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## **ROBIN RIGG OFFSHORE WIND FARM**

### **MARINE ENVIRONMENT MONITORING PROGRAMME (MEMP)**

#### **1. INTRODUCTION**

This document presents the developers proposed outline for a monitoring programme covering the pre- during and post-construction stages of the Robin Rigg offshore wind farm in accordance with the consent from Scottish Ministers under Section 36 of the Electricity Act 1989 and as guided and/or described by all consents issued by the relevant authorities. The monitoring proposals have been formulated jointly with Robin Rigg Monitoring Group (RRMG).

The document is intended to be the basis on which detailed monitoring schemes will be devised and implemented by the developer, in consultation with the RRMG, to meet consent and licensing conditions.

#### **2. REMIT**

Purpose : To comply with condition 6.4 of Section Consent 36 conditions.

The remit of the Monitoring Programme will be to allow changes to the physical and ecological environment caused by the construction and operation of the wind farm to be recorded principally in areas where there is some uncertainty in the effects of the wind farm on the receiving environment, where those effects are potentially damaging. The monitoring programme should be designed so that if potentially adverse significant impacts are predicted which can be reasonably attributed to the wind farm, mitigation measures can be adopted in time to avoid irreversible significant impacts.

#### **3. SCOPE OF THE MEMP**

The MEMP should be sufficiently robust to detect and/or predict direct and indirect adverse impacts, likely to have a significant effect on the marine environment <sup>1</sup>, arising from the pre-construction, construction, operation and decommissioning of the windfarm. However, it must also recognise the fact of the consents granted and the demands of the construction programme in a difficult working environment, the programme will have to remain responsive to unexpected events.

The monitoring programme shall comply with the conditions attached to the various consents as listed at Annex 1.

1. In this context the marine environment includes the birdlife in the vicinity of the windfarm

#### 4. SUMMARY OF DIRECT AND INDIRECT IMPACTS IDENTIFIED IN THE ENVIRONMENTAL STATEMENT

Direct and indirect potential impacts on the physical environment and biological receivers identified within the Environmental Statement (ES) are included within the following tables and these potential impacts and the requirements of the conditions contained in the consents and licences at Annex 1 should guide the scope and detail of the Monitoring Programme.

These tables list the potential impacts identified at the time of issuing this document. However it is possible that issues may arise or evolve that require changes to be made, in which case such changes will be discussed with the RRMG and agreed with the licensing authorities.

Full details of protected species and habitats are contained in the ES.

**Table 1: Potential Ecological Impacts During Construction/Decommissioning <sup>1</sup>**

Construction Event	Impact Tier (Direct-Indirect)	Potential Impact
<b>Seabed preparation for foundations and cable routes (FEPA Interest)</b>	Primary	Loss of benthic community in immediate vicinity of foundation and cable Loss of saballeria reef in intertidal area at landfall
	Primary	
<b>Augering of pile shafts, trenching of cables (FEPA Interest)</b>	Primary	Introduction of sediment into water column o Increased turbidity <i>Changing of physical environment for fish</i> <i>Reduction in effectiveness of birds diving for shellfish</i> o Increased deposition of sediment downstream <i>Smothering of benthic</i>
	Secondary	
	Tertiary	
	Tertiary	
	Secondary	
	Tertiary	

	Primary	<i>community downstream</i>
	Secondary	Disturbance of radio-nuclides from buried sediments <ul style="list-style-type: none"> <li>o Toxic effects on benthos/fish community</li> <li>o Long term accumulation of radionuclides higher up the food chain</li> </ul>
<b>Piling of turbine foundations (FEPA Interest)</b>	Primary	Physiological/b behavioural effects on fish
	Primary	Physiological/b behavioural effects on sea mammals including calving porpoise
	Primary	Physiological effects on benthos
	Primary	Avoidance of piling site by birds
<b>Boat movements, Construction/decommissioning activities above sea surface (FEPA Interest)</b>	Primary	Avoidance of immediate area by birds
	Primary	Disturbance of grey and common seals on haul-out areas
<b>Risk of accidental spillage of hydraulic fluids, lubricants, fuel etc. (FEPA Interest)</b>	Primary	Change in water quality
	Secondary	<ul style="list-style-type: none"> <li>o Temporary toxicity effects on benthic/fish communities</li> </ul>
	Secondary	<ul style="list-style-type: none"> <li>o Potential fouling of bird plumage and toxic effects</li> </ul>

