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For the attention of: Gayle
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Firth of Forth Banks Complex Nature Conservation Marine Protected Area and Seagreen Phase 1 – Windfarm project

Policy context

The Firth of Forth Banks Complex Nature Conservation Marine Protected Area (NCMPA) was designated in July 2014. The site's status means that the requirements of the Marine & Coastal Access Act (2009) apply, which is the underpinning legislation for NCMPAs in Scottish offshore waters. Consequently, Marine Scotland is required to consider the effect of the proposal on the protected features of the NCMPA before it can be consented.

This site was designated for the following features:

- Ocean quahog aggregations (*Arctica islandica*[1])
- Offshore subtidal sands and gravels,
- Shelf banks and mounds (including Berwick, Scalp and Montrose banks and mounds and the Wee Bankie)
- Moraines geodiversity feature which overlaps the Wee Bankie

As there is uncertainty as to the condition of the protected features of the NCMPA, in accordance with Marine Scotland policy the protected features have conservation objectives of *conserve in favourable condition*. The Designation Order of the NCMPA provides an overview of the conservation objectives for the protected features, but in summary:

- '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

[1] *Arctica islandica* is included on the OSPAR list of threatened and/or declining species

(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 biological communities
  (c) The processes supporting the feature are maintained

- 'Favourable condition', with respect to the Moraines geodiversity feature means that:
  (a) Its structure and functioning are unimpaired
  (b) Its surface remains sufficiently unobscured

In accordance with Marine Scotland's draft MPA Management Handbook, potential impacts of activities on the protected features of NCMPAs should be assessed through the existing EIA process and in accordance with the Marine & Coastal Access Act (2009).

Summary of Seagreen Phase I proposal

The Seagreen Phase 1 proposal comprises two sites: Alpha and Bravo, which will each contain up to 75 offshore wind turbines (525MW per site) and between them contain up to five offshore substation platforms (OSP), up to three meteorological masts, as well as inter-array cables and a proposed cable route from the indicative OSP in Alpha development area to a landfall site at Carnoustie (105.39 km^2).

We note that the Environmental Statement states (*Chapter 11: benthic ecology and intertidal ecology,* paragraph 11.99) that it was not possible to undertake an assessment of the NCMPA features until the boundaries were finally established. As such, our current advice is based on the information available. However, we expect to be involved in further dialogue with MSLOT and the applicant as the project details are further refined.

Are the activities associated with the proposed operation capable of affecting, other than insignificantly, the protected features of the NCMPA?

The proposed Alpha and Bravo sites, together with the cable routes, lie mostly outside the boundary of the Firth of Forth Banks Complex NCMPA. However, there are areas of overlap: for Alpha this amounts to 83.28km^2 (equivalent to 3.91% of the NCMPA area); for Bravo it amounts to 40.29km^2 (1.89% of the MPA project area); and for the cable route 29.23km^2 (1.37% of the NCMPA area). In total, the combined overlap amounts to 7.17% of the NCMPA. However, the footprints of any environmental impacts are much smaller than the overall project footprint with the NCMPA (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), JNCC conclude that activities associated with the Seagreen windfarm proposal 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 geodiversity 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[2,3]. As such, JNCC concludes that the proposal is capable of affecting the ocean quahog aggregations and offshore subtidal sand and gravels protected features of the Firth of Forth Banks Complex NCMPA.

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 turbines installation, the material dumping area and the area affected by trench cable installation have been included in the impact assessment as well. 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 (see Annex I).

The extent of these impacts within the NCMPA is estimated at 4.58 km^2 from *physical disturbance* and 1.03 km^2 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,* we understand that the benthic impacts of displacing 3,457,647 m^3 of sediment are included in the *physical disturbance* and *habitat loss* estimations.

