

# Hornsea Offshore Wind Farm

---

Project Two

---

## Appendix referred to in response to CS5 – Tabular Summary

**Appendix EE to the Response submitted for Deadline I  
Application Reference: EN010053**

15 July 2015

---

[smartwind.co.uk](http://smartwind.co.uk)

## Appendix EE: referred to in response to CS5 – Tabular Summary

The following text and table provide a summary of the predictions made in relation to the recovery timescales of the seabed and its associated habitats and supporting ecological features.

The nature and magnitude of the physical disturbance of the seabed, is described and considered in Volume 2, Chapter 1: Marine Processes of the ES (Doc ref No 7.2.1). However, as outlined in Volume 2, Chapter 1 of the ES, the seabed is not considered to be a receptor for the purposes of the EIA. Impacts on receptors, such as benthic habitats and species are, however, described in Volume 2, Chapter 2: Benthic Subtidal and Intertidal Ecology of the ES (Doc ref No 7.2.2).

Paragraphs 2.6.6 to 2.6.8 of Volume 2, Chapter 2 of the ES identify that determining the significance of effects is a two stage process that involves defining the sensitivity of the receptors and the magnitude of the impacts. The sensitivity of benthic receptors is defined by an assessment of the combined vulnerability of the receptor to a given impact and the likely rate of recoverability to pre-impact conditions. Paragraph 2.6.7 and paragraphs 2.6.36-2.6.53 of Volume 2, Chapter 2 of the ES describe the sensitivity of subtidal and intertidal benthic receptors to the construction works as low, with the habitats being well adapted for recoverability. In summary, the assessment concludes that, for the majority of the habitats which are prevalent throughout the Project and Subzone 2 in particular, recoverability is assessed as high. Paragraph 2.6.43 of Volume 2, Chapter 2 of the ES specifically states that 'recovery in most cases is likely to be high and typically within five years or less'. The statement is slightly caveated by the reference to two specific species where recoverability is not considered high, including *Sabellaria spinulosa*, which although likely to recover quickly, the associated high biodiversity is likely to take longer to recover and as such the sensitivity is given as medium. Similarly, paragraph 26.44 of Volume 2, Chapter 2 of the ES the species *Arctica islandica* has a recoverability of medium to high but a low sensitivity.

**Table 1: Summary of seabed recovery duration following construction activity**

Construction aspect	Recovery Duration After Disturbance	ES Paragraph Reference
<p>Construction works associated with foundation and topside installation</p>	<p>Many of the habitats throughout the offshore environment within which works will take place are predominantly dominated by infaunal mobile species including polychaetes and bivalves, which are capable of re-entering the substratum following disturbance and displacement. Recovery of soft sediment communities is likely to occur as a result of the combination of recruitment from surrounding unaffected areas and from larval dispersal. Paragraph 2.6.43 of Volume 2, Chapter 2 of the ES concluded that recovery of subtidal benthic communities impacted by temporary habitat loss/disturbance and deposition of drill arisings associated with the construction of the Project is predicted to typically occur within five years. The recovery of benthic subtidal communities from other construction related impacts such as increased suspended sediment concentrations and sediment deposition is predicted to be more rapid than that associated with temporary habitat disturbance/loss and well within the five years described.</p> <p><u>Recovery from seabed preparation activity and the deposition of drill arisings:</u></p> <p>This will result in the deposition of material on the seabed. Given the prevailing tidal currents, the sediments will be gradually re-worked and no discernible effect on marine processes is anticipated, with mounds eroding over time.</p> <p><u>Recovery from foundation and topside installation activity:</u></p> <p>There is potential for jack-up barges used for foundation installation to affect the sediment regime. Sediment depths are variable across Subzone 2, but at some locations only a thin veneer of sediments overlies till. As a result, there is some potential for jack-up footprints to be recorded across Subzone 2. It is anticipated that these will begin to infill over time, although evidence from other sites suggests this could in certain circumstances take a period of years to occur</p>	<p>Paragraphs 1.6.41-1.6.42, 2.6.7-2.6.69 and 1.6.73-1.6.74 of Volume 2, Chapter 1, Doc Ref: 7.2.1)</p> <p>1.6.199 of Volume 2, Chapter 1, Doc Ref: 7.2.1)</p>
<p>Construction works associated with offshore cable installation</p>	<p>Recovery of the more diverse subtidal benthic communities associated with the mixed sediments found along the export cable route corridor, and characterised by <i>Sabellaria</i> biotopes, is predicted to be high (as concluded in Paragraph 2.6.41 of Volume 2, Chapter 2 of the ES).</p> <p>Paragraph 2.6.43 of Volume 2, Chapter 2 of the ES concluded that recovery of subtidal benthic communities impacted by temporary habitat loss/disturbance associated with the construction of the Project is predicted to typically occur within five years.</p>	<p>Paragraph 1.6.101, 1.6.103, 1.6.104, 1.6.107, 1.6.108 of Volume 2, Chapter 1, Doc Ref: 7.2.1)</p>

