Westermost Rough Offshore Wind Farm Development: Environmental Statement Addendum Part 1

Prepared
On behalf of:
DONG Energy Ltd

By:
Maritime Archaeology Ltd
Room W1/95
Southampton Oceanography Centre
Empress Dock
Southampton
SO14 3ZH

Document Authorisation

Name	Position	Details/Revisions	Signature/ Initial	Date
Rachel Bynoe	Project Officer	Copy drafting	RB	15/08/10
Brandon Mason	Project Manager	Copy drafting and editing	BM	03/09/10
Virginia Dellino-Musgrave	Project Manager	QA & authorisation	VDM	10/08/10

Contents

I. LIST OF FIGURES

II. LIST OF TABLES

III. REFERENCING

This report should be referenced as:
Maritime Archaeology Ltd (2010) *Westermost Rough Offshore Wind Farm Development: Environmental Statement Addendum Part 1*. Southampton: National Oceanography Centre.

1. Introduction

This document forms Part 1 of an addendum to the Environmental Statement (ES) for the Westermost Rough Offshore Windfarm project, on behalf of DONG Energy. It should be read in conjunction with the full ES document. Addendum Part 2 will address issues relating to survey that is yet to be conducted.

This addendum provides information on issues relating submerged cultural heritage, as well as clarification of certain sections contained within the full ES.

2. Amended Sections

Section 6.3 Cultural Heritage Offshore (Maritime Sites and Finds)*, replace with:*
The existence of submerged landscapes within this study area is demonstrated by the presence of two known sites: Noah's Wood, a submerged forest (**MAL-107)**, located in the sub-tidal zone at Owthorne, and the extensive submerged peat beds on Tunstall Mere beach (Sand-le-Mere; **MAL-118**) which becomes exposed at low tide.

In order to assess the likelihood of the existence of such deposits without the use of geotechnical and geophysical survey data, terrestrial data has been used as a proxy. The area under survey is one of extensive low-lying wetlands, potentially preserving organic archaeological remains. Noah's Wood submerged forest and its associated faunal material suggest that during the Mesolithic this would have been a productive environment for hunter-gatherer populations. However, to-date no anthropogenic material has been found in association with this deposit. The feature was last recorded on the 1890 OS County Series Map and was, therefore, still visible at low tide at that time.

However, a walkover survey inspection conducted by Maritime Archaeology Ltd at low tide did not identify any organic material or physical visible evidence of the forest. This could indicate that sediment movement has led to the burying of this feature, or that it has been completely eroded. Conversely, the presence of submerged peat beds on Tunstall Mere (Sand-le-Mere) beach were confirmed by the walk-over survey, which serves to highlight the potential of further extant peat deposits in the wider area.

In a broader context, the presence of currently submerged Palaeolithic activity in the survey areas can be inferred by the regular dredging up and foreshore collection of faunal remains such as Mammoth (*Mammuthus*), Bison (*Bison*) and Horse (*Equus*) and the recovery of an elephant tooth (**MAL-108)**. Despite not being directly associated with any anthropogenic material, these do present evidence for exploitation opportunities for hunter-gatherer populations in prehistory. Supporting this theory are several Mesolithic artefacts from the region. These include a bone harpoon found at Withow in 1902 as well as numerous finds of microliths, blades and scrapers from sites overlooking Skipsea Mere just to the north of the study area (Harrison 2000, 10).

Since the Environmental Statement was produced a Regional Environmental Characterisation (REC) study of the Humber region has been identified. The data for this is newly accessible (http://www.marinealsf.org.uk), though the final report is yet to be made available. Examination of this data has shown that just two survey lines partially intersect the Westernmost Rough Study (**Figure 1**). Data from the two sub-bottom lines shown in **Figure 1** have been analysed in their entirety.

The only potential archaeologically significant feature demonstrated by these lines is a large, shallow palaeochannel feature at the south-eastern extent of line 4A, 20kms from the edge of the survey area. No other features of relevance to this project were identified. Though palaeolandscapes, by their nature, are often significantly more than discreet occurrences and identification of features such as palaeochannels in proximity to the survey area may have notable implications, no significant features have identified in the Westermost Rough Study Area in this instance.

The Humber REC project sampled two study areas intensively for archaeological evidence. The closest to Westermost Rough, Area 2, lies approximately 45km SE of the Study Area and contains 16 lines of sub-bottom data. It covers an area of approximately 3 km² (**Figure 2**). Analysis of this data has revealed an environment potentially suitable for hominin exploitation.