Table 1. Summary table of NCMPA and Project Alpha and Bravo overlapping and benthic impacts estimation (NB. These are maximum figures, associated with the worst case scenario)

	Structure	**Area km^2**	**Area within MPA km^2**	**% 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^2**	Sum m^2	**Operation m^2**	Sum m^2	**Total area m^2**	**% MPA** (total MPA area 2,131.48 km^2)
Physical disturbance	A: 1,575,113 B: 802,523 C: 2,204,535	4,582,171	-	-	**4,582,171 (4.58 km^2)**	**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^2)**	**0.05%**
Impact	**Construction m^3**	Sum m^3	**Operation m^3**	Sum m^3	**Total volume (m^3)**	
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 includes benthic methodology such as grab samples, video and trawl samples. Following the worst case scenario approach and making the assumption that all the habitat within the NCMPA boundaries would be suitable for *Arctica islandica*, we consider that the maximum habitat

[2] Brooks, A.J., (2013). Assessing the sensitivity of geodiversity features in Scotland's seas to pressures associated with human activities. *Scottish Natural Heritage Commissioned Report No. 590.*
[3] http://jncc.defra.gov.uk/pdf/Firth_of_Forth_Banks_Complex_Management_Options_Paper_v4_0.pdf

loss for this species would be 0.05%, which we do not consider likely to hinder the achievement of the conservation objective for this species.

Overall, JNCC consider that on the basis of the information provided, the proposal is capable of affecting the ocean quahog aggregations and offshore subtidal sands and gravels protected features of the Nature Conservation MPA, but that this is not considered to be significant in accordance with the requirements of the Marine & Coastal Access Act (2009). This 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 NCMPA that is directly impacted by the project. It is estimated that 0.21% of the NCMPA benthic area will receive *physical disturbance* and there will be habitat loss amounting to 0.05% of the NCMPA area during construction and operational phases.

- noting that impacts (habitat loss and smothering etc) will occur from the placement of infrastructure within the NCMPA 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, 11-42), minimising the introduction of new materials (e.g. rock dumping, mattresses etc. *Mitigation* pg 11-47) into the area that alters seabed habitat type and the micro-siting of infrastructure, where possible, in relation to sensitive benthic habitats (*Mitigation* pg 11-45).

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.

- Marine Scotland have confirmed that the use of gravity bases at both the Alpha and Bravo development areas will be subject to a further marine licence and supporting EIA in order to consider the required dredging and disposal of sediment (letter dated 12th June 2013). We welcome and support this approach.

- in our previous advice to Marine Scotland (7th March 2014), in Appendix F we recommended Natural Heritage matters that could be addressed by conditions and included a recommendation for any appointed Expert Panel to consider the '*evaluation of impacts to MPA features (if the MPA is taken forward) and post-construction monitoring of benthic impacts (within the wind farm site and along the export cable route) to include consideration of damage, recovery, colonisation and management for the prevention of invasive non-native species*.' As such, we welcome continuing liaison with Marine Scotland and Seagreen in order to inform any monitoring that may be required in this regard now that the MPA has been designated.

Please contact me with any questions regarding the above comments.

Yours sincerely,

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Annex I. benthic impact estimation on NC MPA

There is minimal difference between 'grid' and 'in line' locations of the WTG regarding their impact on NC MPA features, and therefore we have undertaken the assessment considering the worst case, which would be 'grid' location (Alpha 30 WTG and Bravo 15; if we would consider 'in line', Alpha 29 and Bravo 14).

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 NCMPA overlaps 27.73% of the export cable route, resulting in approximately 0.1 km^2 of habitat loss within the NCMPA boundaries.

PROJECT ALPHA (in grid)

	Infrastructure affecting seabed	**Area / volume**	**Section in MPA (worst case)**	**Area / Volume**	
Construction					
Physical disturbance	72m baseplate (up to 8 WTG)	1,931 m^2	x 8	14,448	
	30 Tubular Jacket and suction piles (+ 3 Met mast)	1,773 m^2	x 33	58,505	
	OSP (2x1400 m^2 + 2,474 m2)	5,274 m^2	x1	5,274	
	Jack-up vessel (by WGT: 121.5 x 6)*	729 m^2	x 30	21,870	
	Jack-up vessel (by OSP: 121.5 x 8)*	972 m^2	x 3	2,916	
	Array cable installation (355km x 10m wide)	3,500,000 m^2	42.06%	1,472,100	
					1,575,113 m^2
Loss of habitat	72m baseplate (up to 8 WTG)	10,923 m^2	x 8	87,384	
	Tubular Jacket and suction piles (including Met mast)	7,467 m^2	x 30	224,010	
	OSP	18,265 m^2	x1	18,265	
	Rock placement (10% worst case) x 7m wide (7m x 35,500m)	248,500 m^2	42.06%	104,519	
					434,178 m^2
Sediment suspension increase	Up to 8 GBS 72 m and up to 67 GBS 52m diameter	642,200 m^3	42.06%	270,109 m^3	
	GBS up to 3 OSP	53,500 m^3	x1	53,500 m^3	
	Array cable (total 355km 3m wide)	2,236,500 m^3	42.06%	940,671 m^3	
					1,264,280 m^3
Operation					
Physical disturbance	Jack-up vessel (121.5 m^2)	Unknown			
Habitat loss	Scour hole from 75WTG + 3 Met mast conical GBS	353,178 m^2	42.06%	148,547	
	Scour hole from OSP rectangular GBS	2,886 m^2	x1	2,886	
					151,433 m^2

