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PROFORMA FOR RECORDING MARINE SCOTLAND'S CONSIDERATION OF A PROPOSAL AFFECTING A POTENTIAL/DESIGNATED SAC OR SPA

SITE DETAILS: Oyster 2b & Oyster 2c, Billia Croo, Orkney FILE REF: FKB/Z237

1a. Name of Natura site affected & current status

1. Hoy Special Protection Area	2. Marwick Head Special Protection Area	3. Sule Skerry and Sule Stack Special Protection Area

1b. Name of component SSSI if relevant

1. Hoy SSSI	2. Marwick Head SSSI	3. Sule Skerry SSSI

1c. European qualifying interests & whether priority/non-priority:

1. Hoy Special Protection Area European Importance (all non-priority)	2. Marwick head Special Protection Area European Importance (all non-priority)	3. Sule Skerry and Sule Stack Special Protection Area European Importance (all non-priority)
Red throated divers Peregrine Great Skua Fulmar Greater black-backed gull Guillemot Kittiwake Puffin Arctic Skua Seabird assemblage	Guillemot Kittiwake Seabird Assemblage	Guillemot Gannet Storm Petrel Shag Puffin Leach's Petrel Seabird Assemblage

1d. Conservation objectives for qualifying interests:

	To avoid deterioration of the habitats of the qualifying species (detailed in section 1c) or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and To ensure for the qualifying species that the following are maintained in the long term:
	• Population of the species as a viable component of the site
	• Distribution of the species within site
	• Distribution and extent of habitats supporting the species
	• Structure, function and supporting processes of habitats supporting the species
	• No significant disturbance of the species

PROPOSAL DETAILS

2a. Proposal title & name of consultee (i.e. applicant or competent authority)

Deployment of the Oyster 2b & c Wave Energy Converter (each 800kW) devices at the EMEC test facility, Billia Croo, Orkney

2b. Date of Consultation: SNH response to the Section 36 consultation including Habitats Regulations Appraisal (HRA) and Species of inclusion in the Appropriate Assessment received 24th of August 2011

2c. Type of Case: Appropriate Assessment (AA) of the proposed deployment of Wave Energy Converter devices at the EMEC test facility, EMEC test facility, Billia Croo, Orkney.

2d. Details of proposed operation (inc. location, timing, methods):

The complete Oyster 2 Array is a project at the EMEC test facility, Billia Croo, Orkney. It comprises 3 Oyster wave energy converters (Oyster 2a, Oyster 2b and Oyster 2c) each rated at 800kW with a combined project rating of 2.4MW. Oyster 2a is already in place and this second phase of the project is to complete the array with Oyster 2b and Oyster 2c. Oyster 2b and Oyster 2c will have a number of components including flap, baseframe, hydraulic modules and a foundation monopile (pre-installed in 2011).In addition rock anchors will be installed around the device to assist with lowering each Oyster flap onto its foundation monopile, and for maintenance operations. Latching anchors will also be installed. Interconnecting pipelines will be installed between the Oyster 2b and 2c devices and between the Oyster 2b and existing Oyster 2a device.

Installation of Oyster 2b is planned to commence in summer 2012, with Oyster 2c installation commencing in 2013. If it is possible then Oyster 2b and 2c will both be installed in 2012. Each installation will commence in May and utilise a mixture of tugs, multi-cat vessels and dive boats. The devices will be towed out to the site from a suitable port facility in Orkney, positioned over the monopile foundations, lowered over the pile and secured using grout.

Oyster 2b and Oyster 2c are expected to be operational within 5 months of commencing installation. The electricity produced will be exported to the grid via EMEC's substation.

ASSESSMENT IN RELATION TO REGULATION 20 or 48

3a. Is the operation directly connected with or necessary to conservation management of the site? ~~YES~~/NO *If YES give details:*

The operation is not connected with or necessary to conservation management of the site.

If yes *and it can be demonstrated that the tests in 3b have been applied to all the interest features in a fully assessed and agreed management plan then consent can be issued but rationale must be provided, including reference to management objectives.* ***If no,*** *or if site has several European qualifying interests and operation is not directly connected with or necessary to the management of* ***all*** *of these then proceed to 3b*

3b. Is the operation likely to have a significant effect on the qualifying interest? Repeat for each interest on the site.