**Table 2: Potential Environmental Impacts During Operation/Decommissioning<sup>1</sup>**

Development Characteristic	Impact Tier (Direct-Indirect)	Potential Impact
<b>Physical presence of turbine foundations (FEPA Interest)</b>	Primary	Replacement of sediment with hard substrate for benthic life at foundation
	Secondary	o New benthic community on foundation
	Tertiary	<i>Change in food availability for fish in immediate area of foundation</i>
	Primary Secondary	Reduction in tidal flow/wave energy
	Primary	o Increased shelter for fish downstream of foundation
	Secondary Tertiary	<i>Wall of predator effect on young migratory fish</i>
	Secondary Primary	Reduction in sediment transport in vicinity of wind farm
	Secondary	o Change in turbidity/deposition
	Tertiary	<i>Change in physical environment for fish/benthic communities</i>
		o Change in coastal processes Localised effects on water flow past foundations o Local and global scour around foundations <i>Local disturbance effects to benthic community</i>

<b>Physical presence of turbines and substation platform (FEPA Interest)</b>	Primary	Avoidance of area by birds Collision risk of birds in rotors Collision risk for boats o Risk of spillage of transformer coolants
	Primary	
	Primary	
	Secondary	
<b>Navigation Lighting and foghorn</b>	Primary	Disturbance/attractive effect on birds
<b>Presence of cables on sea bed</b>	Primary	Risk of exposure of cables through normal sediment transport o Non-zero magnetic fields in immediate vicinity of exposed cable <i>Disorientation effects on migratory fish</i> o Non-zero electric fields around exposed cables <i>Attractive/repulsive effects on elasmobranch fish</i>
	Secondary	
	Tertiary	
	Secondary	
	Tertiary	
<b>Noise of wind turbines (FEPA Interest)</b>	Primary	Avoidance of area by marine mammals Avoidance of immediate area by birds Behavioural effects on noise sensitive fish
	Primary	
	Primary	
<b>Presence of sacrificial anodes on foundations (FEPA Interest)</b>	Primary	Loss of aluminium into water column o Toxic effects on fish/benthic communities
	Secondary	

1. The above tables will be amended in line with the prevailing legislation at the time of decommissioning

## 5. PROPOSED OUTLINE MONITORING PROGRAMME

The following section gives an outline of the monitoring regime proposed by the Developer for the environmental monitoring of the Robin Rigg windfarm. It also identifies additional base line surveys that may be required where considered necessary to complement the original baseline surveys carried out for the ES, in order to give a sufficiently robust picture of the baseline environment for later comparison with monitoring data.

Depending upon the detailed arrangements for monitoring or results obtained it may be appropriate to amend the monitoring arrangements from time to time in order to ensure that the methods are effective or appropriately focussed. Such amendments would be subject to consultation as appropriate between the Developer and the RRMG and agreement with the relevant licensing authorities as appropriate.

The developer is actively involved in COWRIE and will keep track of the research carried out and associated conclusions. COWRIE conclusions available at the time will be taken into account in the specification for the design and construction of the Robin Rigg wind farm. However once firm contract commitments have been made by the developer, it will not always be possible to apply new research findings retrospectively, otherwise it will be impossible to finalise major design and construction methodologies.

## **5.1 The Physical Environment**

### **5.1.1 Bathymetry**

#### ***Pre-construction***

Due to the dynamic nature of the Robin Rigg area a further survey will be carried out prior to construction. This will confirm the shape and development of the Robin Rigg sandbank provided by two surveys carried out in Autumn 2001 and Spring 2002.