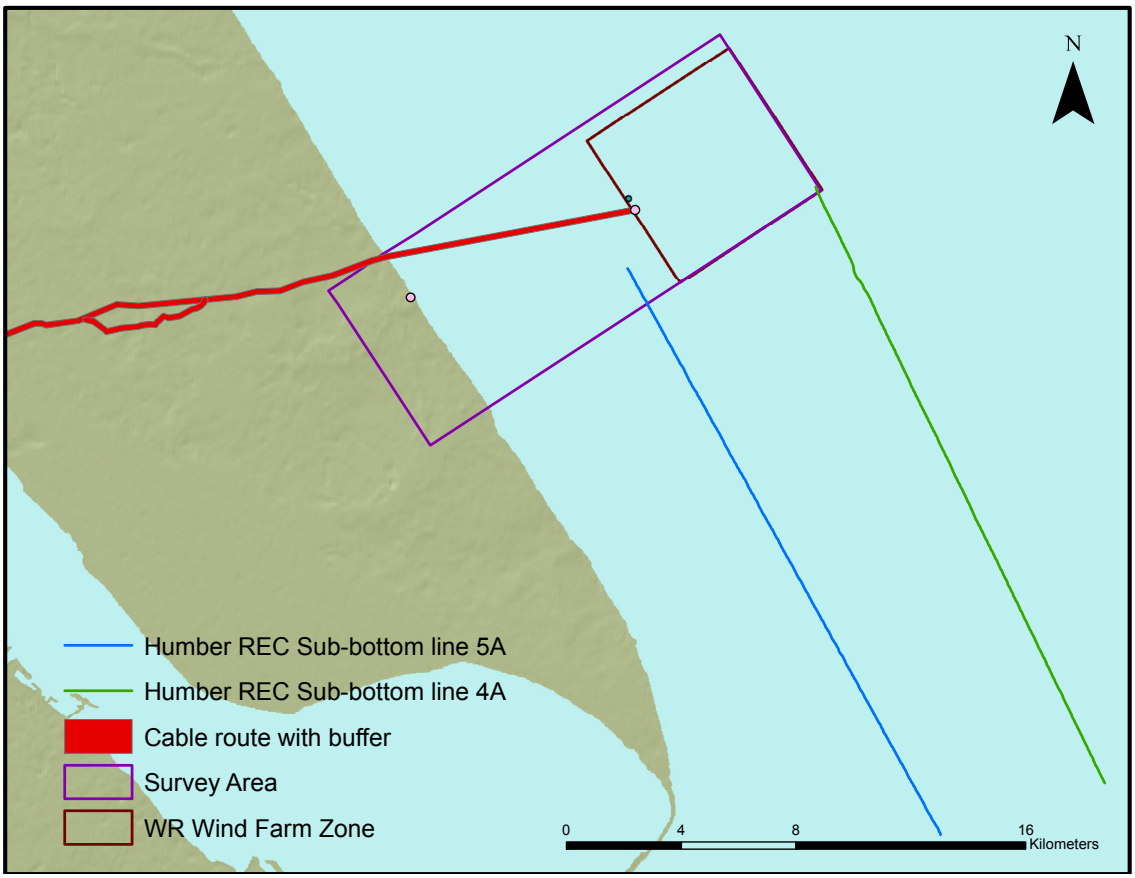

Figure 1 - Intersection of Humber REC data with Westernmost Rough Survey Area

At least one large palaeochannel can be identified running WNW and another more deeply incised cut, possibly lacustrine or fluvial, is visible on a NNE alignment. Full interpretation of this data is due to be released in February 2011 in the Final Humber REC report by the Marine Aggregate Levy Sustainability Fund (MALSF).

The identification of these interrelated features indicates that there is potential for the preservation of palaeolandsurfaces in this region. However, given the nature and location of these in relation to the magnitude of seabed disturbance predicted for the Westermost Rough Wind Farm, the impact of such work upon these landscapes is considered negligible (see **ES Section 6.3.6**). Furthermore, the analysis of Humber REC survey lines in close proximity to the Westernmost Rough survey area supports the current interpretation that there is a low potential for the disturbance of submerged palaeolandsurfaces in this area.

