
Robin Rigg Monitoring Windfarm Site Benthic Macro Invertebrate Data Report, June 2009

1. Introduction

In order to comply with Marine Environment Monitoring Programme (MEMP) and FEPA licence requirements for the construction of the Robin Rigg Offshore Windfarm a benthic survey of the windfarm site was undertaken on 23rd June 2009.

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*. Five 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 in **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 time and location the grab was dropped were recorded using the vessel's Global Positioning System (GPS), depth was measured using the vessel's sounder and temperature was measured by the vessel's in-built thermometer. Surface water salinity was measured using a hand held refractometer and clarity was measured using a Secchi disc. A visual assessment of sediment type was also made. Each sediment 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 analysis (PSA) and Total Organic Carbon (TOC) analysis.

Taxonomic identification of the macro-faunal species found in the samples was undertaken by Identichaete, while the PSA and TOC analysis on the sediment samples was undertaken by AES Laboratories¹. Although duplicate grab samples were taken at each sampling station, in accordance with the approved methodology invertebrate identification, PSA and TOC were only performed on the first sample taken, with the second sample being preserved for reference.

3. Results

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

¹ United Kingdom Accreditation Service (UKAS) accredited laboratory

Table 1.1 – Sampling station locations and physical data, June 2009

Sampling station	Date	Time (GMT)	Lat.	Long.	Depth (m)	Salinity (‰)	Water Temp (°C)	Secchi Depth (m)	Visual Sediment Type	Sea State (Beaufort Force)
Site 1	23/06/09	12.05	N54°45.5100'	W003°41.0600'	13.33	34	14.4	3.5	Clean Sand	0
Site 2	23/06/09	13.00	N54°45.0000'	W003°41.0500'	9.09	34	13.9	3.5	Clean Sand	0
Site 3	23/06/09	13.14	N54°45.0100'	W003°44.0700'	11.52	34	14.4	3.5	Clean Sand	0
Site 4	23/06/09	11.39	N54°45.8700'	W003°44.0900'	7.27	34	14.4	3.5	Clean Sand	0
Site 5	23/06/09	13.23	N54°44.0600'	N54°44.0600'	15.45	34	13.3	3.5	Clean Sand	0
Site 6	23/06/09	11.51	N54°46.2300'	W003°41.0200'	7.27	34	14.4	3.5	Clean Sand	0
Control 1	23/06/09	12.15	N54°47.2100'	W003°43.2600'	7.27	34	14.5	3.5	Clean Sand	0
Control 2	23/06/09	12.38	N54°46.0200'	W003°36.3100'	10.30	34	13.9	3.5	Clean Sand	0
Control 3	23/06/09	13.34	N54°42.4800'	W003°43.2300'	13.33	34	13.9	3.5	Clean Sand	0

NB * Beaufort force 0 describes a sea state that is flat

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 largely comprise medium to very fine sand.

In total 25 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 1.2 – Particle Size Analysis (PSA) and Total Organic Carbon (TOC) of sediment, July 2009

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	0	0	0	2.4	89.5	5.9	2.1	<1.0
Site 2	0	0	0	0	2.8	86.2	7.3	3.7	<1.0
Site 3	0	0	0	1.0	2.7	81.2	13.7	1.4	<1.0
Site 4	0	0	0	0	48.2	43.4	3.1	5.2	1.2
Site 5	0	0	0	0	0.4	74.4	20.0	5.2	1.2
Site 6	0	0	0	0	0	89.4	9.8	0.8	<1.0
Control 1	0	0	0	0	1.0	55.1	35.6	10.4	1.3
Control 2	0	0	0	0	0	77.4	17.9	4.7	<1.0
Control 3	0	0	0	1.0	33.9	58.7	3.3	3.1	1.3

Table 1.3 – Macro-invertebrate counts from Robin Rigg Windfarm site, June 2009

Species	Sampling Station and Species Counts									Total
	S1	S2	S3	S4	S5	S6	C1	C2	C3	
<i>Nemertea</i> indet.	2				1					3
<i>Sigalion mathildae</i>							1			1
<i>Eteone flava/longa</i>					1				1	2
<i>Nephtys cirrosa</i>	3	5	28	1	17	12	14	19	3	102
<i>Scoloplos armiger</i>		1			1		4			6
<i>Paraonis fulgens</i>	1	1					1			3
<i>Scolecopsis mesnili</i>		11		8		7			1	27
<i>Goniada maculata</i>					1					1
<i>Spio martinensis</i>									1	1
<i>Spiophanes bombyx</i>			1							1
<i>Magelona johnstoni</i>			5		5		5	1		16
<i>Ophelia borealis</i>	5								1	6
<i>Gastrosaccus spinifer</i>		1			1	4			1	7
<i>Perioculodes longimanus</i>					1					1
<i>Pontocrates arenarius</i>							1			1
<i>Urothoe brevicornis</i>	2			1						3
<i>Bathyporeia elegans</i>	7	11	111	6	114	13	33	30	10	335
<i>Bathyporeia nana</i>			3		1		2	2		8
<i>Pseudocuma longicornis</i>		1	34		16	1	10	8		70
<i>Liocarcinus marmoreus</i>				1						1
<i>Nucula nitidosa</i>					3					3
<i>Fabulina fabula</i>			1		11			3		15
<i>Donax vittatus</i>								1		1
<i>Abra alba</i>			1							1
<i>Cerastoderma edule</i>								1		1
<i>Solenacea</i> indet.					2					2
<i>Ophiura albida</i>			1							1
Total number of individuals	20	31	184	17	175	37	71	65	18	618
Total number of species	6	7	8	5	14	5	9	8	7	26

NOTE: Indet = not possible to identify to higher taxonomic resolution

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Issue date:

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