

**APPLICATIONS FOR TWO CONSENTS UNDER SECTION 36 OF THE ELECTRICITY ACT 1989 FOR THE CONSTRUCTION AND OPERATION OF TWO OFFSHORE GENERATING STATIONS, THE SEAGREEN ALPHA AND SEAGREEN BRAVO OFFSHORE WIND FARMS, 27 AND 38 KILOMETRES EAST OF THE ANGUS COASTLINE RESPECTIVELY.**

**MARINE SCOTLAND'S CONSIDERATION OF A PROPOSAL  
AFFECTING A NATURE CONSERVATION MARINE PROTECTED AREA ("NC MPA")  
FEATURE**

**NC MPA Conclusion**

Marine Scotland Licensing Operations Team ("MS-LOT") on behalf of the Scottish Ministers conclude that there is no significant risk of the proposed Seagreen Alpha and Seagreen Bravo Offshore Wind Farms hindering the achievement of the conservation objectives for the protected features of the Firth of Forth Banks Complex NC MPA if conditions detailed in section 8 of this assessment are complied with.

**1. Introduction**

Under section 126 of the Marine and Coastal Access Act 2009 ("the 2009 Act") MS-LOT (as the public authority) is required to consider whether a licensable activity is capable of affecting (other than insignificantly) a protected feature in a NC MPA or any ecological or geomorphological process on which the conservation of any protected feature in a NC MPA is dependant. MS-LOT must not grant authorisation of the activity unless the person applying for the authorisation satisfies MS-LOT that there is no significant risk of the activity hindering the achievement of the conservation objectives for the NC MPA. If MS-LOT believe that there is or may be a significant risk of the Proposal hindering the achievement of the conservation objectives then they must notify the conservation bodies (Scottish Natural Heritage ("SNH") for MPAs within 12 nautical miles ("nm") or the Joint Nature Conservation Committee ("JNCC") for MPAs outwith 12 nm) of that fact. The JNCC have provided advice in terms of section 127 of the 2009 Act. If the person seeking the authorisation is not able to satisfy MS-LOT that there is no significant risk of the licensable activity hindering the achievement of the conservation objectives then a licence will only be granted if:

- I. MS-LOT is satisfied that there is no other means of proceeding with the licensable activity which would create a substantially lower risk of hindering the achievement of those objectives (to include proceeding in another manner or at another location);
- II. MS-LOT is satisfied that the benefit to the public of proceeding with the licensable activity clearly outweighs the risk of damage to the environment that will be created by proceeding with it; and
- III. MS-LOT is satisfied that the person seeking the authorisation will undertake, or make arrangements for the undertaking of, measures of equivalent environmental benefit to the damage which the activity will or is likely to have in or on the MPA concerned.

## 2. MPA Details

### Firth of Forth Banks Complex

[http://gateway.snh.gov.uk/sitelink/siteinfo.jsp?pa\\_code=10447](http://gateway.snh.gov.uk/sitelink/siteinfo.jsp?pa_code=10447)

- Quaternary of Scotland – moraines
- Shelf banks and mounds
- Offshore subtidal sands and gravels
- Ocean quahog aggregations

Condition - uncertain

## 3. Conservation Objectives

For the Firth of Forth Banks Complex MPA the current conservation objective is to **conserve** the protected features within the MPA. The uncertainty over the feature condition is a consequence of there being insufficient evidence available to confirm that the features are in good condition. The [Designation Order](#) of the NC MPA states the conservation objectives for the protected features, but in summary they are as follows:

‘Favourable condition’, with respect to ocean quahog aggregations, means that the quality and quantity of its habitat and the composition of its population are such that they ensure that the population is maintained in numbers which enable it to thrive.

‘Favourable condition’, with respect to offshore subtidal sands and gravels, means that:

- (a) Its extent is stable or increasing; and
- (b) Its structures and functions, its quality, and the composition of its characteristic biological communities are such as to ensure that it is in a condition which is healthy and not deteriorating.

‘Favourable condition’, with respect to shelf banks and mounds, means that:

- (a) The extent, distribution and structure of the feature is maintained;
- (b) The function of the feature is maintained so as to ensure it continues to support its characteristic biological communities and their use of the site for, but not restricted to, feeding, courtship, spawning, or use as nursery grounds; and
- (c) The processes supporting the feature are maintained.

‘Favourable condition’, with respect to the Moraines geomorphological feature, means that:

- (a) Its extent, component elements and integrity are maintained;
- (b) Its structure and functioning are unimpaired; and
- (c) Its surface remains sufficiently unobscured.

#### 4. Details of the Proposed Operation (location, timing, methods)

The Applications submitted by Seagreen Wind Energy Limited ("SWEL") are to construct and operate two separate offshore wind generating stations (Seagreen Alpha Offshore Wind Farm ("SAWEL") and Seagreen Bravo Offshore Wind Farm ("SBWEL")), with a combined maximum generating capacity of up to 1050 megawatts ("MW"). Consent is sought for up to 75 wind turbine generators ("WTGs") at each site giving a total of 150 WTGs across the wind farms. The Applications also cover associated infrastructure including, but not limited to, inter-array cabling to the connection point on the offshore sub-station platforms. The generating capacity of the individual WTGs installed has not been defined, and are dependent upon a number of factors, including the choice of wind turbine generator, the final foundation and substructure design and any mitigation measure to reduce the predicted impacts of the wind farms. The generating capacity of the individual WTGs will be finalised at a later stage post determination of these Applications. There are three main substructure and foundation options defined within the Design Envelope (also referred to as Rochdale Envelope) for supporting the WTG structures. These are:

- a four leg steel jacket with driven piles;
- a four leg steel jacket with suction piles; or
- Gravity Base Structure ("GBS").