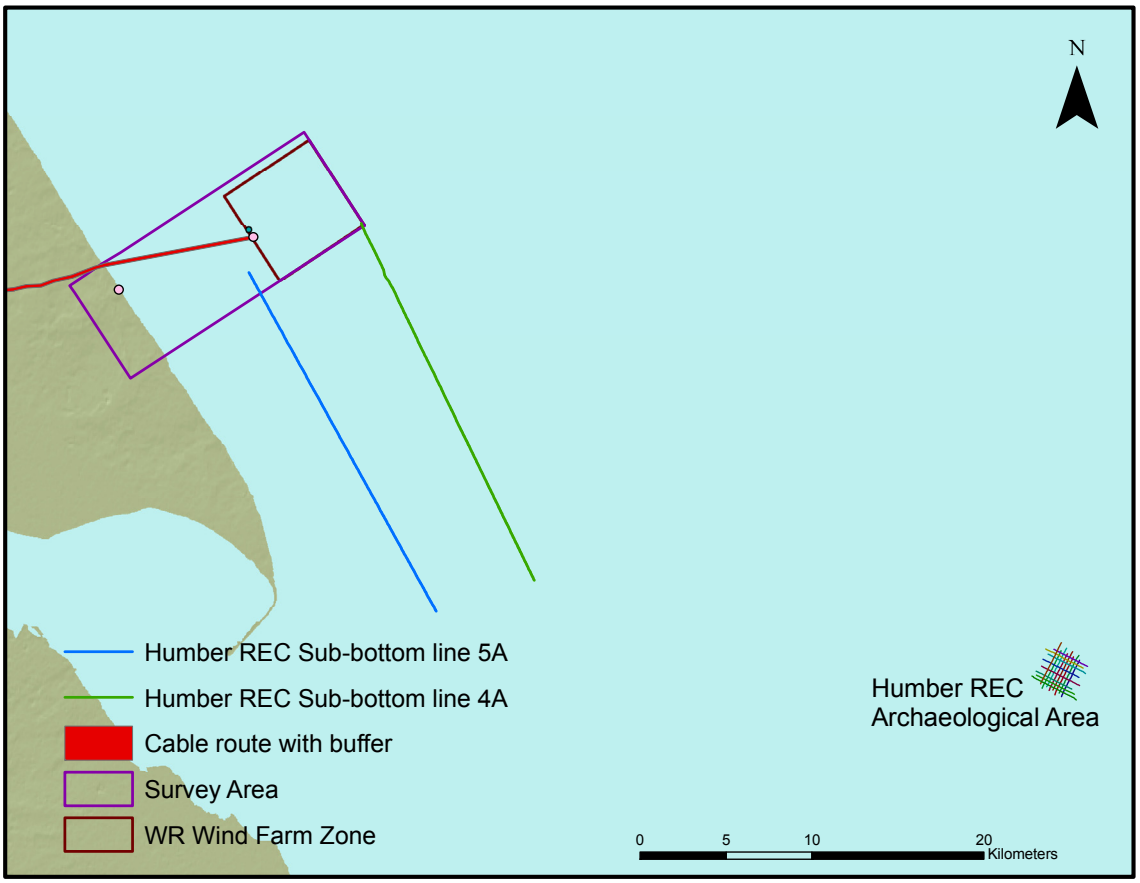

Figure 2 - Detailing the location of Humber REC Archaeological Area 2 in relation to the Westermost Rough marine study area

Section 4.3.2 (Seabed Surface), paragraph 4, sentence 3; replace with: Based on analysis of side scan sonar data conducted by Maritime Archaeology Ltd the wreck stands approximately 6m above the seabed at the highest point and is lying on a bearing of approximately 165/345°.

Section 6.3 (High Archaeological Potential), paragraph 2, clarification: Analysis of side scan sonar data using SonarWiz.MAP v.4004 by Maritime Archaeology Ltd enabled the determination of the form and extent of the wreck identified as SS *Upminster*. Using a simplified relationship between length of shadow, towfish height above seabed and range to end of shadow, an estimate of the target height was achieved.

$$Ht = (Ls \times Hf) / R$$

The final calculation was performed by the post-processing software, using a customised function. Accordingly, the maximum height above seabed for the wreck identified as that of SS *Upminster* was 5.81 m.

