
Robin Rigg Monitoring Windfarm Site Benthic Data Report, April 2011

1. Introduction

In order to comply with Marine Environment Monitoring Programme (MEMP) and FEPA licence requirements for the monitoring of the Robin Rigg Offshore Windfarm a benthic survey of the windfarm site was undertaken on 8th April 2011.

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 in **Figure 2.1**. 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 turbidity was measured using a Secchi disc.

Duplicate grab samples were taken at each sampling station. A visual assessment of sediment type in each grab sample was made and a sample of sediment from the first grab sample was retained for particle size analysis (PSA) and Total Organic Carbon (TOC) analysis. The sediment from each grab sample was then sieved using a 1mm mesh and the fauna retained in the sieve and preserved in 5% formaldehyde. Taxonomic identification of the macro-faunal species found in one replicate from each sampling station was undertaken by Identichaete, while the PSA and TOC analysis on the sediment samples was undertaken by AES Laboratories¹.

3. Results

The physical and environmental data from the survey are recorded in **Table 3.1**.

¹ United Kingdom Accreditation Service (UKAS) accredited laboratory

Table 3.1 – Sampling Station Locations and Physical Data, April 2011

Sampling station	Date	Time (GMT)	Latitude	Longitude	Depth (m)	Sal. (‰)	Water Temp (°C)	Secchi Depth (m)	Visual Sediment Type
Site (WF) 1	08/04/2011	10:50	N54°45.005'	W003°41.102'	2.13	32	10.6	1.5	Sandy, minimal infauna
Site (WF) 2	08/04/2011	07:38	N54°45.894'	W003°41.111'	2.44	32	10.6	1.5	Sand
Site (WF) 3	08/04/2011	07:05	N54°45.064'	W003°44.106'	6.40	33	10.6	1.5	Sand, few invertebrates
Site (WF) 4	08/04/2011	07:20	N54°45.879'	W003°44.096'	9.45	33	10.6	1.5	Sand, few invertebrates
Site (WF) 5	08/04/2011	06:50	N54°44.100'	W003°44.100'	11.89	32	10.6	1.5	Sand, few invertebrates
Site (WF) 6	08/04/2011	08:06	N54°46.394'	W003°41.043'	1.83	33	10.6	1.5	Minimal infauna
Control (CON) 1	08/04/2011	11:11	N54°42.343'	W003°43.471'	1.83	33	10.6	1.5	Sandy
Control (CON) 2	08/04/2011	10:30	N54°44.592'	W003°36.389'	6.40	32	10.9	1.5	Sandy, minimal infauna
Control (CON) 3	08/04/2011	06:40	N54°42.799'	W003°43.399'	9.75	32	11	1.5	Sand, few invertebrates

Results of particle size analysis and percentage TOC are shown in **Table 3.2**. Particle size distributions agree with the visual assessment for sites for the majority of samples taken. According to the PSA the majority of the samples from within the wind farm site are made up of fine sands, or very fine sands. This is consistent with previous surveys.

Table 3.2 – Particle Size Analysis (PSA) and Total Organic Carbon (TOC) of Sediment, April 2011

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 (WF) 1	<0.1	<0.1	<0.1	<0.1	14.15	80.48	2.99	2.36	<1.0
Site (WF) 2	<0.1	<0.1	<0.1	<0.1	0.48	89.17	7.03	3.31	<1.0
Site (WF) 3	<0.1	<0.1	<0.1	<0.1	4.1	83.02	10.03	2.81	<1.0
Site (WF) 4	<0.1	<0.1	<0.1	<0.1	43.93	50.13	2.74	3.17	<1.0
Site (WF) 5	<0.1	<0.1	<0.1	<0.1	0.28	63.78	30.66	5.26	<1.0
Site (WF) 6	<0.1	<0.1	<0.1	<0.1	0.98	86.32	10.43	0.25	<1.0
Control (CON) 1	<0.1	<0.1	<0.1	<0.1	<0.1	33.95	58.6	6.74	<1.0
Control (CON) 2	<0.1	<0.1	<0.1	<0.1	0.17	65.69	28.25	5.87	<1.0
Control (CON) 3	<0.1	<0.1	<0.1	<0.1	26.42	57.74	11.82	4.02	<1.0

In total 12 species of invertebrates were identified from the grab samples collected (**Table 3.3**). 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*. The bivalve *Donax vittatus* was also found in relatively high numbers, although all these were found at one sampling station. (Control site 1). The species found in this survey are consistent with previous benthic surveys, and the overall diversity and productivity (i.e. number of species and individuals) of the sampling stations are similar to that recorded in the 2010 surveys...

