

moray offshore renewables ltd

Environmental Statement

Technical Appendix 5.2 C - MCA MGN 371 Checklist

Telford, Stevenson, MacColl Wind Farms
and associated Transmission Infrastructure
Environmental Statement



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C1. Introduction

This Appendix presents the Marine Coastguard Agency (MCA) checklist based on the requirements set out in Marine Guidance Note (MGN) 371 which was the guidance set by the MCA during the NRA preparation.

Reference notes/remarks are made within the table based on which sections of the Navigational Risk Assessment (NRA), or other documents, address the issue noted in the MGN 371 checklist.

C2. MGN 371 Compliance Checklist

Table 1 MGN 371 Compliance Checklist for the three proposed wind farm sites located within the Eastern Development Area (EDA) of the MORL Zone

MGN 371 COMPLIANCE			
Issue	Yes	No	Remarks
Considerations on Site Position, Structures and Safety Zones			
1. Traffic Survey			
All vessel types	✓		Section 8 of NRA.
Four weeks duration, within 12 months prior to submission of the Environmental Statement	✓		Survey period comprised four months AIS/Radar survey from April to July 2010 and AIS/Radar survey in November, December and January 2011.
Seasonal variations	✓		Surveys have been carried out in spring/summer April to July 2010 and winter November, December and January 2011. Consultation was also used to identify variations in recreational and fishing vessel activity. (Also refer to the Commercial Fisheries Assessment carried out for the ES.)
Recreational and fishing vessel organisations	✓		Sections 10 and 11 of NRA.
Port and navigation authorities	✓		Sections 5, 6, 8 and 9 of NRA.
Assessment			
Proposed OREI site relative to areas used by any type of marine craft.	✓		Sections 8-11 of NRA.
Numbers, types and sizes of vessels presently using such areas	✓		Sections 8-11 of NRA.
Non-transit uses of the areas, e.g. fishing, day cruising of leisure craft, racing, aggregate dredging, etc.	✓		Sections 8-11 and 14 of NRA.
Whether these areas contain transit routes used by coastal or deep-draught vessels on passage.	✓		Section 8 and 14 of NRA.
Alignment and proximity of the site relative to adjacent shipping lanes	✓		Sections 8, 9 and 14 of NRA.
Whether the nearby area contains prescribed routing schemes or precautionary areas	✓		Sections 6, 8 and 9 of NRA.
Whether the site lies on or near a prescribed or conventionally accepted separation zone between two opposing routes	✓		Sections 6, 8 and 9 of NRA.
Proximity of the site to areas used for anchorage, safe haven, port approaches and pilot boarding or landing areas.	✓		Sections 6, 8 and 9 of NRA.

MGN 371 COMPLIANCE			
Issue	Yes	No	Remarks
Whether the site lies within the limits of jurisdiction of a port and/or navigation authority.	✓		Section 6.2/6.3 of NRA.
Proximity of the site to existing fishing grounds, or to routes used by fishing vessels to such grounds.	✓		Sections 11/14 of NRA and Commercial Fisheries Assessment.
Proximity of the site to offshore firing/bombing ranges and areas used for any marine military purposes.	✓		Section 6.8 and Section 16/17 of NRA.
Proximity of the site to existing or proposed offshore oil / gas platform, marine aggregate dredging, or other exploration/exploitation sites	✓		Section 6.7 and Sections 14,16 and 17 of NRA.
Proximity of the site relative to any designated areas for the disposal of dredging spoil	✓		Section 17 of NRA
Proximity of the site to aids to navigation and/or Vessel Traffic Services (VTS) in or adjacent to the area and any impact thereon.	✓		Sections 6 of NRA.
Researched opinion using computer simulation techniques with respect to the displacement of traffic and, in particular, the creation of 'choke points' in areas of high traffic density.	✓		Sections 8, 9 and 13 of NRA.
Type(s) of simulation used in analysis Limitation of system (s)	✓		Sections 8, 9 and 13 of NRA
2. OREI Structures			
Whether any features of the OREI, including auxiliary platforms outside the main generator site and cabling to the shore, could pose any type of difficulty or danger to vessels underway, performing normal operations, or anchoring	✓		Sections 8-15 of NRA. (Note: The final design has not yet been selected therefore the Rochdale Envelope has been assumed, covering three indicative layouts).
Clearances of wind turbine blades above the sea surface <i>not less than 22 metres</i>	✓		Section 3.4 of NRA.
Least depth of current turbine blades	✓		Not applicable.
The burial depth of cabling	✓		1m to 3m based on preliminary export cable route investigation works (Note: however, protection will be used where the cable cannot be buried. In addition the final route has not yet been selected).
Whether any feature of the installation could create problems for emergency rescue services, including the use of lifeboats, helicopters and emergency towing vessels (ETVs)	✓		Section 19 of NRA.