#### **Project Description**

The wind farms, located as shown at **Figure 1** (please see below), shall have a permitted generating capacity not exceeding 1050 MW and shall comprise two wind-powered electricity generating stations in the Firth of Forth Zone, including:

1. not more than 150 three-bladed horizontal axis wind turbine generators each with:
  - a. a maximum blade tip height of 209.7 metres (measured above Lowest Astronomical Tide ("LAT"))
  - b. a rotor diameter of between 122 and 167 metres;
  - c. a hub height of between 87.1 and 126.2 metres (measured from LAT);
  - d. a minimum blade tip clearance of between 29.8 and 42.7 metres (measured from LAT);
  - e. blade width of up to 5.4 metres; and
  - f. a minimum spacing of 1,000 metres;
2. all foundations, substructures, fixtures, fittings, fixings, and protections;
3. inter array cabling and cables up to and onto the offshore substation platforms; and
4. transition pieces including access ladders / fences and landing platforms,

all as specified in the Applications and by the conditions imposed by the Scottish

Ministers.

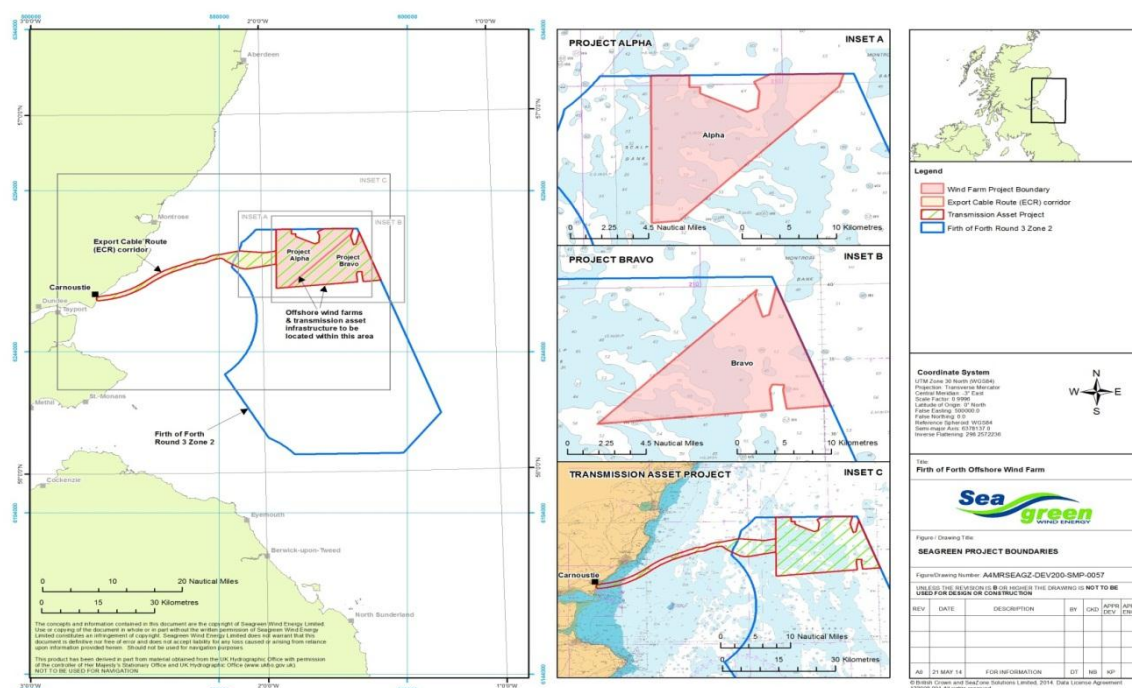
The construction programme is expected to cover a period of approximately 4 years. No date is yet available for commencement of construction, but it is likely to commence in 2017. A full project description can be found in [chapter 5 of the Seagreen Environmental Statement \(“ES”\)](#).

### Location of Development

The SAWEL and SBWEL sites are located approximately 27 km and 38 km offshore respectively from the nearest landfall on the Angus coastline. The total area within the SAWEL site boundary is 197 km<sup>2</sup>. The total area within the SBWEL site boundary is 194 km<sup>2</sup>.

The selected landfall for the export cable is at Carnoustie, a total distance of approximately 70 km from the indicative Offshore Substation Platform (“OSP”) location within the SAWEL site.

**Figure 1 – Development Location:** Seagreen Alpha and Seagreen Bravo Offshore Wind Farm Locations, showing the proposed Export Cable Route to shore at Carnoustie.



## 5. Details of Consultation

MS-LOT received advice from the JNCC and SNH on the Forth and Tay wind farm applications (SAWEL, SBWEL, Naert na Gaoithe Offshore Windfarm Limited (“NNGOWL”) and Inch Cape Offshore Limited (“ICOL”)) on 7<sup>th</sup> March 2014. The JNCC and SNH advised that the SAWEL and SBWEL developments partially overlap with the proposed Firth of Forth Banks Complex NC MPA (the MPA had not been designated when that advice was received). Following designation of the NC MPA in July 2014 MS-LOT requested further advice on the potential impacts of the SAWEL and SBWEL developments on the Firth of Forth Banks Complex NC MPA. MS-LOT received this advice from JNCC on 16<sup>th</sup> September 2014.

Marine Scotland Science reviewed the advice provided by JNCC and were content with the advice.

