

APPENDIX 6

This document provides environmental information in support of the Section 36 variation application for the Sheringham Shoal Offshore Wind Farm. The variation concerns the following two parameters:

- The installed capacity of the project (316.8MW from 315MW); and
- The red line boundary of the project (in order to accommodate three very small stretches of inter-array cables that have been installed within 36m of the existing red line).

At the pre-application stage, the Department of Energy and Climate Change (DECC) was consulted on the scope of the environmental information that would be required to support the Section 36 variation application. Through this consultation DECC confirmed that no environmental information was required, in addition to what is presented in this document.

Installed capacity of the project

The Sheringham Shoal project is an 88 x 3.6MW offshore wind farm project with an installed capacity of 316.8MW. This very slightly exceeds the capacity of 315MW as described in the s36 consent (Section 2). During the delivery of the project this difference between the consented capacity and the proposed generating capacity was not identified as a compliance related concern. Recent advice from DECC has confirmed the need to vary the S36 consent in order to formalise acceptance of the operational project.

The 88 x 3.6MW layout is included as a possible layout option in the Project Description section of the Environmental Statement (ES) (Scira Offshore Energy Ltd. 2006) and is within the Rochdale Envelope parameters which were the subject of the Environmental Impact Assessment (EIA)¹.

Furthermore the Habitats Regulations Assessment (HRA) conducted in relation to the Dudgeon Offshore Wind Farm project which considers the cumulative impacts of offshore wind farm projects in The Wash concludes no likely significant effect (LSE) for harbour seal and sandwich tern from Dudgeon Offshore Wind Farm (DOW 2013), either alone, or in combination with Sheringham Shoal, Triton Knoll, and Race Bank, as described by DECC (2012). This conclusion was based on an assumed maximum generating capacity of Sheringham Shoal of 317MW.

Based on the conclusion that the slight variation to the capacity of the project does not change the outcome of the EIA and as all other project parameters remain within the Rochdale Envelope, and nor would it change the outcome of the recent HRA, the operational project is not materially different to that which has been consented and the variation should be permitted without the need to consider any further environmental information.

¹ It is not clear why the capacity in the consent is stated at 315MW as the Project Description also includes an option to install a 108 x 3MW turbines layout (equating to a capacity of 324MW) which tends to be the one considered as the worst case for assessment in the EIA.

Inter-array cables

A review of the physical parameters of the project identified three small sections of inter-array cable that have been installed marginally outside of the red line boundary of the project (see figures included as a part of this variation application). A fourth section is located within the export cable corridor on the southern perimeter of the wind farm site. This is a consequence of a combination of physical and environmental challenges associated with the installation of the cables including manoeuvrability of the installation vessel in challenging weather and ocean conditions and the bending radius of the cable.

The total length of cable installed outside of the red line boundary is 612m (excluding the section within the export cable corridor). The maximum distance that any one of the cables has been installed from the red line boundary is 36m. The details of each section are provided in **Table 1**.

Table 1: Summary of inter-array cable sections installed outside of the red line boundary

Section ID	Length of section outside of the red line boundary (m)	Maximum distance installed from the red line boundary (m)
A4 – A5	19.1	1.3
A8 – B8	184.0	34.0
B8 – C8	408.7	36.3
D8 – E8 (export cable corridor)	399.2	32.1
Total (excluding section within export cable corridor)	611.8	-

In order to assess whether the installation of these small sections of inter-array cable outside of the red line boundary of the project has any implications for the existing environmental assessment as presented in the ES (and where relevant any assessment provided under the Habitats Regulations), an environmental ‘screening’ exercise has been undertaken of the receptors and impacts relevant to cable installation and operation (**Table 2**). This considers the potential for any change to the existing assessment on account of the cable installation and operation and also takes into account any work (e.g. post-construction surveys) that may have been undertaken since the EIA stage in the course of discharging the consent conditions.

The following receptors are screened out from any further consideration on account of the absence of any effect from the installation or operation of the inter-array cables:

- Seascape and landscape; and
- Civil and military aviation.

Where this is not the case, or where there is a degree of uncertainty, further information is provided in **Table 2**.