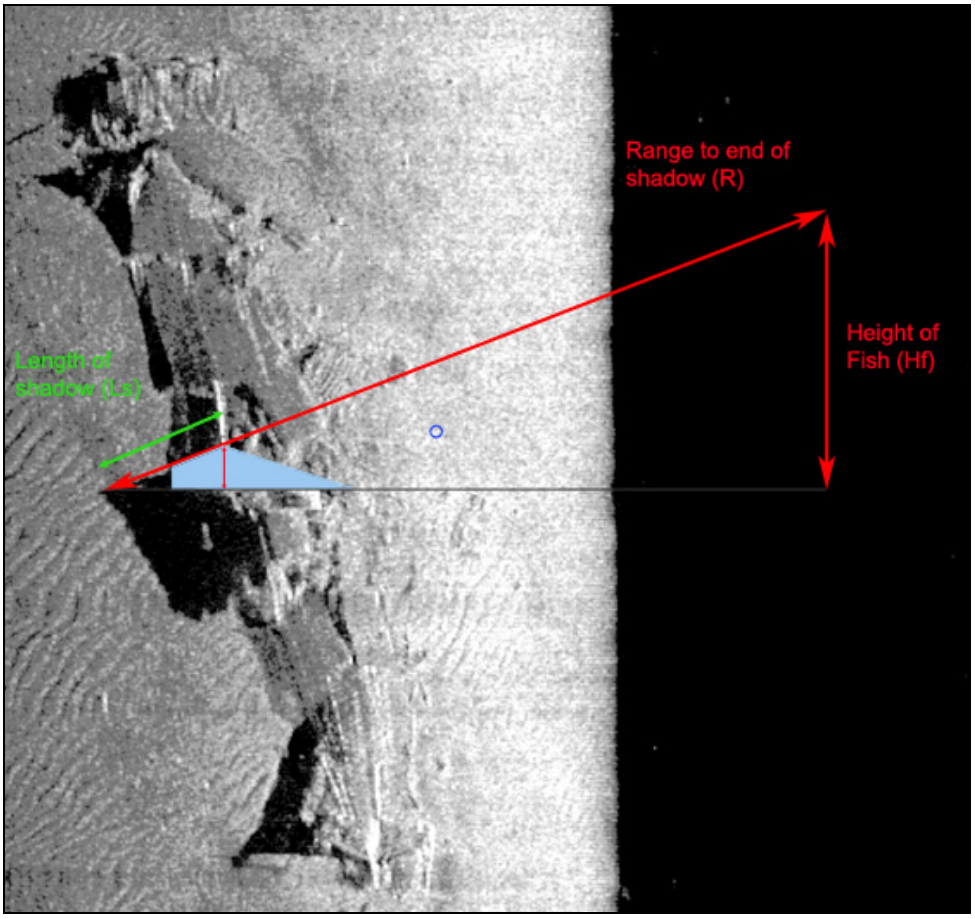

Figure 3 - Diagram showing generic values for target height calculation based on side scan imagery of the wreck identified as SS *Upminster*. The software package SonarWiz.MAP was used to determine the final value using a customised function

Section 6.3.6 (Mitigation), paragraph 3, bullet point 3; replace current text with:
A precautionary exclusion zone of 75m (rectangular area encompassing wreck and associated debris, defined in **Table 6.3.3**) is proposed around the surveyed position of the UKHO 'live wreck' identified as '*Upminster'*. Precautionary exclusion zones (radius from a central point) are proposed around the two high potential wreck anomalies identified in the side scan survey. Due the uncertain extent and distribution of any surviving material around the recorded position of the UKHO 'dead wreck' *'Celtic',* a precautionary 75m exclusion zone is proposed. This will be subject to alteration depending on the results of a planned magnetometer survey of the marine Study Area;