## 6. SCREENING – is the proposal capable of affecting (other than insignificantly) the protected features of the MPA

In their response dated 16<sup>th</sup> September 2014, the JNCC advised that the proposed SAWEL and SBWEL sites, together with the cable routes, lie mostly outside the boundary of the Firth of Forth Banks Complex NC MPA. However, there are areas of overlap: for SAWEL this amounts to 83.28 km<sup>2</sup> (equivalent to 3.91% of the NC MPA area); for SBWEL it amounts to 40.29 km<sup>2</sup> (1.89% of the NC MPA area); and for the cable route 29.23 km<sup>2</sup> (1.37% of the NC MPA area). In total, the combined overlap amounts to 7.17% of the NC MPA. However, JNCC stated that the footprints of any environmental impacts are much smaller than the overall project footprint with the NC MPA (see below) as these impacts are localised within the site.

Based on consideration of the information presented in the ES and Marine Scotland’s [Features Activities Sensitivities Tool \(“FeAST”\)](#), the JNCC concluded that activities associated with the SAWEL and SBWEL developments will result in pressures to which offshore subtidal sands and gravels and ocean quahog aggregations are known to be sensitive. The shelf bank and mound large-scale features and the Moraines key geomorphological feature are considered unlikely to be adversely affected by the proposed operation due to the very small scale of the impact footprints in relation to these large scale features. As such, the JNCC concluded that the proposal is capable of affecting, other than insignificantly, the ocean quahog aggregations and offshore subtidal sand and gravel protected features of the Firth of Forth Banks Complex NC MPA.

Therefore, MS-LOT are required to complete an assessment to determine whether there is a significant risk of the SAWEL and SBWEL developments hindering the achievement of the conservation objectives of the Firth of Forth Banks Complex MPA with respect to subtidal sands and gravels and ocean quahog (see section 7 below).