Table 2: Screening of potential changes to the existing environmental assessment on account of the installed position of the inter-array cables

Receptor	Potential impact/s relevant to inter-array cable installation	Summary of existing assessment (ES section number)	Potential change to existing assessment	Rationale
Shipping and navigation	Cable interaction & related safety issues	Limited activity in this area with potential to snag on the buried cable. Impact described as negligible (ES section 14.5.5).	No change	Three sections, totalling a length of 612m of inter-array cable have been installed beyond the footprint of the consented red line boundary. The greatest distance from this boundary is 36m. The inter-array cables were installed and buried using a combination of jet trenching spreads. Post-installation survey and cable burial assessment indicate that cables are buried to a depth of between 0.5m and 1m.
Commercial fisheries	Cable interaction & related safety issues	As above	No change	As above. Principal commercial fishing activity within the area of the array is potting, which is considered to be of low risk of interaction with a buried cable.
	Effects on fishing area and steaming times	During operation, assuming access is permitted for the static gear vessels concerned, impacts on fishing area and steaming times are assessed as negligible (ES sections 12.4.1 – 12.4.3).	No change	The increase in the area of the red line boundary necessary to accommodate the inter-array cables would be approximately 0.17km ² , which represents a 0.49% increase in the overall area. An increase of this size is considered to represent a negligible impact on fishing area and (during construction) steaming times to fishing grounds. Scira has imposed no restrictions on fishing access during routine operation and, as noted above, the principal commercial fishing activity within the area of the array is potting, which will not be affected by the buried inter-array cables.
Archaeology and cultural heritage	Potential disturbance to known and unknown wrecks	Possible significant adverse effects on archaeological sites and materials. However, a number of	No change	The areas where the inter-array cables have been installed outside of the original red line boundary have been captured in the surveys undertaken to

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Receptor	Potential impact/s relevant to inter-array cable installation	Summary of existing assessment (ES section number)	Potential change to existing assessment	Rationale
		recommendations regarding mitigation and monitoring are made, including measures to further clarify the potential for as yet unknown sites and provision for dealing with archaeological material discovered in the course of construction, such that the residual effect of the scheme will be negligible (ES section 15.6.6).		<p>inform the ES, as well as the pre and post-construction surveys.</p> <p>The areas where the cables have been installed outside of the original red line boundary are not in the vicinity of any of the known wrecks or associated Construction Exclusion Areas as identified in the ES.</p> <p>The mitigation put forward in the ES has been implemented in line with the consent conditions (including the use of construction exclusion areas; and the implementation of a Written Scheme of Investigation (WSI) and Finds Reporting Protocol for the construction phase of the scheme).</p> <p>The Written Scheme of Investigation was prepared and agreed with the Licensing Authority, English Heritage and Norfolk County Council.</p>
	Potential disturbance to prehistoric deposits, land-surfaces and artefacts	Negligible (ES section 15.6.3).	No change	As above
Marine ecology (benthic)	Direct impact through installation of inter-turbine cables	No species of conservation significance are present within the footprint of the construction activities, and the assemblage is considered to be well adapted to living in a dynamic and periodically disturbed environment. As such, the overall impact on the benthic community,	No change	<p>The areas where the cables have been installed outside of the original red line boundary have been captured in the surveys undertaken to inform the ES, as well as the pre and post-construction surveys (details below).</p> <p>With respect to potential Annex I habitat (specifically <i>Sabellaria spinulosa</i> reefs):</p> <ol style="list-style-type: none"> In the surveys undertaken to inform the ES, S.

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Receptor	Potential impact/s relevant to inter-array cable installation	Summary of existing assessment (ES section number)	Potential change to existing assessment	Rationale
		through the installation of inter-turbine cables, both within the wind farm and in the context of the wider study area, is considered to be of negligible significance (ES section 9.4.1.3).		<p><i>spinulosa</i> was present in the form of crusts or clumps. These features were found to be patchy within the substrate and did not form a continuous coherent feature that constitutes a biogenic reef (EMU 2006).</p> <p>2. No <i>S. spinulosa</i> reef has been reported from either the pre-construction or post-construction surveys (EMU 2010, EMU 2011) i.e. no <i>S. spinulosa</i> reef had built up since the original surveys undertaken in 2008.</p>
	Sediment disturbance and deposition from construction activities	The benthic community is tolerant to such disturbance and increases in turbidity. The potential impact is considered to be of short term duration and negligible significance (ES section 9.4.2).	No change	See comments above
Fish ecology	Temporary habitat loss and disturbance during construction, including impact on the north Norfolk crab fishery	<p>Given the small area of maximum disturbance and the relatively quick rate of recovery, the significance of temporary habitat loss due to cable installation for natural fisheries resources is considered negligible (ES section 10.4.3.1).</p> <p>Negligible impact on the north Norfolk crab fishery anticipated from suspended sediment dispersion and deposition (ES section 10.4.5.1).</p>	No change	The installation of a total of 612m of inter-array cables beyond the original red line boundary does not increase the overall maximum area of temporary habitat loss and/or disturbance beyond that assessed in the ES.

