

Annex 1

This Annex summarises the minimum physical and biological (excluding birds) monitoring requirements that must be undertaken to comply with the conditions of this Marine Licence. Survey specifications are to be agreed by the Licensing Authority, in consultation with Cefas, NE and EH prior to the commencement of any survey works in accordance with the supplementary conditions of this Licence or by the date specified in the schedule required under condition 5.2.1.

The reports must include data, interpretation, assessment, conclusions and an executive summary. All data must be submitted with the reports (processed and unprocessed).

All monitoring surveys must be based on a clear and reported rationale and a robust hypotheses must be established for each survey. The interpretation and reporting of the monitoring required in this Annex must be undertaken so as to ensure that all inter-relationships are appropriately addressed.

The purpose of the monitoring required under this Licence is to test the predictions made in the Dudgeon OWF Environmental Statement dated June 2009, and subsequent additional information provided during the consultation period.

1.Seabed Morphology and Scour

(Licence conditions 5.2.11 and 5.2.39)

The pre construction programme must include a high resolution 100% swath-bathymetric surveys of the inter-array and cable export route to provide a baseline upon which to assess the extent of any changes to bedform morphology. This is in addition to site specific wave height modelling and scour monitoring.

The post construction monitoring programme must include geophysical surveys (100% swath bathymetric, side scan at 6 monthly intervals for a minimum of three years) and scour monitoring (geomorphology changes, scour beds, scour tails).

2.Benthic Organisms

(Licence conditions 5.2.11 and 5.2.22).

The pre-construction monitoring programme must include benthic ecology surveys, which must also include a survey for Annex 1 habitats for potential micro-siting as described in condition 5.2.21.

The post construction monitoring programme should include a benthic ecology survey to be undertaken on years 1, 5 and 10 post construction. All surveys must be

designed using the guidance provided in Ware, S.J & Kenny, A.J 2011 (Guidelines for the Conduct of Benthic Studies at Marine Aggregate Extraction Sites (2nd edition). Marine Aggregate Levy Sustainability Fund 80pp).

3.This Section has been removed

4.Noise and Vibration.

(Licence condition 5.2.38)

The post construction monitoring programme must include sub-sea operation noise assessment conducted once, to confirm levels are as predicted in the Environmental Statement.

5.Marine Mammals

(Licence condition 5.2.16)

As a number of cetaceans and pinnipeds are found within the general area of the wind farm site, there is a requirement to conduct monitoring pre and during construction.

The Licence Holder must produce a proposal for pre and during monitoring to observe seal behaviour (potentially through the use of tagged mammals) during the installation of the turbines. This must be submitted to the Licensing Authority in consultation with NE at least 4 months prior to the commencement of offshore construction.

The need for additional post construction monitoring will be determined in consultation with NE and the Licensing Authority.

6.Decommissioning

A further survey is required prior to decommissioning in order to inform the decommissioning process. This should be undertaken in line with the Department for Energy and Climate Change (DECC) Decommissioning Scheme and any statutory decommissioning scheme for the wind farm required under the Energy Act 2004.

7.Archaeology

(Condition 5.2.17 refers)

The monitoring strategy to be adopted must follow guidance provided in Historic Environment Guidance for the Offshore Renewable Energy Sector (2007) and specifically within the Written Scheme of Investigation the following are to be included;

- A report on the results of watching briefs commissioned at the time of construction and submitted to the Licensing Authority, EH and Norfolk County Council within **six months** of completion of construction.
- A three year reporting cycle to monitor effectiveness of seabed construction exclusion zones with reports submitted to the Licensing Authority and EH within **six months** of completion of construction.

*****This is the end of the Annex*****

Annex 2

Ornithological Monitoring

Monitoring will comprise a Before and After Control Impact design (BACI) and will be undertaken at the survey areas consisting of the wind farm site, and a 1km and 2- 4km buffer zone surrounding the wind farm and selected reference site.

The ornithological monitoring programme (OMP) will include a one year pre construction period and continue through the construction phase. This monitoring period will serve the dual purpose of identifying any possible changes in the ornithological value of the area since the Environmental Statement surveys, and provide an immediate baseline for comparison with data collected during the construction phase. There is also a requirement to conduct post construction monitoring to provide a minimum of three years data from the operating phase.

The OMP must detail proposals for linking results of ornithological monitoring, with monitoring of their prey.

Ornithological monitoring reports will be provided to the Licensing Authority on a quarterly basis as a draft report update and as a final annual report. This may be more frequent where the results of the data trigger further, more intensive monitoring work. Monitoring of the agreed reference site will also continue parallel to the wind farm site and the 1km and 2-4km buffer zones surrounding the wind farm.

The detailed specification for the co-ordinated monitoring programme (which may include both aerial and boat based surveys, and any other appropriate monitoring technique), will be subject to separate written agreement with the Licensing Authority following consultation with NE and RSPB **four months** prior to the start of construction. This data must be comparative with baseline data provided with the Environmental Statement.

The ornithological monitoring programme may have to be adapted and amended as new technologies and research findings become available, as determined by the Licensing Authority and NE.

The need for additional ornithological monitoring over the life time of the project will be determined in consultation with NE and reviewed at agreed periods. This will have regard to the magnitude of any change in bird populations observed during the initial three years operational monitoring period.

Monitoring will need to fulfil the following objectives;

- 1) Determine whether there is any change in distribution of Sandwich tern, use and passage, measured by species abundance and behaviour, of the wind farm site, 1km and 2- 4km buffer zones and the reference site.

2) Validate the collision risk modelling used to identify avoidance rates of Sandwich terns at Dudgeon OWF. Specific methodologies, timings and spatial coverage of the surveys are to be determined in consultation with NE and RSPB.

*****This is the end of the Annex*****