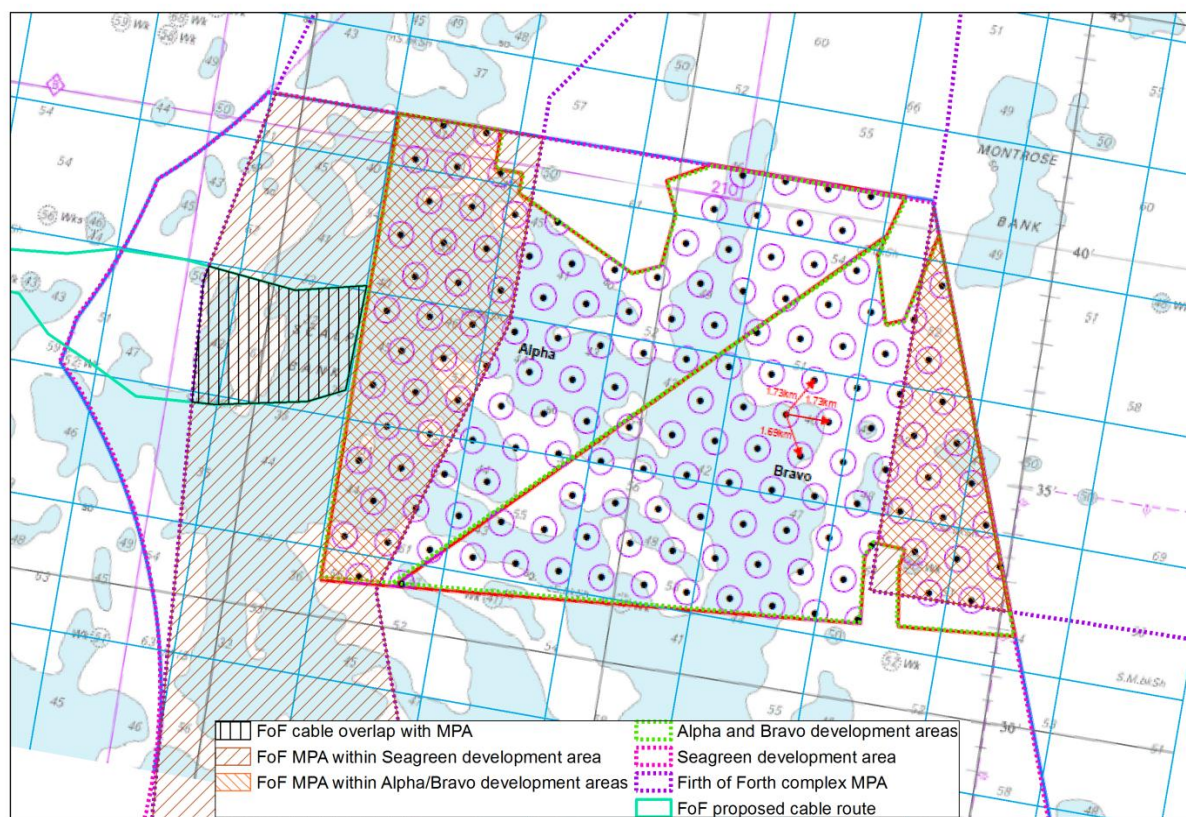


## 7. MAIN ASSESSMENT - Is there a significant risk of hindering the achievement of the conservation objectives?

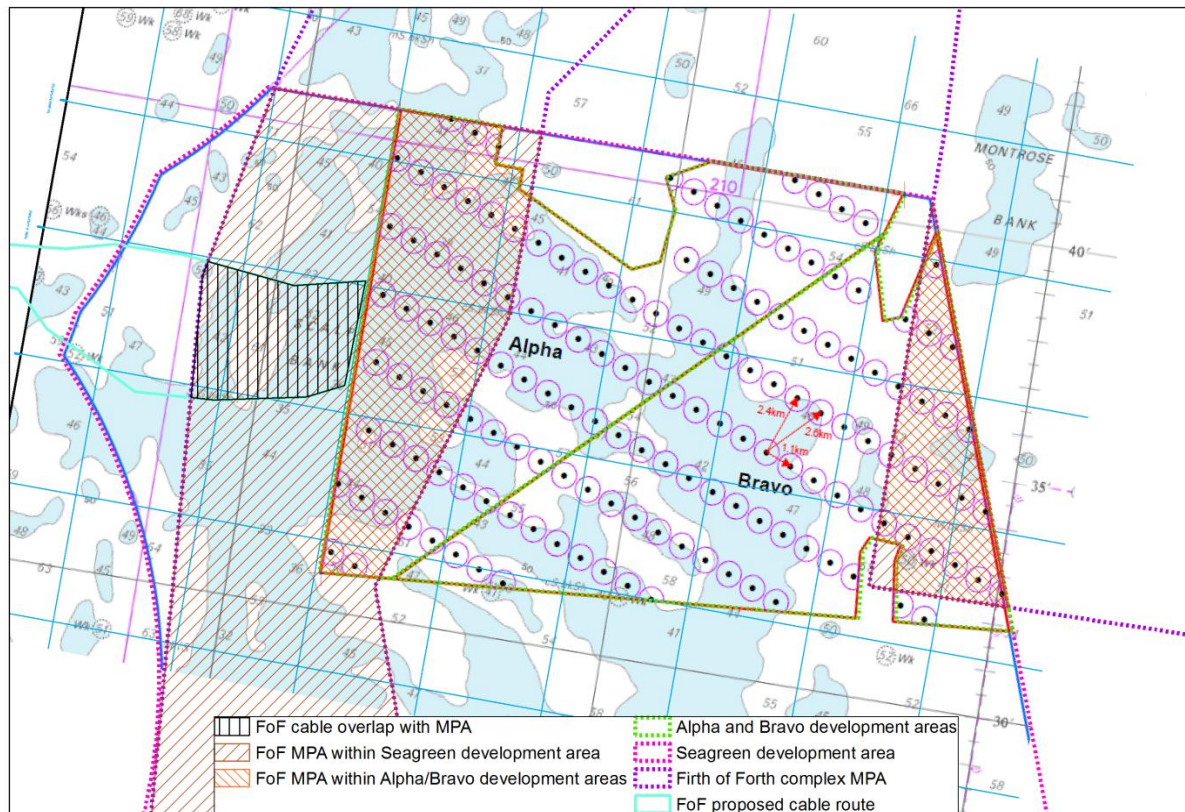
Figure 2 below shows the areas of overlap of the SAWEL and SBWEL developments with the NC MPA and possible turbine layouts.

**Figure 2 – Turbine layouts**

a) Potential WTG location on 'grid' layout.



b) Potential WTG location 'in line' layout.



For their environmental assessment, Seagreen have considered two different gravity bases as a worst case scenario when considering impacts to the seabed. The jack-up footprint for turbine installation, the material dumping area and the area affected by trench cable installation have also been included in the impact assessment. Seagreen have considered *physical disturbance*, *habitat loss* and *increase in suspended sediment* as the main potential impacts affecting benthic areas during the *construction* and the *operation* phases.

The JNCC have advised that the extent of these impacts within the NC MPA is estimated at 4.58 km<sup>2</sup> from *physical disturbance* and 1.03 km<sup>2</sup> from *habitat loss*. According to the information in *Chapter 5 (Project Description Table 5.6 and Table 5.13)*, the *Appendix E4-Annex A, Table 1* and *Chapter 7* of the ES, the JNCC understand that the benthic impacts of displacing 3,457,647 m<sup>3</sup> of sediment are included in the *physical disturbance* and *habitat loss* estimations.

With the "grid" layout (Figure 2a above), 30 WTGs in the SAWEL site and 15 WTGs in the SBWEL site are within the MPA; with the "in line" layout (Figure 1a above), 29 WTGs in the SAWEL site and 14 WTGs in the SBWEL site are within the MPA. As there was minimal difference between the "grid" and "in line" layouts in the potential impact on the MPA features, the JNCC undertook the assessment on the worst case, i.e., the "grid" layout.

With regards to the cable route, Seagreen estimate 15 metres width of physical disturbance during the installation along the route and 7 metres width of habitat lost



from material dumping (cable protection), which is estimated to be required along 10% of the cable route. The NC MPA overlaps 27.73% of the export cable route, resulting in approximately 0.1 km<sup>2</sup> of habitat loss within the NC MPA boundaries.

Table 1 below details the assessment completed by the JNCC, and Table 2 provides a summary.