Suspended sediments	Scour hole from 75WTG + 3 Met mast conical GBS	340,296 m^3	42.06%	143,128	
	Scour hole from OSP rectangular GBS	5,226 m^3	x1	5,226	
					148,354 m^3

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

Suspended sediments	Scour hole from 75WTG + 3 Met mast conical GBS	340,296 m^3	20.79%	70,747	
	Scour hole from OSP rectangular GBS	8,064 m^3	x1	8,064	
					78,811 m^3

*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

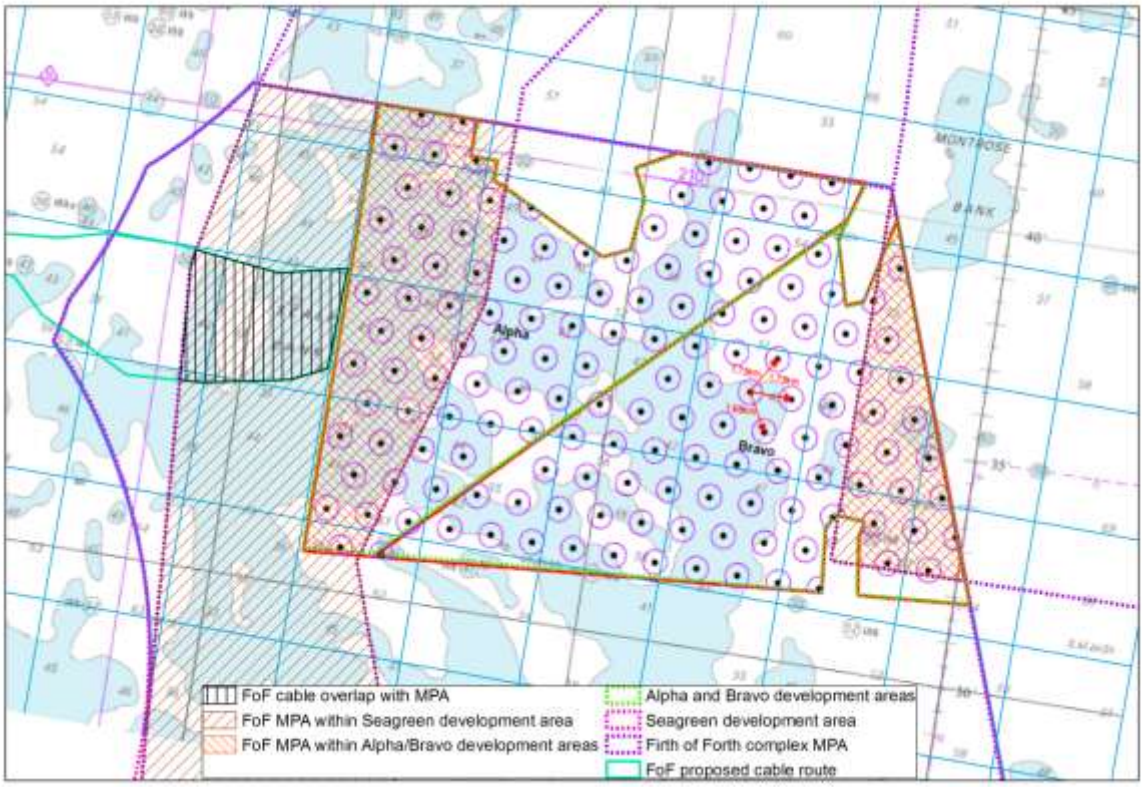
EXPORT CABLE (ECR)

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

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

Annex II. Maps overlapping Seagreen and NC MPA

Potential WGT location on ‘grid’ layout



Potential WGT location ‘in line’ layout