Survey Type: Ship based echo sounding or similar. Similar equipment to that used for 2001/2002 surveys.

Survey Area/Coverage: Area bounded by wind turbines, meteorological mast and offshore substation and a border of 500m beyond the outer turbines or other structures. Survey lines in one direction only, nominally 450m centres to coincide with turbine rows.

Timing and frequency: Once in advance of commencement of construction. Expected by Developer to be completed in Q1 2004.

#### ***During construction***

Reason: 1. FEPA(Scotland) condition 19. 2. Monitoring of local scour effects of turbine foundations and any global movements resulting from presence of foundation array and its effects on tidal flow and wave movement.

Survey Type: As stated above for preconstruction.

Survey Area/Coverage: As stated above for preconstruction.

Timing and Frequency: In accordance with FEPA(Scotland) condition 19, commencing only after construction works have started on site.

#### ***Post-construction***

Reason: As stated above for Construction period.

Survey Type: As stated above for preconstruction .

Survey Area/Coverage: As stated above for preconstruction.

Timing and Frequency: In accordance with FEPA(Scotland) condition 19.

#### ***5.1.2 Suspended Sediment***

##### ***Pre-construction***

Background suspended sediment levels are better recorded simultaneously with sediment levels in sediment plumes during construction by taking samples before/after relevant construction activities or installing measuring apparatus beyond the influence of the construction area. Pre-construction monitoring is therefore not required.

##### ***During construction***

Reason: 1. FEPA condition 19. 2. To allow the suspended sediment loadings predicted by the model as presented within the ES to be tested. 3. To allow the RRMG to be alerted, and mitigation measures to be adopted should sediment loadings be sufficiently widespread, heavy and long term so to have a significant detrimental effect on important benthic communities/fish species.

Survey Type: Collection of samples from around working areas at agreed distances and depths from the working site and measuring both near and far field effects.

The two construction operations that should be monitored are augering and bedding of turbine piles and ploughing of trenches for on-site cables. Should turbine foundations be piled and not augered it is not considered necessary to monitor suspended sediments in the vicinity of foundations.

Manual sampling is proposed that will enable rapid deployment and flexibility to construction works (eg unforeseen augering). Background measurements will be taken before/after relevant construction activities.

Wave and wind conditions should be recorded during the monitoring.

Coverage: Agreed number of piles/locations where drilling or augering is anticipated. Monitoring of agreed cable trenching operations once detailed programme has been defined.

Timing and Frequency: In line with construction programme.

### ***Post –Construction***

No monitoring required.

### ***5.1.3 Radionuclide***

#### ***Pre-construction***

Reason: 1. FEPA licence condition 24. 2. To allay public concerns and confirm desk assessment that unacceptable levels will not be released during the construction phase.

Survey type: To comply with condition 24 of the FEPA licence up to 5 additional composite samples should be tested using same methodology as used in the pre construction monitoring or by using another method agreed by the RRMG. These samples will be collected during the pre-construction borehole log work.

Timing and Frequency: Once only in advance of commencement of construction. Expected by Developer to be completed in Q1 2004.

#### ***During construction***

None considered necessary.

#### ***Post construction***

None considered necessary.

## **5.2 ECOLOGICAL MONITORING**

### ***5.2.1 Benthos- subtidal***

#### ***Pre-construction***

Reason: 1. To comply with Condition 19 of the FEPA license.

Suggested survey type: The baseline surveys carried out in 2001/2002 provided a very clear picture of the benthic communities within the wind farm area with 80 sites inside the development area and 20 control sites outside the perimeter. The benthic community was found to be fairly homogenous within the turbine area and



therefore only a few sample sites will be needed during and post-construction. Samples should be taken at these same sites pre-construction, with two or three samples at each point to check variability at a single location. Around 6 sample sites are suggested within the wind farm area, with a further two or three control sites beyond the perimeter. The sites within the wind farm area should be selected at various distances from future foundation and cable route locations. For the cable route to land it is suggested that 8 sample points are selected along the final line of the cable route once this has been established.