During the consultation phase of the Marine Licence licensing process, SNH concluded that the proposed deployment of the wave energy device is likely to have a significant effect on several of the qualifying interests of the Sule Skerry and Sule Stack, Hoy and Marwick Head

SPA's. No LSE was concluded for Peregrine Falcon (Hoy SPA) due to the lack of connectivity between the species and development locale and only the gannet from Sule Skerry and Sule Stack were considered at risk. SNH identified that the gannet was at risk form collision with the flap if it was in the locked down position and submerged. The primary concern for the remaining qualifying interests detailed in section 1c was disturbance due to operation of the device.

i)indicate which feature of interest could be affected by the proposed operation and briefly in what way; if none proceed to v), otherwise continue:
ii) refer to other plans/projects with similar effects/other relevant evidence;
iii) consider scale, longevity, reversibility of effects;
iv) consider whether proposal contributes to cumulative or incremental impacts with other projects completed, underway or proposed;
v) give Yes/No conclusion for each interest.

YES

***If no** for **all** features, a consent or non-objection response can be given and recorded under 4 (although if there are other features of national interest only, the effect on these should be considered separately). **If** potential significant effects can easily be avoided, record modifications required under 3d.*
***If yes**, or in cases of doubt, proceed to 3c.*

3c. Appropriate Assessment of the implications for the site in view of the site's conservation objectives.

i) Describe for each European qualifying interest the potential impacts of the proposed operation detailing which aspects of the proposal could impact upon them.
ii) Evaluate the significance of the potential impacts, e.g. whether short/long term, reversible or irreversible, and in relation to the proportion/importance of the interest affected, and the overall effect on the site's conservation objectives. Record if additional survey information or specialist advice has been obtained.

Due to the proximity of the Hoy, Marwick Head and Sule Skerry and Sule Stack SPA's to the location of the proposed wave energy device, the site conservation objectives require to be assessed in light of potential impacts arising from the deployment and operation of the Oyster 2a, 2b and 2c wave energy converters on each of the qualifying interests identified in 1c, except for Peregrine Falcon and only for the Gannet at Sule Skerry and Sule Stack SPA.

The installation of the Oyster 2b and Oyster 2c will require seabed preparation – kelp clearance, infilling of gullies and gaps with rock and the installation of rock anchors and latching anchors. The pipeline will be installed on the seabed between the device and the directionally drilled pipeline to the onshore hydro-electric plant. The works associated with this project are temporary, but the offshore structures have a design life of 20 years. Birds are present throughout the year at Billia Croo with the spring and summer breeding months considered to be the most sensitive period as this is the time when the greatest concentration of birds will be present. The construction period for the Oyster 2b and Oyster 2c devices is due to commence in May 2012 and May 2013 respectively.

Installation & Decommissioning
EMEC wildlife monitoring at the Billia Croo test site is helping to establish the use of the area by bird species. APL have carried out their own monitoring of the inner bay area with is not covered from the EMEC vantage point. The assessment reviews all bird data

gathered at the APL Billia Croo site and analyses the bird numbers that were present from the months of May – July 2009. Data on the number of observations per month and the total number of observations per day were combined to provide estimates of the average number of birds using the area covered by the Billia Croo monitoring site during the breeding season (May – July inclusive).

The average number of each species present on the site could be calculated using the number of occurrences of individuals of each species derived from the EMEC monitoring data divided by the actual number of observational periods conducted during the sensitive period.