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Receptor	Potential impact/s relevant to inter-array cable installation	Summary of existing assessment (ES section number)	Potential change to existing assessment	Rationale
Ornithology	Direct effect: disturbance on the site due to increased boat traffic	A relatively small, but potentially significant reduction in the numbers of birds using the site during construction due to the impacts of increased boat traffic: minor adverse (sandwich terns) and negligible (common terns, razorbills and guillemot) (ES section 8.4.2).	No change	There was no increase in the duration of the cable installation process over that assessed in the ES. Amendment to the red line boundary does not alter the conclusions of the assessment presented in the ES.
	Indirect effect during construction: changes in prey supply	A combination of negligible effects on pelagic spawning fish and furthermore based on the relative unimportance of the site for feeding birds suggests the indirect effect of change in prey supply to be of negligible significance (ES section 8.4.5).	No change	As above
Marine mammals	Impact due to noise (construction)	Significant impacts were not identified in relation to the noise generated by the cable installation process (ES section 11.4.1).	No change	Installation of a total of 612m of inter-array cable beyond the original red line boundary would not have resulted in effects of greater magnitude or in impacts of greater significance than those assessed in the ES.
	Impact due to collision risk (construction)	Given the relatively low importance of the wind farm area for marine mammals, the high agility of the species likely to be encountered (seals and porpoise), and the low speeds at which the vessels would be travelling within the site, it is anticipated that the risk of a significant collision with a marine mammal would be	No change	As above

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Receptor	Potential impact/s relevant to inter-array cable installation	Summary of existing assessment (ES section number)	Potential change to existing assessment	Rationale
		negligible (ES section 11.4.2).		
Nature conservation/designated sites	Refer to receptor specific assessments above	N/A	No change	<p>The three sections of inter-array cable that have been installed marginally outside of the red line boundary are not in the vicinity of any designated sites*.</p> <p>*The Wash Approach recommended Marine Conservation Zone (rMCZ) overlaps with the wind farm site. Features include subtidal mixed sediments, sand and subtidal sands and gravel. However, it is not included in the list of sites to be considered in the second tranche of sites to go forward for public consultation (Natural England 2014). Also refer to comments under benthic ecology section above.</p>
Hydrodynamic and geomorphological processes	Sediment dispersion during cable installation	<p>Increases in suspended sediment levels due to cable laying are small relative to background conditions, localised and short lived (ES section 6.4.5).</p> <p>Also refer to receptor specific assessments above.</p>	No change	Installation of a total of 612m of inter-array cable beyond the original red line boundary would not have resulted in effects of greater magnitude or in impacts of greater significance than those assessed in the ES.

Summary of environmental implications

It is considered that the installed capacity of the offshore wind farm does not change the outcome of either the EIA or the HRA since all other project parameters remain within the Rochdale Envelope of the consent. Therefore there are no environmental implications beyond those already assessed and that form the basis of the consent.

With respect to the inter-array cables, a total length of 612m of cable has been installed beyond the footprint of the consented red line boundary. The greatest distance from this boundary is 36m. An environmental 'screening' exercise has been undertaken of the receptors and impacts relevant to cable installation and operation. This considers the potential for any change to the existing assessment on account of the cable installation and operation and also takes into account any work (e.g. post-construction surveys) that may have been undertaken since the EIA stage in the course of discharging the consent conditions. No effects of greater magnitude or impacts of any greater significance than those forming the basis of the current assessments have been identified.

References

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