MGN 371 COMPLIANCE			
Issue	Yes	No	Remarks
How rotor blade rotation and power transmission, etc., will be controlled by the designated services when this is required in an emergency.	✓		Section 19 of NRA.
<p>3. Assessment of Access to and Navigation Within, or Close to , an OREI To determine the extent to which navigation would be feasible within the OREI site itself by assessing whether:</p>			
a. Navigation within the site would be safe:	✓		
<ul style="list-style-type: none"> i. by all vessels, or ii. by specified vessel types, operations and/or sizes. iii. in all directions or areas, or iv. in specified directions or areas. v. in specified tidal, weather or other conditions 			Entire NRA.
b. Navigation in and/or near the site should be:	✓		
<ul style="list-style-type: none"> i. prohibited by specified vessels types, operations and/or sizes. ii. prohibited in respect of specific activities, iii. prohibited in all areas or directions, or iv. prohibited in specified areas or directions, or v. prohibited in specified tidal or weather conditions, or simply vi. recommended to be avoided. 			Entire NRA.
c. Exclusion from the site could cause navigational, safety or routing problems for vessels operating in the area.	✓		See Sections 8-11 and 14 for discussion of likely impacts of site on vessel activity.
Relevant information concerning a decision to seek a “safety zone” for a particular site during any point in its construction, operation or decommissioning.	✓		Section 18 of NRA.

MGN 371 COMPLIANCE			
Issue	Yes	No	Remarks
Navigation, collision avoidance and communications			
1. The Effect of Tides and Tidal Streams : It should be determined whether or not:			
Current maritime traffic flows and operations in the general area are affected by the depth of water in which the proposed installation is situated at various states of the tide i.e. whether the installation could pose problems at high water which do not exist at low water conditions, and vice versa.	✓		Sections 3, 6, 8 and 20 of NRA
Set and rate of the tidal stream, at any state of the tide, has a significant affect on vessels in the area of the OREI site.	✓		Sections 6, 7, 8 13 and 20 of NRA
Maximum rate tidal stream runs parallel to the major axis of the proposed site layout, and, if so, its effect.	✓		Section 6.10 of NRA.
The set is across the major axis of the layout at any time, and, if so, at what rate.	✓		Section 6.10 of NRA.
In general, whether engine failure or other circumstance could cause vessels to be set into danger by the tidal stream.	✓		Section 6.10, 9 and 13.3 of NRA. (Tides in the area used to model risk of drifting ship collision.)
Structures themselves could cause changes in the set and rate of the tidal stream.	✓		Section 20.3 of NRA.
Structures in the tidal stream could be such as to produce siltation, deposition of sediment or scouring, affecting navigable water depths in the windfarm area or adjacent to the area	✓		Section 20.5 of NRA.
2. Weather: To determine if:			
The site, in normal, bad weather, or restricted visibility conditions, could present difficulties or dangers to craft, including sailing vessels, which might pass in close proximity to it.	✓		Sections 3, 6.10, 7, 8-13, 15, 20 and 21 of NRA.
The structures could create problems in the area for vessels under sail, such as wind masking, turbulence or sheer.	✓		Section 20.4 of NRA.
In general taking into account the prevailing winds for the area, whether engine failure or other circumstances could cause vessels to drift into danger, particularly if in conjunction with a tidal set.	✓		Section 13.3 of NRA (Drifting collision risk model).
3. Visual Navigation and Collision Avoidance: To assess the extent to which			
Structures could block or hinder the view of other vessels under way on any route.	✓		Section 20.2 of NRA.

