Robin Rigg Monitoring Cable Route Benthic Macro-Invertebrate Survey Data Report, November 2007

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 and along the proposed cable route of the wind farm was undertaken on 15th November 2007.

This survey was the first benthic survey of the proposed cable route out of a biannual (twice per year) survey programme and represents a pre-construction survey of this area.

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*. Eight sampling stations were identified along the length of the cable route (**Figure 1**).

Samples were recovered using a 0.1m^2 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 probe[1] 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 Laboratories[2]. 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.

3. Results

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

[1] Using a WTW Multi 340i ph/Dissolved Oxygen/Conductivity measuring instrument

[2] United Kingdom Accreditation Service (UKAS) accredited laboratory

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.

The invertebrate communities from this area are consistent with an impoverished sand associated community with fauna such as the amphipod *Bathyporeia* spp. and the polychaete *Nephtys cirrosa* commonly encountered. **Table 1.3** shows the results of invertebrate identification from grab samples.

Table 1.1 – Sampling station locations and physical data

Sampling station	Date	Lat	Long	Depth (m)	Salinity (‰)	Water Temp (°C)	Secchi Depth (m)	Sediment Type	Time (GMT)
1	15.11.07	54°44.514	3°41.100	7.32	34.4	16.0	3.0	Fine Sand	15.05
2	15.11.07	54°44.346	3°40.710	8.11	30.12	15.0	2.5	Fine Sand	15.12
3	15.11.07	54°44.082	3°40.110	11.61	31	14.7	2.5	Fine Sand	15.23
4	15.11.07	54°43.734	3°39.156	12.89	31.2	15.7	2.5	Fine Sand	15.37
5	15.11.07	54°43.452	3°38.406	15.67	31.3	15.2	2.0	Fine Sand	15.45
6	15.11.07	54°43.17	3°.37.746	7.32	30	14.7	2.0	Fine Sand	15.53
7	15.11.07	54°42.504	3°36.294	6.98	29.3	14.3	2.0	Fine Sand	16.00
8	15.11.07	54°42.138	3°35.406	8.90	33.2	14.5	2.0	Mud	16.12

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

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 (%)
1	<0.1	<0.1	<0.1	<0.1	<0.1	49.8	47.1	3.1	<0.1
2	<0.1	<0.1	<0.1	<0.1	0.5	78.6	18	2.9	<0.1
3	<0.1	<0.1	<0.1	<0.1	2.1	84.7	11.7	1.5	<0.1
4	0.2	0.1	<0.1	<0.1	1.9	78.7	16.6	2.5	<0.1
5	<0.1	<0.1	<0.1	0.1	26.8	67.9	4	1.2	<0.1
6	<0.1	<0.1	<0.1	<0.1	0.1	44.9	51.2	3.8	<0.1
7	<0.1	<0.1	<0.1	<0.1	0.3	27.5	64.6	7.6	<0.1
8	<0.1	<0.1	0.2	0.3	1	40.2	37.4	20.9	3.3

Table 1.3 – Macro-invertebrate counts from Robin Rigg Windfarm cable route sampling stations

	Sampling Station and Species Counts							
Species	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Nemertea sp.				1				
Sigalion mathildae								3
Eteone flava/longa indet.								8
Glycera tridactyla				1	1		1	1
Scolelepis mesnili	2	3	2			1		
Spio martinensis								5
Spiophanes bombyx							1	
Magelona johnstoni			1				3	2
Gastrosaccus spinifer		1		1	3	1	2	
Perioculodes longimanus								4
Pontocrates altamarinus			1					
Bathyporeia elegans	2		11	3	8	3	1	6
Bathyporeia nana					4			
Bathyporeia sarsi						3		
Pseudocuma longicornis					1	1		
Pholoe inornata								7
Eteone foliosa						1		
Podarkeopsis capensis								3
Nephtys cirrosa		1	7	2	3	5	5	
Nephtys juv. indet.[3]								4
Nephtys assimilis								2
Nephtys hombergii								9
Lagis koreni								6
Liocarcinus marmoreus						1		
Polinices pulchellus				1				
Donax vittatus			1					1
Nucula nitidosa							2	36
Mysella bidentata								139
Tellimya ferruginosa			1					
Fabulina fabula			3		1		3	30
Pharus legumen								2
Mytilus edulis								3
Abra alba							1	22
Abra nitida								1
Echinocardium cordatum			1					
Ophiothrix fragilis								1

NB. Indeterminate' not identifiable to species due to whole individual not being present.