Construction aspect	Recovery Duration After Disturbance	ES Paragraph Reference
	<p><u>Recovery from sandwave clearance activity:</u></p> <p>It is likely that any change in morphology or substrate will be undetectable within a few hundred metres of the placement, and that over time, the areas where placements occur will be indistinguishable from surrounding areas.</p> <p>Sediment placed with the disposal area will either (if the placement is adjacent to a large sandwave feature) become influenced by the larger feature and become part of that feature over time; or (if the placement is sufficiently far from a large sand wave feature) move broadly in line with sediment transport patterns over time, becoming indistinguishable from the background sand transport patterns.</p> <p>The clearance activity will be undertaken in areas of the seabed with an active sediment regime (as indicated by the presence of the sandwaves) and in such environments it is anticipated that any material deposited will be re-worked by the prevailing tidal currents within a relatively short timescale.</p> <p>Any sediment that settles to form a layer less than 0.5mm is small enough to be reworked through the tide and dispersed to form part of the background material.</p> <p><u>Recovery from cable installation:</u></p> <p>Sediment will be released into the water and subsequently deposit on the seabed. Cable installation activities are not expected to lead to any long-term disruption to background SSC or result in any substantial deposition on the seabed.</p>	<p>Paragraph 1.6.156, 1.6.165 of Volume 2, Chapter 1, Doc Ref: 7.2.1)</p>
<p>Construction works associated with intertidal cable installation</p>	<p>The intertidal habitats that may be subject to temporary disturbance as a result of export cable installation include Habitat E (excluding the cockle bed habitat which will not be subject to direct disturbance) together with two Annex I habitats: 'mudflats and sandflats not covered by seawater at low tide' and '<i>Salicornia</i> and other annuals colonising mud and sand'.</p> <p>Habitat E displays a low sensitivity to, and high recoverability from, temporary sediment displacement such as that likely to occur from methods used to install the export cable, and anchor placements. The recovery of the habitat will be dependent on the hydrodynamic regime; sandy sediments are likely to recover in less than one year, with the muddy sediments potentially taking longer. Recovery of the biological communities associated with 'mudflats and sandflats not covered by seawater at low tide' is expected to be in line with those for Habitat E.</p> <p>As outlined in Paragraph 3.10.2 of the Outline Code of Construction Practice (Doc ref No 12.4) and Table 2.18 of Volume 2, Chapter 2 Doc Ref 7.2.2, following completion of the intertidal cable</p>	<p>Paragraphs 2.6.45-2.6.48 and 2.6.51-2.6.53 of Volume 2, Chapter 2 Doc Ref 7.2.2</p> <p>Paragraph 3.10.2 of the Outline CoCP and Table 2.18 of Volume 2, Chapter 2 Doc Ref 7.2.2</p>

Construction aspect	Recovery Duration After Disturbance	ES Paragraph Reference
	<p>installation works, the working area, will be returned to an elevation similar to that of the surrounding area and smoothed over to remove deep depressions (those deeper than 10cm) to encourage Salicornia seed capture and improve recoverability of the habitat. It is therefore anticipated that physical recovery (i.e., the recovery of the topography of the intertidal area) of the disturbed sediments to pre-impact conditions will be rapid (within weeks) following completion of the construction works. It is further noted that there is also a commitment in the DCO and dMLs for a Salicornia reinstatement plan, should it be required, to ensure that the most important intertidal habitats are returned to their baseline state following completion of works.</p>	