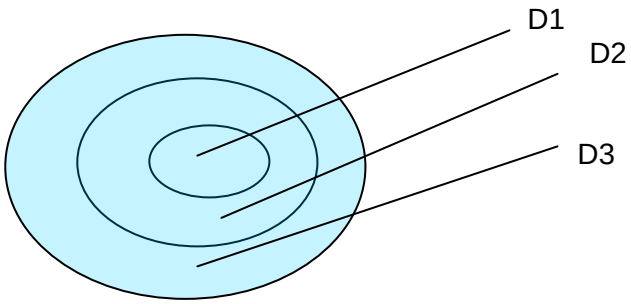
Aquamarine Power Bird Counts

Species	Mean Number of Birds Present over 3 months for Southern Area (May-July)	Number of Scans	Total count on site during May to July (Mean number seen x No.Scans)	Maximum number of birds recorded in any one scan (May-July)
Arctic skua	0.24	106	25	3
Kittiwake	0.05	106	5	1
Puffin	0.51	106	54	4
Red-throated diver	0	106	0	0
Fulmar	49.99	106	5299	241
Great skua	1.21	106	128	14
Great black-backed gull	3.02	106	320	18
Guillemot	2.43	106	258	17
Shag	11.67	106	1237	33
Gannet	4.12	106	1237	36

The monitoring carried out at EMEC was done in accordance with the Land-based Visual Observations data collection protocol: Billia Croo site (Ref: MMM.0908.EME_001). As the inner bay is not fully covered by this monitoring APL undertook their own targeted monitoring to establish baseline conditions. For this assessment MS-LOT have used only APL's data and not the whole data set from EMEC. The stationary character of the Oyster 2b and Oyster 2c, bar its rocking motion, and its permanent visibility on the surface act to render the risk of harmful collision much less than the possible consequences of displacement of the species from areas used for feeding or other activities related to breeding. The exception to this is gannets which may be at risk of collision in poor weather when the devices may be less visible because of their plunge-diving behaviour. Therefore, assessment is concentrated on the likely scale of displacement of the species concerned. As no direct observational data on displacement have been provided, a range of 3 sizes of displacement zones surrounding the device have been considered. These range from a rather small size (10 m radius) to and extremely large, conservative size (1000 m). As the 3 device are so close together the displacement zones have for this AA be converted to ellipses. For the 10m displacement this will be 10 m displaced around the 150m axis the 3 devices make.

Radius of Displacement

D1 = 10m
D2 = 100m
D3 = 1000m



The areas covered by each of the assessed displacement zones (D1-D3) can be calculated as:

D1 = $\pi * R_1 * R_2$ = 3.14*85*10 = 2670m^2
D2 = $\pi * R_1 * R_2$ = 3.14*185*100 = 58119m^2
D3 = $\pi * R_1 * R_2$ = 3.14*1075*1000 = 3377212m^2

The entire area of the APL Billia Croo EMEC survey area is 3km^2 i.e 3x10^6 m^2

The average number of birds present in the displacement zones can therefore be calculated by:

(Displacement Zone/Total area) * (Average number of birds present in the survey area)

e.g. D1 = 2670 / 3x10^6

Average number of birds in displacement zone D1 = 8.9x10^{-4} * (Average number of birds present in the survey area)

Average number of birds in displacement zone D2 = 1.93x10^{-2} * (Average number of birds present in the survey area)

Average number of birds in displacement zone D3 = 1.125 * (Average number of birds present in the survey area)

The numbers of relevant seabirds using the Sule Skerry and Sule Stack, Hoy and Marwick Head designated areas were obtained from the SNHi website. The estimated numbers of displaced birds could then be expressed as a percentage of the total number of breeding birds.

Numbers of birds present

Site	Species	Counts (individuals)
Hoy	Great Skua	3800
	Red Throated Diver	116
	Fulmar	70000
	Guillemot	26800
	Puffin	7000
	Greater Black-Backed Gull	1140
	Kittiwake	6000
	Arctic Skua	118
Marwick Head	Guillemot	37700
	Kittiwake	15400
Sule Skerry and Sule Stack	Guillemot	12596
	Gannet	11800
	Storm Petrel	1000-10000
	Shag	1748
	Puffin	93800
	Leach's Petrel	10

Number of birds displaced

Species	Great Skua	Fulmar	Guillemot	Puffin	Greater Black-Back Gull	Kittiwake	Shag	Gannet
Displacemaet Zone								
D1 = 10m	0.00	0.04	0.00	0.00	0.00	0.00	0.01	0.00
D2 = 100m	0.02	0.97	0.05	0.01	0.06	0.00	0.23	0.08
D3 = 1000m	1.36	56.25	2.73	0.57	3.40	0.06	13.13	4.64

As can be seen from the table above displacement zones of 10m and 100m around the 150m plane of the devices clearly result in insignificant numbers of birds displaced and will not be considered further. Displacement distances of 1000m (D3) around the 150m plane of the devices will be examined further in the next table.