Methodology to be similar to that used for ES as defined in Section 7.3.3.1.

***During construction:***

Reason: 1. To comply with Condition 19 of the FEPA license.

Suggested survey type: As stated above for preconstruction .

Timing and Frequency: In accordance with FEPA (Scotland) condition 19, commencing only after construction works have commenced in windfarm area or cable route as applicable.

***Post-construction***

Reason: 1. To comply with Condition 19 of the FEPA licence.

Suggested survey type: As stated above for preconstruction .

Timing and Frequency: In accordance with FEPA (Scotland) condition 19.

**5.2.2 *Benthos- Intertidal***

***Pre-construction***

Reasons: 1. To map the Sabellaria alveolata reef in the intertidal area to allow the cable route at landfall to be selected to minimise disturbance to this important community.

Suggested survey type: Mapping of the extent and distribution of the reef on the cobble scar areas in the intertidal zone or alternately staking out a cable route through the intertidal zone which avoids sabellaria as far as possible. Note that route is also constrained by consent corridors and practicalities of cable installation (eg cable flexibility).

A phase 2 survey along a transect from HW to LW as conducted for the ES will be completed to confirm ES findings. The need for repeat surveys of this type during construction will be reviewed depending on results. If results confirm ES findings that the beach is species poor then no further surveys will be required.

Timing and Frequency: Once prior to cable installation provided this is no more than 12 months prior to the commencement of cable installation.

***During construction***

Reasons: 1. To identify damage caused to the Sabellaria alveolata reef and initial recolonisation.

Suggested survey type: Mapping of the distribution of the reef, and judgements of the reef quality above the cable. No survey required if cable installation avoids Sabellaria alveolata.

Timing and Frequency: Immediately after completion of cable installation and annually thereafter.

***Post-construction***

Reasons: 1. To track recolonisation.

Suggested survey type: As above. No survey required if cable installation avoids Sabellaria alveolata.

Timing and Frequency: Annually for 2 years after construction is complete.

**5.2.3 Fish – Non-migratory**

***Pre-construction***

Reasons: 1. To comply with condition 20 of the FEPA licence.

Suggested survey type: Beam Trawl surveys were carried out during 2001 & 2002.

***During construction***

Reasons: 1. To comply with Condition 20 of the FEPA license.

Type of Survey: Beam trawl surveys of the channels and banks of the site area and the Inner Solway. Although beam trawl surveys are biased towards benthic and demersal fish and are likely to underestimate number of pelagic species, general surveys of the Irish Sea have found that in the shallow silt habitats presented by the wind farm area and the Inner Solway, benthic and demersal fish species tend to be favoured and dominate over pelagic species. The beam trawl survey is therefore considered to be the most appropriate. Net size, mesh size, tow length and treatment of the catch should follow that for the beam trawl surveys carried out in 2001/2002.

Coverage: As for Environmental Statement

Timing and Frequency: Monthly for first three months, relaxed to quarterly thereafter depending on results.

***Post-construction***

Reasons: As above.

Type of Survey: As above.

Coverage: As above.

Timing and Frequency: Six monthly surveys, if no significant change in fish numbers and distribution was observed during the construction stage monitoring, for three years.

**5.2.4 Fish – Electroreceptive**

***Pre-construction***

Reasons: To gain an understanding of the abundance and distribution of electroreceptive fish in the vicinity of the cable route to shore prior to power being carried on the cable.

Suggested survey type: It is suggested that surveys cover all electrosensitive fish species but it acknowledged that the Thornback ray is the more commercially important of the electroreceptive fish in the Solway. The most appropriate survey would be a survey using a beam trawl along the cable route.

Timing and Frequency: Indicative frequency of quarterly for 1 year prior to the cable being energised. Timing may need to be seasonally adjusted to match behaviour of relevant species.

Note that these surveys can be carried out during the construction period provided the cable has not been energised and that there is no nearby impact piling activity at the time of the surveys.