**Table 1.** Details of assessment completed by JNCC for SAWEL, SBWEL and the export cable route.

PROJECT ALPHA (in grid)					
	Infrastructure affecting seabed	Area / volume	Section in MPA (worst case)	Area / Volume	
<b>Construction</b>					
Physical disturbance	72m baseplate (up to 8 WTG)	1,931 m <sup>2</sup>	x 8	14,448	
	30 Tubular Jacket and suction piles (+ 3 Met mast)	1,773 m <sup>2</sup>	x 33	58,505	
	OSP (2x1400 m <sup>2</sup> + 2,474 m <sup>2</sup> )	5,274 m <sup>2</sup>	x1	5,274	
	Jack-up vessel (by WGT: 121.5 x 6)*	729 m <sup>2</sup>	x 30	21,870	
	Jack-up vessel (by OSP: 121.5 x 8)*	972 m <sup>2</sup>	x 3	2,916	
	Array cable installation (355km x 10m wide)	3,500,000 m <sup>2</sup>	42.06%	1,472,100	
					1,575,113 m <sup>2</sup>
Loss of habitat	72m baseplate (up to 8 WTG)	10,923 m <sup>2</sup>	x 8	87,384	
	Tubular Jacket and suction piles (including Met mast)	7,467 m <sup>2</sup>	x 30	224,010	
	OSP	18,265 m <sup>2</sup>	x1	18,265	
	Rock placement (10% worst case) x 7m wide (7m x 35,500m)	248,500 m <sup>2</sup>	42.06%	104,519	
					434,178 m <sup>2</sup>
Sediment suspension increase	Up to 8 GBS 72 m and up to 67 GBS 52m diameter	642,200 m <sup>3</sup>	42.06%	270,109 m <sup>3</sup>	
	GBS up to 3 OSP	53,500 m <sup>3</sup>	x1	53,500 m <sup>3</sup>	
	Array cable (total 355km 3m wide)	2,236,500 m <sup>3</sup>	42.06%	940,671 m <sup>3</sup>	
					1,264,280 m <sup>3</sup>
<b>Operation</b>					
Physical disturbance	Jack-up vessel (121.5 m <sup>2</sup> )	Unknown			
Habitat loss	Scour hole from 75WTG + 3 Met mast conical GBS	353,178 m <sup>2</sup>	42.06%	148,547	
	Scour hole from OSP rectangular GBS	2,886 m <sup>2</sup>	x1	2,886	
					151,433 m <sup>2</sup>
Suspended sediments	Scour hole from 75WTG + 3 Met mast conical GBS	340,296 m <sup>3</sup>	42.06%	143,128	
	Scour hole from OSP rectangular GBS	5,226 m <sup>3</sup>	x1	5,226	
					148,354 m <sup>3</sup>

\*Footprint from 6 legs and number of deployments from installation (6 for each WGT and 8 for each OSP). Information from the Technical Appendix G4  
55.91% section of project Alpha affected by the MPA



**PROJECT BRAVO**

	Infrastructure affecting seabed	Area / volume	Section in MPA (worst case)	Area / Volume	
<b>Construction</b>					
Physical disturbance	72m baseplate (up to 8 WTG)	1,931 m <sup>2</sup>	x 8	14,448	
	Tubular Jacket and suction piles (+3 Met mast)	1,773 m <sup>2</sup>	x18	31,914	
	2 x OSP (2,100 m <sup>2</sup> + 1,400 m <sup>2</sup> )	3,500 m <sup>2</sup>	x1	3,500	
	Jack-up vessel (by WGT: 121.5 x 6)*	729 m <sup>2</sup>	x15	10,935	
	Jack-up vessel (by OSP: 121.5 x 8)*	972 m <sup>2</sup>	x 8	7,776	
	Array cable installation (355km x 10m wide)	3,500,000 m <sup>2</sup>	20.79%	727,650	
					<b>802,523 m<sup>2</sup></b>
Loss of habitat	72m baseplate (up to 8 WTG)	10,923 m <sup>2</sup>	x 8	87,384	
	Tubular Jacket and suction piles (including Met mast)	7,467 m <sup>2</sup>	x15	112,005	
	2 x OSP (13,009 m <sup>2</sup> + 5,555 m <sup>2</sup> )	18,564 m <sup>2</sup>	x1	18,564	
	Rock placement (10% worst case) x 7m wide (7m x 35,500m)	248,500 m <sup>2</sup>	20.79%	51,663	
					<b>269,616 m<sup>2</sup></b>
Sediment suspension increase	Up to 8 GBS 72 m and up to 67 GBS 52m diameter	642,200 m <sup>3</sup>	20.79%	133,513 (using formula-128,440)	
	GBS up to 2 OSP	45,000 m <sup>3</sup>	x1	45,000	
	Array cable (total 355km 3m wide)	2,236,500 m <sup>3</sup>	20.79%	464,968	
					<b>643,481 m<sup>3</sup></b>
<b>Operation</b>					
Physical disturbance	Jack-up vessel (121.5 m <sup>2</sup> )	Unknown			
Habitat loss	Scour hole from 75WTG + 3 Met mast conical GBS	353,178 m <sup>2</sup>	20.79%	73,425	
	Scour hole from OSP rectangular GBS	1,036 m <sup>2</sup>	x1	1,036	
					<b>74,461 m<sup>2</sup></b>
Suspended sediments	Scour hole from 75WTG + 3 Met mast conical GBS	340,296 m <sup>3</sup>	20.79%	70,747	
	Scour hole from OSP rectangular GBS	8,064 m <sup>3</sup>	x1	8,064	
					<b>78,811 m<sup>3</sup></b>

\*Footprint from 6 legs and number of deployments from installation (6 for each WGT and 8 for each OSP). Information from the Technical Appendix G4  
20.79% proportion of the Project Bravo affected by the NC MPA

# EXPORT CABLE (ECR)

	Infrastructure affecting seabed	Area / volume	Section in MPA (worst case)	Area / Volume	
<b>Construction</b>					
Physical disturbance	Total six cables (530,000 m x 15m wide)	7,950,000 m <sup>2</sup>	27.73%	2,204,535	
					2,204,535 m <sup>2</sup>
Loss of habitat	Rock dumping (10% of total long 53,000m x 7m wide)	371,000 m <sup>2</sup>	27.73%	102,878	
					102,878 m <sup>2</sup>
Sediment suspension increase	3 m wide cable trench total long	4,770,000 m <sup>3</sup>	27.73%	1,322,721	
					1,322,721 m <sup>3</sup>

27.73% is the proportion of the export cable route within the MPA boundary.