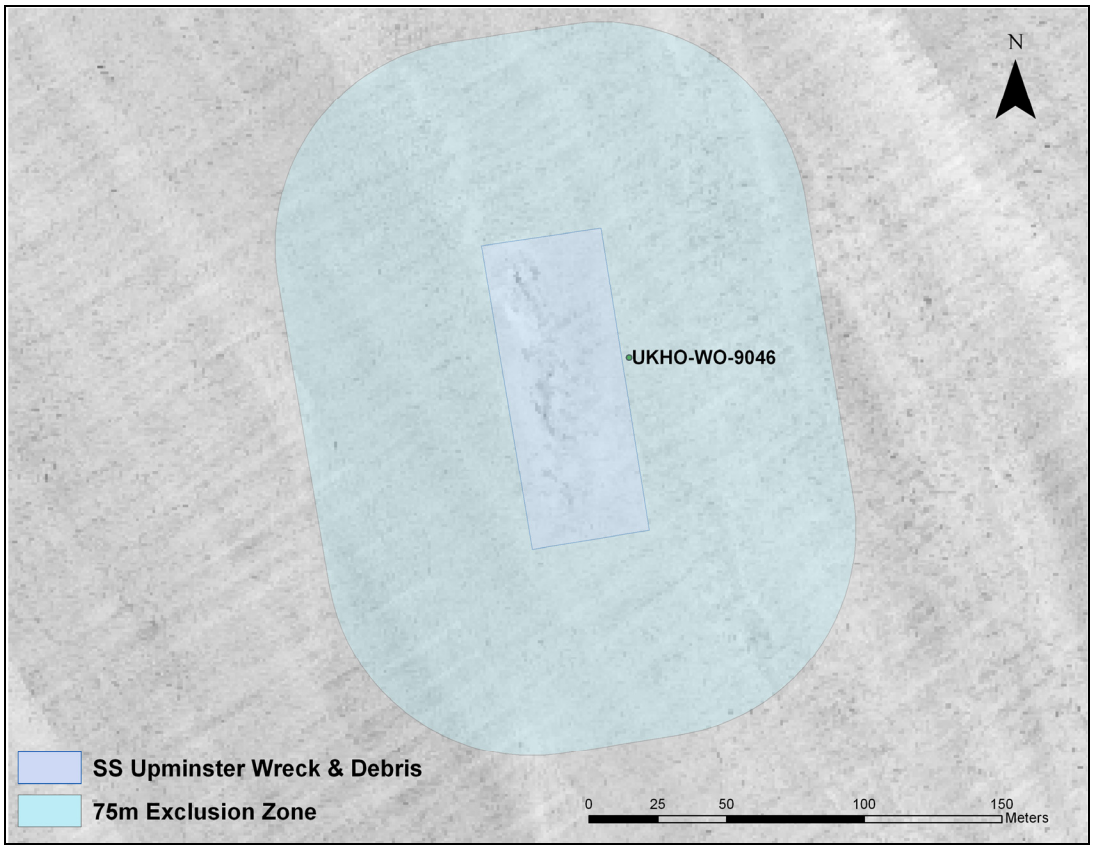

Figure 4 - Rectangular area (blue) encompassing wreckage and debris of UKHO live wreck identified as SS *Upminster*, with 75m buffer zone (green) established around corner points

UTM Positions			
NE point	**NW point**	**SW point**	**SE point**
312953 5968360	312996 5968367	313014 5968257	312971 5968257

Table 1 – Positions of corner points around the revised SS *Upminster* exclusion zone

Section 6.3.6 (Mitigation), paragraph 3, bullet point 5; at the end insert: The scope and extent of such work, using the most appropriate methodology for archaeological investigation as defined in the WSI, including such ROV, diver ground-truthing or other strategies, will be agreed with English Heritage prior to any alteration or intrusive work within declared exclusion zones.

Section 6.3.6 (Mitigation), paragraph 3, bullet point 7; at the end insert: The methodological basis for this work will be set out in a WSI, pending approval from English Heritage prior to further survey work;

Section 6.3.6 (Mitigation), paragraph 3, bullet point 8; at the end insert: This protocol is to be included within any environmental management plan used by contractors involved in any phase of this development;

Section 10.1.3: The following references to published guidance notes were omitted in the original text, and full references are provided below:

- **(Cumulative Impacts on the Human Environment), paragraph 1, at the end of the first sentence insert:** (see COWRIE, 2008).
- **(Cultural Heritage), paragraph 1, at the end of the second sentence insert:** (see COWRIE, 2007).

Section 13 (Cultural Heritage Offshore), at the end insert: The geophysical magnetometer survey is to be planned in conjunction with archaeological advice with resulting data analysed by a professional archaeological contractor. A draft report is then to be issued to English Heritage for comment and agreement. This work is to be concluded and agreed prior to the initiation of any on-site development activity.

3. Amendments: ES Addendum 2

The following elements form the basis of a second addendum to the Environmental Statement (forthcoming):

- Magnetometry survey data and results to inform on mitigation proposals.
- Archaeological analysis of geotechnical survey data through sedimentary sequence modelling and reporting, as a form of mitigation.

4. Amended References

COWRIE (2008), *Guidance for Assessment of Cumulative Impacts on the Historic Environment from Offshore Renewable Energy*. Commissioned by COWRIE Ltd (project reference CIARCH-11-2006). Project contractors: Oxford Archaeology with George Lambrick Archaeology and Heritage.

Harrison, S. (ed) 2000, Sands of Time. *A History of Skipsea from Prehistoric Times to the Year 2002*. Skipsea: History Workshop.

Wessex Archaeology Ltd (2007), *Historical Environment Guidance for the Offshore Renewable Energy Sector.* Commissioned by COWRIE Ltd (project reference ARCH-11-05).

.