***During construction***

None considered necessary as a single season pre-commissioning of the wind farm should be sufficient.

Note that “pre-construction” surveys can be carried out during the construction provided the cable has not been energised and that there is no nearby impact piling activity at the time of the surveys.

***Post-construction***

Reasons: To allow any changes in abundance/distribution of electroreceptive fish following powering of the cable.

Suggested survey type: As with pre-construction. Potential impact of changes in benthic food supply due to cable installation to be considered in detailed methodology.

Timing and Frequency: Timing may need to be seasonally adjusted to match behaviour of relevant species. Indicative frequency of quarterly for 1 year following the windfarm being fully operational, assuming benthic community has recovered.

### **5.2.5 Impacts on migratory fish - general**

#### ***Pre-construction***

Reasons: To establish baseline conditions, which were not included within the ES, and to comply with Condition 20 of FEPA licence.

Type of survey:

The baseline survey work will assess abundance of all migratory fish, other than eels. The surveys will be species specific as described below.

Atlantic salmon	adults - catch statistics, trap and counter data (Scotland, England); juveniles – electro-fishing at 16 Scottish (Nith, Annan, Urr, Dee, Fleet) and 20 to 25 English sites (Esk, Eden, Derwent).
Sea trout	adults - catch statistics (Scotland, England); monitoring of coastal nets - Catch Per Unit Effort (CPUE), sizes, growth and condition.
Allis shad	Monitor net catches by fishermen; examine CPUE, growth and age class data (Scottish Solway side).
Twaite shad	Monitor net catches by fishermen; examine CPUE, growth and age class data (Scottish Solway side).
Sparling	Baseline sparling data is being collected by SNH in Spring 2004, as part of an unconnected research project. These data are expected to be sufficient for the Robin Rigg windfarm project.
Sea lampreys	Pre-construction work will be completed in 2003, as part of unrelated national research contract from SNH (Scotland). Redd counts done on Eden.

River lampreys            Pre-construction work will be completed in 2003, as part of unrelated national research contract from SNH (Scotland).

Timing and Frequency:        Defined as part of detailed methodology to be drawn up in consultation with the fish sub group of the RRMG.

***During Construction***

Reason 1.                    To comply with Condition 20 of FEPA licence.

Type of Survey:            Species specific surveys as described below;

Atlantic salmon            adults - catch statistics, trap and counter data (Scotland, England); juveniles – electro-fishing at 16 Scottish (Nith, Annan, Urr, Dee, Fleet) and 20 to 25 English sites (Esk, Eden, Derwent).

Sea trout                    adults - catch statistics (Scotland, England); monitoring of coastal nets - Catch Per Unit Effort, sizes, growth and condition.

Allis shad                    Monitor net catches by fishermen; examine CPUE, growth and age class data (Scottish Solway side).

Twaite shad                Monitor net catches by fishermen; examine CPUE, growth and age class data (Scottish Solway side).

Sparling                    Basic survey on River Cree to establish time and extent of spawning.

Sea lampreys              Distribution and abundance determined by electro-fishing surveys of Esk, Annan, Fleet and control river (Scotland). Redd counts done on Eden.

River lampreys            Distribution and abundance determined by electro-fishing and trapping surveys of Esk, Annan, Fleet and control river (Scotland).

Timing and Frequency:        As for pre-construction

***Operation / Post Construction***

Reason 1.                    To comply with Condition 20 of the FEPA licence.