**Table 2.** Summary table of NC MPA and Project Alpha and Bravo overlapping and benthic impacts estimation (NB. These are maximum figures, associated with the worst case scenario)

	Structure	Area km <sup>2</sup>	Area within MPA km <sup>2</sup>	% of MPA	Total % of MPA	
Overall footprint	Alpha	197.33	83.28	3.91	7.17%	
	Bravo	193.78	40.29	1.89		
	Cable	105.39	29.23	1.37		
Total impacts estimation (project Alpha, Bravo and ECR)						
Impact	Construction m <sup>2</sup>	Sum m <sup>2</sup>	Operation m <sup>2</sup>	Sum m <sup>2</sup>	Total area m <sup>2</sup>	% MPA (total MPA area 2,131.48 km <sup>2</sup> )
Physical disturbance	A: 1,575,113 B: 802,523 C: 2,204,535	4,582,171	-	-	4,582,171 (4.58 km <sup>2</sup> )	0.21%
Loss of habitat	A: 434,178 B: 269,616 C: 102,878	806,672	A: 151,433 B: 74,461	225,894	1,032,566 (1.03 km <sup>2</sup> )	0.05%
Impact	Construction m <sup>3</sup>	Sum m <sup>3</sup>	Operation m <sup>3</sup>	Sum m <sup>3</sup>	Total volume (m <sup>3</sup> )	
Sediment suspension increase	A: 1,264,280 B: 643,481 C: 1,322,721	3,230,482	A: 148,354 B: 78,811	227,165	3,457,647	N/A

A: Project Alpha; B: Project Bravo; C: Cable corridor

Seagreen provided survey information regarding the project area, which included grab samples, video and trawl samples. Following the worst case scenario approach and making the assumption that all the habitat within the NC MPA boundaries would be suitable for ocean quahog, the JNCC advised that the maximum habitat loss for this species would be 0.05%, which the JNCC do not consider likely to hinder the achievement of the conservation objective for this species.

The JNCC advised that the impacts on the ocean quahog aggregations and offshore subtidal sands and gravels protected features of the NC MPA, are not considered to be significant in accordance with the requirements of the 2009 Act.

The JNCC assessment is based on the following and is contingent on further engagement with Marine Scotland and Seagreen as highlighted below in order to

ensure the conservation objectives of this site are achieved:

- the small percentage area of Firth of Forth Banks Complex NC MPA that is directly impacted by the project. It is estimated that 0.21% of the NC MPA benthic area will receive *physical disturbance* and there will be habitat loss amounting to 0.05% of the NC MPA area during construction and operational phases.
- noting that impacts (habitat loss and smothering etc.) will occur from the placement of infrastructure within the NC MPA but acknowledging that Seagreen have suggested proposals to mitigate such impacts. These include site specific surveys to inform final turbine and export cable locations (*Mitigation* pg 11.41 and 11-42 of the ES), minimising the introduction of new materials (e.g. rock dumping, mattresses etc). into the area that alters seabed habitat type (*Mitigation* pg 11-47 of the ES) and the micro-siting of infrastructure, where possible, in relation to sensitive benthic habitats (*Mitigation* pg 11-45 of the ES).

The JNCC welcome these initial proposals to mitigate such impacts and are keen to continue close liaison with Marine Scotland and Seagreen over these mitigation proposals as they develop and Seagreen further refine their Rochdale envelope for this proposal to order to ensure the conservation objectives of the site are achieved.

Although the assessment completed by the JNCC considers the worst case of gravity bases it should be noted that in a letter dated 12<sup>th</sup> June 2013 Marine Scotland informed Seagreen that if gravity bases are to be used this will be subject to a further marine licence application and supporting Environmental Impact Assessment in order to consider the required dredging and disposal of sediment. This approach has been welcomed by the JNCC and will allow further consideration of the impacts on the NC MPA if this option is to be progressed. MS-LOT consider that if foundations are piled then impacts on the qualifying features of the NC MPA will be considerably less than those assessed by the JNCC.

**Having considered the advice provided by the JNCC, MS-LOT consider that there is no significant risk of the SAWEL and SBWEL developments hindering the achievement of the conservation objectives of the Firth of Forth Banks Complex MPA if the conditions in section 8 are complied with.**

## 8. Conditions

**The following conditions will be included in any section 36 granted (and if appropriate the marine licence for the transmission works). The conditions serve to address many potential environmental impacts but will also allow the consideration and implementation of effective mitigation on the qualifying features of the Firth of Forth Banks Complex MPA.**

- The Company must, no later than 6 months prior to the Commencement of the Development submit a Construction Method Statement (“CMS”), in writing, to the Scottish Ministers for their written approval. Such approval may only be granted following consultation by the Scottish Ministers with the JNCC, SNH, SEPA, MCA, NLB, RSPB Scotland, the Planning Authority and any such other advisors or organisations as may be required at the discretion of the Scottish Ministers. The CMS must set out the construction procedures and good working practices for installing the Development. The CMS must also include details of the roles and responsibilities, chain of command and contact details of company personnel, any contractors or sub-contractors involved during the construction of the Development. The CMS must be in accordance with the construction methods assessed in the Application and must include details of how the construction related mitigation steps proposed in the ES and in the SEIS are to be delivered. The Development must, at all times, be constructed in accordance with the approved CMS (as updated and amended from time to time by the Company). Any updates or amendments made to the CMS by the Company must be submitted, in writing, by the Company to the Scottish Ministers for their written approval.

The CMS must, so far as is reasonably practicable, be consistent with the Design Statement (“DS”), the Environmental Management Plan (“EMP”), the Vessel Management Plan (“VMP”), the Navigational Safety Plan (“NSP”), the Piling Strategy (“PS”), the Cable Plan (“CaP”) and the Lighting and Marking Plan (“LMP”).

