual impact, there is potential to maximise generation here.

- 300m+ turbines

DPOs E1 & E2



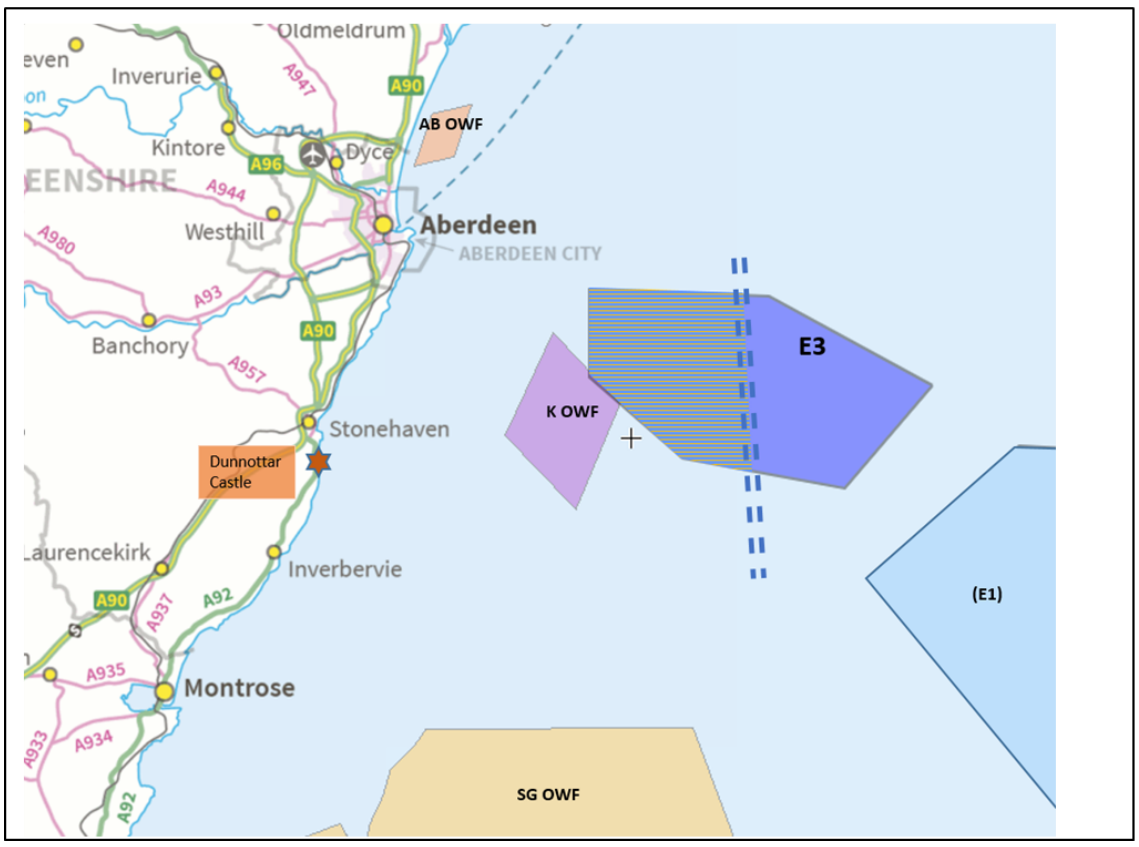
Substantial opportunity for development across both sites without significant landscape and visual impacts.

SNH recommends that, in terms of landscape and visual impact, there is potential to maximise generation here.

- 300m+ turbines

Limit significant effects on views from Dunnottar Castle and distinctive coastline

DPO E3



There is considerable opportunity for development across some of the site, without significant landscape and visual impacts.

To reduce significant effects SNH recommends:

- 250m turbines
- > 45km