Number of birds potentially displaced (1000m displacement zone) expressed as a percentage of the birds using the Sule Skerry and Sule Stack, Hoy and Marwick Head SPA's

Species	Great Skua	Fulmar	Guillemot	Puffin	Greater Black-Back Gull	Kittiwake	Shag	Gannet
Hoy	3800	70000	26800	700	1140	6000		
Marwick Head			37700			15400		
Sule Skerry and Sule Stack			12596	93800			1748	11800
% Displacement								
Hoy	0.04	0.08	0.01	0.08	0.30	0.00		
Marwick Head			0.01			0.00		
Sule Skerry and Sule Stack			0.02	0.00			0.75	0.04

At a displacement zone of 1000m radius around the 150m plane of the devices no birds were displaced at significant levels. Based on the number of birds displaced as a percentage of the Sule Skerry and Sule Stack, Hoy and Marwick Head SPA's. MS-LOT conclude that the installation and operation of the device will have no significant effect on the integrity of any of the above SPA's.

To consider the collision risk for Gannets from the Sule Skerry and Sule Stack during operation MS-LOT considered the worst case of all Gannets in the 3km^2 survey area being killed. This would result in a 0.04% reduction in the Sule Skerry and Sule Stack SPA population a year. This is an extremely conservative figure given the total area of 3 locked down Oyster devices would be 1170 m^2.

iii) In the light of the assessment, ascertain whether the proposal will not adversely affect the integrity of the site for the European interests. If SAC and/or SPA and/or Ramsar site, give separate conclusions. If conditions required, proceed to 3d.

The proposed deployment of the Wave Energy Converter at Billa Croo will not adversely affect the integrity of the Sule Skerry and Sule Stack, Hoy and Marwick Head SPA's

3d. Conditions required.

Indicate conditions/modifications required to ensure adverse effects are avoided, & reasons for these.

Condition: e.g.:	*Reason:*
The licensee will ensure that they comply with the environmental monitoring plan which will be supplied by APL. Prior to installation the monitoring plan must be signed off and held by Marine Scotland.	To ensure that any mitigation and monitoring agreed by the regulator to minimise any associated impact on marine wildlife is undertaken.
The licensee will produce a monitoring report, within 8 weeks of all supplementary monitoring being completed at the EMEC site, reviewing all of the data collected through the monitoring plan to determine any associated impacts. This report will be submitted to the licensing authority (Marine Scotland).	To ensure that the monitoring is fit for purpose.
The licensee shall ensure that all mitigation measures outlined within the Environmental Statement (Ref – OY02-DES-RH-XOD-MS-0001) and any subsequently agreed to through this or other responses for avoiding, mitigating or monitoring wildlife impacts must be adhered to in full.	To minimise the impact on the environment.
The licensee will ensure that a Marine Mammal Observer (MMO) is in place on the installation vessel during all noisy installation operations likely to cause disturbance.	This allows the MMO to have full communication with the vessel operator prior, during and following noisy operations.
The licensee must ensure that the Jack-up barge operator follows the 'soft-start' protocol to ensure that any basking sharks within the vicinity of the noisy works have sufficient time to move out with the 500m buffer zone.	To ensure that any basking sharks within the vicinity of the noisy works have sufficient time to move out with the 500m buffer zone.
The licensee will submit a Construction Method Statement 3 months prior to installation of the Oyster Flaps and associated latching anchors.	To ensure that the installation procedure is adequately monitored.
In addition to the EMP, APL will be required to undertake targeted observations of disturbance of Marine Mammals and birds during installation and operation of devices. Displacement transects and methodologies will be defined by SNH and MSS and then signed off by Marine Scotland prior to installation.	To address some of the parameters used in this assessment, particularly to obtain direct observational data of the radius of displacement arising from aspects of the installation of the device and latching anchors, and during the operation of the device.