**Reason: To ensure the appropriate construction management of the Development, taking into account mitigation measures to protect the environment and other users of the marine area.**

- The Company must, no later than 6 months prior to the Commencement of the Development, submit a Development Specification and Layout Plan (“DSLPL”), in writing, to the Scottish Ministers for their written approval. Such approval may only be granted following consultation by the Scottish Ministers with the MCA, NLB, CoS, the JNCC, SNH, SFF, CAA and any such other advisors or organisations as may be required at the discretion of the Scottish Ministers. The Development must, at all times, be constructed in accordance with the approved DSLPL (as updated and amended from time to time by the Company). Any updates or amendments made to the DSLPL by the Company



must be submitted, in writing, by the Company to the Scottish Ministers for their written approval.

The DSLP must include, but not be limited to the following:

- a. A plan showing the proposed location of each individual WTG (subject to any required micro-siting), including information on WTG spacing, WTG identification / numbering, location of the substation platforms, seabed conditions, bathymetry, confirmed foundation type for each WTG and any key constraints recorded on the Site;
- b. A list of latitude and longitude co-ordinates accurate to three decimal places of minutes of arc for each WTG. This should also be provided as a Geographic Information System ("GIS") shape file using WGS84 format;
- c. A table or diagram of each WTG dimensions including - height to blade tip (measured above Lowest Astronomical Tide ("LAT")) to the highest point, height to hub (measured above LAT to the centreline of the generator shaft), rotor diameter and maximum rotation speed;
- d. The generating capacity of each WTG used on the Site (Annex 1, Inset A of Figure 1 in Annex D(a) and , Inset B of Figure 1 in Annex D(b) respectively) and a confirmed generating capacity for the Site overall;
- e. The finishes for each WTG (see condition **Error! Reference source not found.** on WTG lighting and marking in Annex D(a) and D(b)); and
- f. The length and proposed arrangements on the seabed of all inter-array cables.

**Reason:** *To confirm the final Development specification and layout.*

- The Company must, no later than 6 months prior to the Commencement of the Development, submit an Environmental Management Plan ("EMP"), in writing, to the Scottish Ministers for their written approval. Such approval may only be granted following consultation by the Scottish Ministers with the JNCC, SNH, SEPA, RSPB Scotland, WDC, ASFB and any such other advisors or organisations as may be required at the discretion of the Scottish Ministers. The Development must, at all times, be constructed and operated in accordance with the approved EMP (as updated and amended from time to time by the Company). Any updates or amendments made to the EMP by the Company must be submitted, in writing, by the Company to the Scottish Ministers for their written approval.

The EMP must provide the over-arching framework for on-site environmental management during the phases of development as follows:

- a. all construction as required to be undertaken before the Final Commissioning of the Development; and
- b. the operational lifespan of the Development from the Final Commissioning of the Development until the cessation of electricity generation (Environmental management during decommissioning is addressed by the Decommissioning Programme provided for by

condition **Error! Reference source not found.** of Annex D(a) and D(b)).

The EMP must be in accordance with the ES and SEIS as it relates to environmental management measures. The EMP must set out the roles, responsibilities and chain of command for the Company personnel, any contractors or sub-contractors in respect of environmental management for the protection of environmental interests during the construction and operation of the Development. It must address, but not be limited to, the following overarching requirements for environmental management during construction:

- a. Mitigation measures to prevent significant adverse impacts to environmental interests, as identified in the ES and pre-consent and pre-construction surveys, and include the relevant parts of the CMS (refer to condition **Error! Reference source not found.** in Annex D(a) and D(b));
- b. Pollution prevention measures and contingency plans;
- c. Management measures to prevent the introduction of invasive non-native marine species;
- d. Measures to minimise, recycle, reuse and dispose of waste streams; and
- e. The reporting mechanisms that will be used to provide the Scottish Ministers and relevant stakeholders (including, but not limited to, the JNCC, SNH, SEPA, RSPB Scotland, MCA and NLB) with regular updates on construction activity, including any environmental issues that have been encountered and how these have been addressed.

The Company must, no later than 3 months prior to the Final Commissioning of the Development, submit an updated EMP, in writing, to cover the operation and maintenance activities for the Development to the Scottish Ministers for their written approval. Such approval may be given only following consultation with the JNCC, SNH, SEPA, RSPB Scotland and any such other advisors or organisations as may be required at the discretion of the Scottish Ministers. The EMP must be regularly reviewed by the Company and the Forth and Tay Regional Advisory Group ("FTRAG") (referred to in condition 27 of Annex D(a) and D(b)) over the lifespan of the Development, and be kept up to date (in relation to the likes of construction methods and operations of the Development in terms of up to date working practices) by the Company in consultation with the FTRAG.

The EMP must be informed, so far as is reasonably practicable, by the baseline surveys undertaken as part of the Application and the PEMP.

**Reason: To mitigate the impacts on the environmental interests during construction and operation.**

- The Company must, no later than 6 months prior to the Commencement of the Development, submit a Cable Plan ("CaP"), in writing, to the Scottish Ministers for their written approval. Such approval may only be granted

following consultation by the Scottish Ministers with the JNCC, SNH, MCA, SFF and any such other advisors or organisations as may be required at the discretion of the Scottish Ministers. The CaP must be in accordance with the ES. The Development must, at all times, be constructed and operated in accordance with the approved CaP (as updated and amended from time to time by the Company). Any updates or amendments made to the CaP by the Company must be submitted, in writing, by the Company to the Scottish Ministers for their written approval.