Type of Survey:            Species specific surveys as described below;

Atlantic salmon	adults - catch statistics, trap and counter data (Scotland, England); juveniles – electrofishing at 16 Scottish (Nith, Annan, Urr, Dee, Fleet) and 20 to 25 English sites (Esk, Eden, Derwent). Years 1, 2, 3 and 4 post-construction.
Sea trout	adults - catch statistics (Scotland, England); monitoring of coastal nets - Catch Per Unit Effort, sizes, growth and condition. Years 1, 2, 3 and 4 post-construction.
Allis shad	Monitor net catches by fishermen; examine CPUE, growth and age class data (Scottish Solway side). Years 1, 2, 3 and 4 post-construction.
Twaite shad	Monitor net catches by fishermen; examine CPUE, growth and age class data (Scottish Solway side). Years 1, 2, 3 and 4 post-construction.
Sparling	Basic survey on River Cree to establish time and extent of spawning. Detailed survey on Year 1 post-construction; if no apparent problem, then basic survey each year for the following two years.
Sea lampreys	Distribution and abundance determined by electro-fishing surveys of Esk, Annan, Fleet and control river (Scotland). Redd counts done on Eden. Years 1, 2, 3 and 4 post-construction.
River lampreys	Distribution and abundance determined by electro-fishing and trapping surveys of Esk, Annan, Fleet and control river (Scotland). Years 1, 2, 3 and 4 post-construction.

Timing and Frequency: Dependent upon life cycle but in outline Atlantic salmon, sea trout, Allis and Twaite shads and sea and river lampreys – years 1, 2, 3, and 4 post construction; sparling – detailed survey year 1 post construction; if no apparent problem, the basic survey each year for the following 2 years. The data gathered from the monitoring will be provided to the RRMG to continually assess impacts and advise on potential mitigation. A review of monitoring for each species will be carried out in Year 5.

**The reporting process is as follows:**

Pre-Construction	Reports to be supplied by December 2004 for 2004 survey work (other than catch statistics, which will not be ready until April of the following year).
Construction	Report on fish monitoring work will be supplied by December 2005 for 2005 survey work (other than catch statistics, which will not be ready until April of the following year). The results from under water noise measurements detailed in Section 5.2.6

will be considered within fish reporting for the construction period.

Operation                      Reports to be supplied by December for that calendar year's survey work (other than catch statistics, which will not be ready until April of the following year).

#### **5.2.6 Sea Mammals – Underwater Noise Levels**

##### ***Pre-construction***

None necessary. Background levels to be measured during construction period whilst pile driving is not in progress.

##### ***During construction***

Reasons:            To comply with Condition 22 of the FEPA Licence to measure the levels of underwater noise during piling operations.

Suggested survey type: Measurement of noise produced during piling operations using hydrophone equipment. The detail of the depth of hydrophones in the water and the distances that they are placed from the piling point to be agreed in consultation with the RRMG. Background noise levels should be measured for an agreed period prior to or subsequent to the piling operation for an agreed sample of piles.

Detailed proposals will be developed by the Developer and contractor in consultation with the RRMG. Consideration will be given to detection of sound at frequencies appropriate to detect the presence of harbour porpoise.

##### ***Post-construction***

Reason: 1. As above

Suggested survey type: Use of a similar hydrophone equipment to above to measure turbine noise underwater. Depths and distances of hydrophones to be agreed with the RRMG. Background noise levels carried out during or pre-construction may be sufficient for comparison, although these will need to be carried out over a range of wind speeds and directions. Alternatively developer may measure background levels post construction during short operational outages of wind turbines.

Detailed proposals will be developed by the Developer and contractor in consultation with the RRMG. Consideration will be given to detection of sound at frequencies appropriate to detect the presence of harbour porpoise.

Timing and Frequency:            Up to 2 occasions during 1<sup>st</sup> year of operation. Timing to suit operational constraints.

### **5.2.7 Sea Mammals – Distribution and Abundance**

#### ***Pre-construction***

Reason: 1. To establish additional background data of abundance and distribution of mammals in region of wind farm in order to establish/confirm measures to be adopted during construction.

Suggested Survey Type: Boat based surveys to coincide with pre-construction boat based bird surveys using formal survey procedure and dedicated spotter. Liase with Whale & Dolphin Society and Marine Conservation Society to agree training and survey methodologies for construction and post construction monitoring. Continue to liaise with Solway Shark Watch on data exchange and collation.

Timing & Frequency; As for boat based bird surveys.

