
Robin Rigg Monitoring Windfarm Site Benthic Macro Invertebrate Data Report, March 2008

1. Introduction

In order to comply with Marine Environment Monitoring Programme (MEMP) and FEPA licence requirements for the construction of the Robin Rigg Offshore Wind Farm a benthic survey of the wind farm site was undertaken on 31st March 2008

This survey was the second benthic survey of the wind farm site out of a biannual (twice per year) survey programme and took place during the construction phase of the wind farm.

This technical note summarises the methodology and results of this survey. No data interpretation has been undertaken.

2. Method

A benthic survey of the Robin Rigg windfarm site for macro invertebrates was conducted using the fisheries patrol vessel *Solway Protector*. Six sampling stations were sampled within the wind farm site itself as well as 3 reference (control) sampling stations just outside the wind farm area. Locations of sampling stations are presented **Figure 1**. The sampling stations were selected at positions that were sampled during the original baseline survey for the EIA pre-construction in accordance with the requirements of the MEMP.

Samples were recovered using a 0.1m² Day grab. At each sampling station duplicate grab samples were collected. The exact time and location the grab was dropped was recorded using the vessel's Global Positioning System (GPS), while depth was measured using the vessel's sounder. Surface water salinity and temperature were measured using a portable probe¹ and turbidity was measured using a secchi disc.

After a visual assessment of sediment type was made each sample was sieved using a 1mm mesh and the material retained in the sieve was transferred to labelled sample bottles and preserved in 5% formaldehyde. A sediment sub-sample was taken for particle size (PSA) and Total Organic Carbon (TOC) analysis.

Taxonomic identification of the macro-faunal species found in the samples was undertaken by Identechaete, while the PSA and TOC analysis on the sediment samples was undertaken by AES Laboratories². Although duplicate grab samples were taken at each sampling station, in accordance with the approved methodology invertebrate identification, PSA and TOC was only performed on the first sample taken, with the second sample being preserved for reference.

¹ Using a WTW Multi 340i pH/Dissolved Oxygen/Conductivity measuring instrument

² United Kingdom Accreditation Service (UKAS) accredited laboratory

3. Results

The physical and environmental data from the survey are recorded in **Table 1.1**.

Results of particle size analysis and percentage total organic carbon are shown in **Table 1.2**. Particle size distributions agree with the visual assessment that sediments in this area are largely comprised of fine sand.

18 species of invertebrates were identified from the grab samples collected (**Table 1.3**). The invertebrate communities from this area are consistent with an impoverished sand associated community dominated by the amphipod *Bathyporeia* spp. and the polychaete *Nephtys cirrosa*.

Table 1.1 – Sampling station locations and physical data

Sampling station	Date	Lat.	Long.	Depth (m)	Salinity (‰)	Water Temp (°C)	Secchi Depth (m)	Visual Sediment Type	Time (BST)
Site 1	31/3/08	54°44'120	3°44'140	12.2	30.1	8.7	2.5	Clean Sand	11.52
Site 2	31/3/08	54°45'880	3°44'250	3.6	27.0	8.2	2.5	Clean Sand	13.12
Site 3	31/3/08	54°45'020	3°41'170	3.0	28.1	8.0	2.0	Clean Sand	13.35
Site 4	31/3/08	54°45'003	3°41'091	7.0	29.4	8.0	2.5	Clean Sand	12.30
Site 5	31/3/08	54°45'900	3°44'120	9.1	28.1	8.7	2.5	Clean Sand	12.38
Site 6	31/3/08	54°46'230	3°41'190	3.0	27.9	8.7	3.0	Clean Sand	13.20
Control 1	31/3/08	54°47'100	3°43'680	2.4	27.9	8.3	3.0	Clean Sand	12.56
Control 2	31/3/08	54°44'590	3°36'489	3.9	28.9	8.5	2.0	Clean Sand	13.45
Control 3	31/3/08	54°42'740	3°43'300	12.4	30.2	8.3	2.0	Clean Sand	11.31

Table 1.2 – Particle Size Analysis (PSA) and Total Organic Carbon (TOC) of sediment

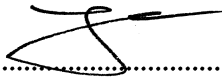
Sampling station	>4000 μm (%)	4000-2000 μm (%)	2000-1000 μm (%)	1000-500 μm (%)	500-250 μm (%)	250-125 μm (%)	125-63 μm (%)	<63 μm (%)	TOC (%)
Site 1	<0.1	<0.1	<0.1	<0.1	1.3	72.3	22.9	3.5	<0.1
Site 2	<0.1	<0.1	<0.1	<0.1	3.1	84.1	10.8	2.0	<0.1
Site 3	<0.1	<0.1	<0.1	<0.1	0.1	87.4	9.5	2.1	<0.1
Site 4	<0.1	<0.1	<0.1	<0.1	3.7	74.2	18.4	3.7	<0.1
Site 5	<0.1	0.2	<0.1	0.2	24.9	66.4	5.4	2.9	1.2
Site 6	<0.1	<0.1	<0.1	<0.1	1.8	77.8	18.6	1.8	<0.1
Control 1	<0.1	<0.1	<0.1	0.3	0.6	51.5	44.0	3.6	<0.1
Control 2	<0.1	<0.1	<0.1	<0.1	1.2	84.0	12.8	2.0	1.8
Control 3	<0.1	<0.1	<0.1	<0.1	8.3	82.6	6.7	2.4	<0.1

Table 1.3 – Macro-invertebrate counts from Robin Rigg Windfarm site

Species	Sampling Station and Species Counts								
	S1	S2	S3	S4	S5	S6	C1	C2	C3
<i>Nemertea</i> indet.				1					
<i>Nephtys assimilis</i>				1					
<i>Nephtys cirrosa</i>	14	4	3	17	10	1	6	9	5
<i>Paraonis fulgens</i>								1	
<i>Scolelepis mesnili</i>			3				2	2	
<i>Magelona johnstoni</i>	fragment			3	2			1	
<i>Gastrosaccus spinifer</i>							1		
<i>Bathyporeia elegans</i>	5	13	2	21	3	13	11	11	
<i>Bathyporeia nana</i>	3	2		9	5	1	2	1	
<i>Haustorius arenarius</i>							1		
<i>Pseudocuma longicornis</i>		2				1	3	1	
<i>Chrysallida decussata</i>				1	1				
<i>Fabulina fabula</i>	2			1				1	
<i>Donax vittatus</i>		3							
<i>Echinocardium cordatum</i>	1				1				
<i>Ophiura albida</i>				1					
<i>Ophelia borealis</i>					4			1	
<i>Urothoe brevicornis</i>					1				

NOTE: Intent = not possible to identify to higher resolution

Author: Jane Lancaster



.....

Reviewer: Paul Salmon



.....

Issue date: 20/6/08

Copyright Notice

The contents and layout of this Technical Note are subject to copyright owned by Entec (© Entec UK Limited 2008) save to the extent that copyright has been legally assigned by us to another party or is used by Entec under licence.

Third Party Disclaimer

Any disclosure of this Technical Note to a third party is subject to this disclaimer. The Technical Note was prepared by Entec at the instruction of, and for use by, our client. It does not in any way constitute advice to any third party who is able to access it by any means. Entec excludes to the fullest extent lawfully permitted all liability for any loss or damage howsoever arising from reliance on the contents of this Technical Note. We do not however exclude our liability (if any) for personal injury or death resulting from our negligence, for fraud or any other matter in relation to which we cannot legally exclude liability.