The CaP must include the following:

- a. Details of the location and cable laying techniques for the inter array cables;
- b. The results of survey work (including geophysical, geotechnical and benthic surveys) which will help inform cable routing;
- c. Technical specification of inter array cables, including a desk based assessment of attenuation of electro-magnetic field strengths and shielding;
- d. A burial risk assessment to ascertain burial depths and where necessary alternative protection measures;
- e. Methodologies for surveys (e.g. over trawl) of the inter array cables through the operational life of the wind farm where mechanical protection of cables laid on the sea bed is deployed; and
- f. Methodologies for inter array cable inspection with measures to address and report to the Scottish Ministers any exposure of inter array cables.

**Reason:** *To ensure all environmental and navigational issues are considered for the location and construction of the inter array cables.*

- The Company must, no later than 6 months prior to the Commencement of the Development, submit a Project Environmental Monitoring Programme ("PEMP"), in writing, to the Scottish Ministers for their written approval. Such approval may only be granted following consultation by the Scottish Ministers with the JNCC, SNH, RSPB Scotland, WDC, ASFB and any other ecological advisors or organisations as required at the discretion of the Scottish Ministers. The PEMP must be in accordance with the Application as it relates to environmental monitoring.

The PEMP must set out measures by which the Company must monitor the environmental impacts of the Development. Monitoring is required throughout the lifespan of the Development where this is deemed necessary by the Scottish Ministers. Lifespan in this context includes pre-construction, construction, operational and decommissioning phases.

Monitoring must be done in such a way so as to ensure that the data which is collected allows useful and valid comparisons between different phases of the Development. Monitoring may also serve the purpose of verifying key

predictions in the Application. In the event that further potential adverse environmental effects are identified, for which no predictions were made in the Application, the Scottish Ministers may require the Company to undertake additional monitoring.

The Scottish Ministers may agree that monitoring may be reduced or ceased before the end of the lifespan of the Development.

The PEMP must cover, but not be limited to the following matters:

- a. Pre-construction, construction (if considered appropriate by the Scottish Ministers) and post-construction monitoring surveys for:
  1. Birds;
  2. Sandeels;
  3. Marine fish;
  4. Diadromous fish;
  5. Benthic communities; and
  6. Seabed scour and local sediment deposition.
- b. The participation by the Company in surveys to be carried out in relation to marine mammals as set out in the Marine Mammal Monitoring Programme ("MMMP"); and
- c. The participation by the Company in a National Strategic Bird Monitoring Framework ("NSBMF") and surveys to be carried out in relation to regional and / or strategic bird monitoring including but not necessarily limited to:
  1. the avoidance behaviour of breeding seabirds around turbines;
  2. flight height distributions of seabirds at wind farm sites;
  3. displacement of kittiwake, puffin and other auks from wind farm sites; and
  4. effects on survival and productivity at relevant breeding colonies

All initial methodologies for the above monitoring must be approved, in writing, by the Scottish Ministers and, where appropriate, in consultation with the Forth and Tay Regional Advisory Group ("FTRAG") referred to in condition 27 of Annex D(a) and D(b). Any pre-consent surveys carried out by the Company to address any of the above species may be used in part to discharge this



condition subject to the written approval by the Scottish Ministers.

The PEMP is a live document and must be regularly reviewed by the Scottish Ministers, at timescales to be determined by the Scottish Ministers, in consultation with the FTRAG to identify the appropriateness of on-going monitoring. Following such reviews, the Scottish Ministers may, in consultation with the FTRAG, require the Company to amend the PEMP and submit such an amended PEMP, in writing, to the Scottish Ministers, for their written approval. Such approval may only be granted following consultation with FTRAG and any other ecological, or such other advisors as may be required at the discretion of the Scottish Ministers. The PEMP, as amended from time to time, must be fully implemented by the Company at all times.

The Company must submit written reports and associated raw data of such monitoring surveys to the Scottish Ministers at timescales to be determined by the Scottish Ministers in consultation with the FTRAG. Subject to any legal restrictions regarding the treatment of the information, the results are to be made publicly available by the Scottish Ministers, or by such other party appointed at their discretion.

**Reason:** *To ensure that appropriate and effective monitoring of the impacts of the Development is undertaken.*

- Prior to the Commencement of the Development, the Company must at its own expense, and with the approval of the Scottish Ministers in consultation with the JNCC and SNH, appoint an Ecological Clerk of Works (“ECoW”). The ECoW must be appointed in time to review and approve the final draft version of the first plan or programme submitted under this consent to the Scottish Ministers for approval, until the Final Commissioning of the Development.

The responsibilities of the ECoW must include, but not be limited to:

- a. Quality assurance of final draft version of all plans and programmes required under this consent;
- b. Provide advice to the Company on compliance with consent conditions, including the conditions relating to the CMS, the EMP, the PEMP, the PS (if required), the CaP and the VMP;
- c. Monitor compliance with the CMS, the EMP, the PEMP, the PS (if required), the CaP and the VMP;
- d. Provide reports on point c) above to the Scottish Ministers at timescales to be determined by the Scottish Ministers; and
- e. Inducting site personnel on site / works environmental policy and procedures.

**Reason:** *To ensure that appropriate and effective monitoring of the impacts of the Development is undertaken.*

## 9. Conclusion

MS-LOT conclude that there is no significant risk of the proposed Seagreen Alpha and Seagreen Bravo Offshore Wind Farms hindering the achievement of the conservation objectives for the protected features of the Firth of Forth Banks Complex NC MPA if the conditions set out in section 8 are complied with.

<b>Name of Assessor</b>	Joao Queiros
<b>Date</b>	29 <sup>th</sup> September 2014
<b>Name of Approver</b>	Gayle Holland
<b>Date</b>	3 <sup>rd</sup> October 2014