#### ***During Construction.***

Reason : 1. To comply with Sec 36 and condition 26 of FEPA licence.

Suggested Survey Type: As for pre-construction.

Timing & Frequency; As for boat based bird surveys.

#### ***Post Construction.***

Reason: As above.

Suggested Survey Type: As for pre-construction.

Timing & Frequency; As for boat based bird surveys for a period of 2 years

### **5.2.8 Birds**

#### ***Pre Construction***

Reason: 1. To comply with Condition 21 of the FEPA licence and Section 36 provisions. 2. To provide additional baseline data to supplement that acquired in the ES and subsequently. 3. Previous surveys have identified the importance of the area for Common Scoter, especially during August/September.

Survey Type: Boat based surveys following methodology described in the ES.

Coverage/Area: Area described in ES.

Timing and Frequency: One survey per month in January to March in 2004 or 2005. Two surveys in August 2004. One survey in September 2004.



### ***During Construction***

Reason: 1. To comply with Condition 21 of the FEPA licence and Section 36 provisions.

Survey Type: Boat based surveys following methodology described in ES.

Coverage/Area: Area to be monitored will need to be established once construction vessel access routes are determined (ie Coverage will be different depending on whether vessels approach from Scottish ports to the north of English ports to the south).

Timing and Frequency: Twice per month.

### ***Post Construction***

Reason: To comply with Condition 21 of the FEPA licence and Section 36 provisions.

Survey Type: Boat based surveys following methodology described in the ES.

Coverage/Area: As described in ES.

Timing and Frequency: Once per month for five years (with a review after three years to establish if further surveys are still required). If no significant adverse impact has been observed surveys will be discontinued.

Remote Detection Systems for monitoring bird movements and collision incidence, in particular during storm conditions, poor visibility and hours of darkness, (e.g.: radar, cameras and thermal animal detection systems) will continue to be investigated. The use of such systems will be reviewed by the developer with the RRMG prior to the windfarm becoming operational.

The data gathered from the monitoring will be provided to the Robin Rigg Monitoring Group to continually assess impacts and advise on potential mitigation.

### **The reporting process for bird monitoring is as follows:**

Pre Construction Report to be supplied by December 2004 for August/September 2004 surveys.  
Prior to commencement of construction works data to be supplied in April 2004 for January – March 2004 surveys. A report will be submitted by May 2004.

Construction Monthly data and Quarterly reports will be submitted together with on-going liaison with the members of the Bird Group of

the RRMG regarding data collected from boat based surveys and construction activities.

Operation                      Monthly data reports and quarterly reports / meetings during year 1, thereafter 6 monthly meetings years 2 - 5, (to be reviewed after year 3 as above).

Monthly Data and reports will be submitted to the members of the RRMG within stated timescales.

## **6.                      MITIGATION MEASURES**

The RRMG has advised that mitigation measures be developed in light of the results of the monitoring programme where appropriate.

Where monitoring results reveal unexpected results, it may be appropriate to carry out further, possibly more detailed or focussed monitoring in order to investigate further. In this respect mitigation measures are considered to include additional monitoring.

Where the need for mitigation measures is demonstrated by the results from the monitoring programme such measures will be agreed by the Developer with the relevant licensing authorities and subject to appropriate consultation with the RRMG.

Name

Designation

Date

## **ANNEX A**

### **Inventory of Consents and Licences**

- a) consent from the Scottish Executive under Section 36 of the Electricity Act 1989 to construct and operate the wind farm.
- b) licence from Fisheries Research Services under the Food and Environment Protection Act 1985 to make deposits in the sea (Scottish waters).
- c) licence from DEFRA under the Food and Environment Protection Act 1985 to deposit capital dredgings in the sea (English waters).
- d) consent from the Scottish Executive under the Coastal Protection Act 1949 to carry out marine works in Scottish waters.
- e) consent from the Department for Transport under the Coastal Protection Act 1949 to lay the export sub-sea cables in English waters.