Table 3.3 – Macro-Invertebrate Counts from Robin Rigg Windfarm Site, April 2011

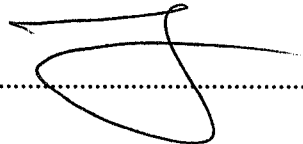
Sampling Station and Species Counts										
Species	WF1	WF2	WF3	WF4	WF5	WF6	CON1	CON2	CON3	Total
<i>Sthenelais limicola</i>					1					1
<i>Glycera tridactyla</i>							1		1	2
<i>Nephtys cirrosa</i>		1	2	4	5	3	5		1	21
<i>Ophelia borealis</i>		1						1		2
<i>Scalibregma inflatum</i>					3					3
<i>Pontocrates altamarinus</i>							1			1
<i>Urothoe brevicornis</i>	1									1
<i>Bathyporeia elegans</i>				3	9	3	4	1		20
<i>Liocarcinus marmoreus</i>			1					1		2
<i>Fabulina fabula</i>					2					2
<i>Donax vittatus</i>							20			20
<i>Echinocardium cordatum</i>					3					3
Total number of individuals	1	2	3	7	23	6	31	3	2	78
Total number of species	1	2	2	2	6	2	5	3	2	12

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Reviewer: Jane Lancaster



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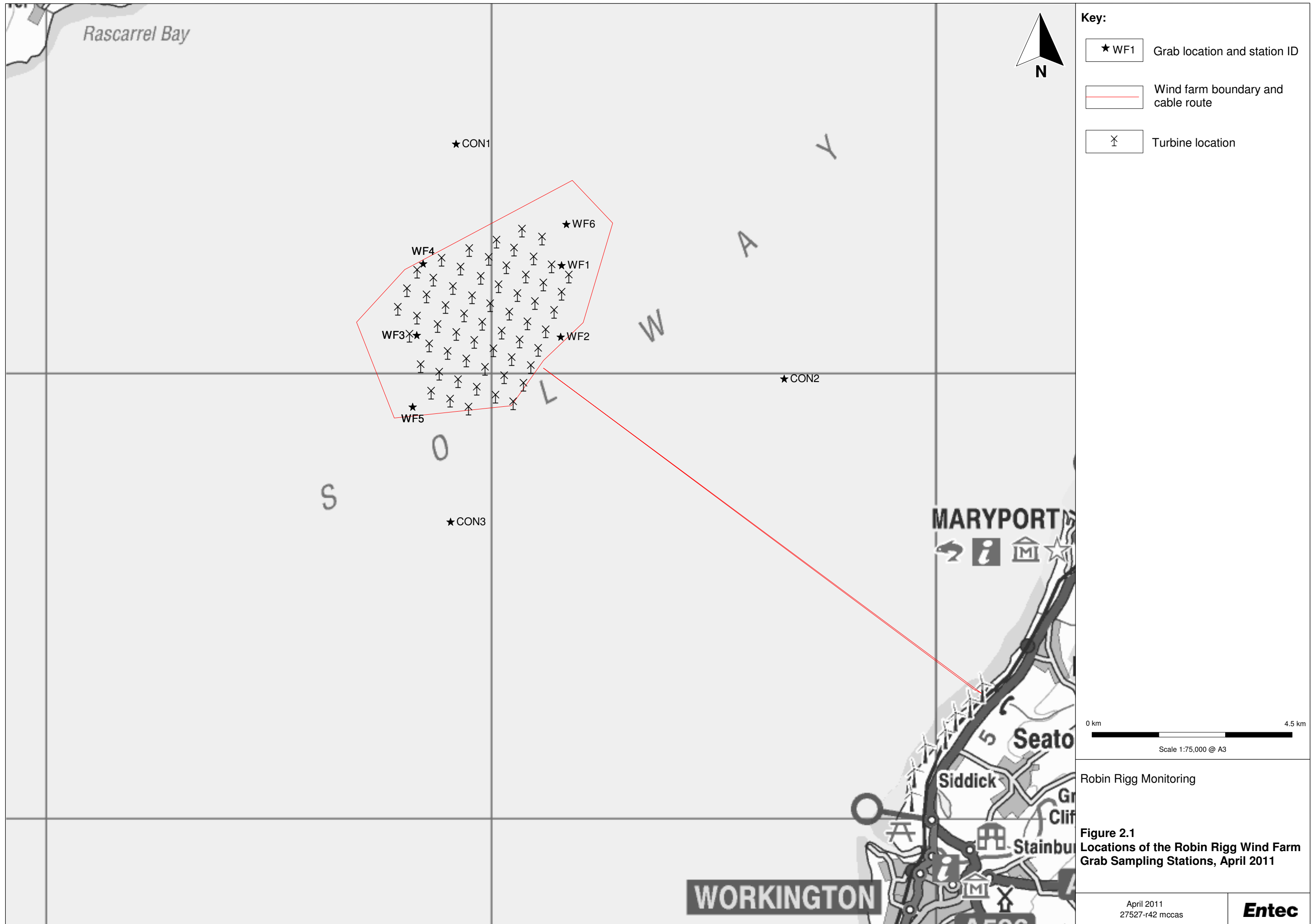
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Key:

- ★ WF1 Grab location and station ID
- Wind farm boundary and cable route
- X Turbine location

0 km 4.5 km
Scale 1:75,000 @ A3

Robin Rigg Monitoring
Figure 2.1
Locations of the Robin Rigg Wind Farm
Grab Sampling Stations, April 2011

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