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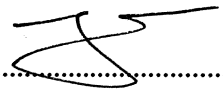

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Reviewer: Paul Salmon

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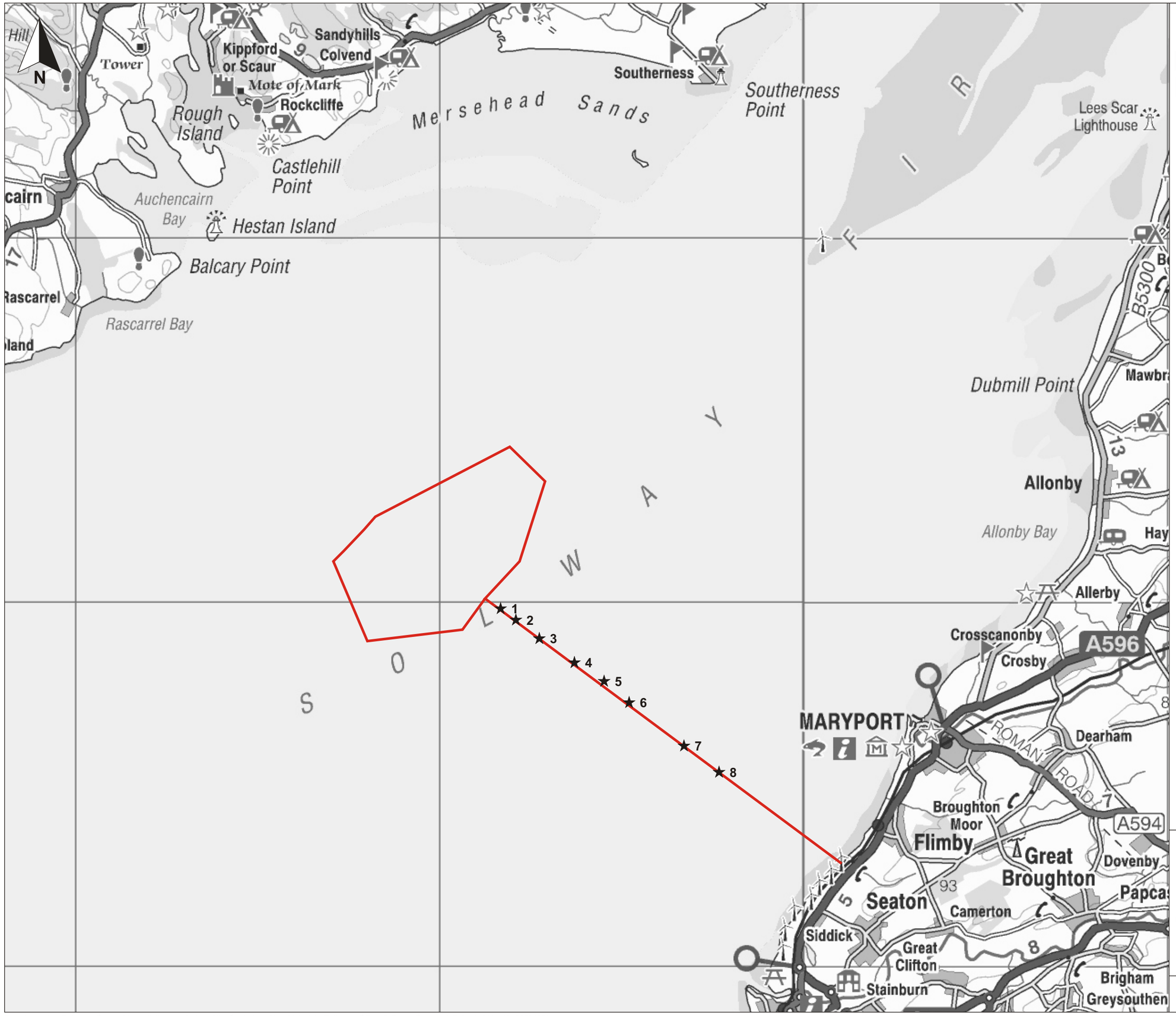

Robin Rigg Monitoring

Figure 1
Robin Rigg Wind Farm Site
Benthic Grab Sampling Stations
(November 2007)

May 2008
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