MGN 371 COMPLIANCE			
Issue	Yes	No	Remarks
Structures could block or hinder the view of the coastline or of any other navigational feature such as aids to navigation, landmarks, promontories, etc	✓		Section 20.2 of NRA.
4. Communications, Radar and Positioning Systems : To provide researched opinion of a generic and, where appropriate, site specific nature concerning whether or not:			
Structures could produce radio interference such as shadowing, reflections or phase changes, with respect to any frequencies used for marine positioning, navigation or communications, including Automatic Identification Systems (AIS), whether ship borne, ashore or fitted to any of the proposed structures.	✓		Section 16 of NRA.
Structures could produce radar reflections, blind spots, shadow areas or other adverse effects: a. Vessel to vessel; b. Vessel to shore; c. VTS radar to vessel; d. Racon to/from vessel.	✓		Section 16 of NRA.
OREI, in general, would comply with current recommendations concerning electromagnetic interference.	✓		Section 16 of NRA.
Structures and generators might produce sonar interference affecting fishing, industrial or military systems used in the area.	✓		Section 20.6 of NRA.
Site might produce acoustic noise which could mask prescribed sound signals.	✓		Section 20.9 of NRA.
Generators and the seabed cabling within the site and onshore might produce electromagnetic fields affecting compasses and other navigation systems.	✓		Section 20.7 of NRA.
5. Marine Navigational Marking :			
To determine:			
How the overall site would be marked by day and by night taking into account that there may be an ongoing requirement for marking on completion of decommissioning, depending on individual circumstances.	✓		Section 4 of NRA.
How individual structures on the perimeter of and within the site, both above and below the sea surface, would be marked by day and by night.	✓		Section 4 of NRA.

MGN 371 COMPLIANCE			
Issue	Yes	No	Remarks
If the specific OREI structure would be inherently radar conspicuous from all seawards directions (and for SAR and maritime surveillance aviation purposes) or would require passive enhancers	✓		Section 4 of NRA.
If the site would be marked by one or more racons and/ or,	✓		Sections 4 and 6.4 of NRA.
If the site would be marked by an Automatic Identification System (AIS) transceiver, and if so, the data it would transmit.	✓		Sections 21 of NRA. (under consideration)
If the site would be fitted with a sound signal, and where the signal or signals would be sited	✓		Section 12.4 of NRA (potential mitigation measure).
If the structure (s) would be fitted with aviation marks, and if so, how these would be screened from mariners or potential confusion with other navigational marks & lights resolved.	✓		Not applicable
Whether the proposed site and/or its individual generators would comply in general with markings for such structures, as required by the relevant General Lighthouse Authority (GLA) or recommended by the Maritime and Coastguard Agency, respectively.	✓		Section 4 of NRA.
The aids to navigation specified by the GLAs are being maintained such that the 'availability criteria', as laid down and applied by the GLAs, is met at all times.	✓		Section 4 of NRA.
The procedures that need to be put in place to respond to casualties to the aids to navigation specified by the GLAs, within the timescales laid down and specified by the GLAs.	✓		Section 4 of NRA.
Safety and mitigation measures recommended for OREI during construction, operation and decommissioning.			

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Issue	Yes	No	Remarks
Mitigation and safety measures will be applied to the OREI development appropriate to the level and type of risk determined during the Environmental Impact Assessment (EIA). The specific measures to be employed will be selected in consultation with the Maritime and Coastguard Agency and will be listed in the developer's Environmental Statement (ES). These will be consistent with international standards contained in, for example, the Safety of Life at Sea (SOLAS) Convention - Chapter V, IMO Resolution A.572 (14) ³ and Resolution A.671(16) ⁴ and could include any or all of the following:	✓		Sections 12.6, 18 and 21 of NRA.
Promulgation of information and warnings through notices to mariners and other appropriate media.	✓		Sections 12.6, 18 and 21 of NRA.
Continuous watch by multi-channel VHF, including Digital Selective Calling (DSC).	✓		Sections 18 and 21 of NRA.
Safety zones of appropriate configuration, extent and application to specified vessels	✓		Section 18 of NRA.
Designation of the site as an area to be avoided (ATBA).	✓		Not applicable.
Implementation of routing measures within or near to the development.	✓		Not applicable. (See Section 9 of for Impact on Commercial Shipping Navigation).
Monitoring by radar, AIS and/or closed circuit television (CCTV).	✓		Sections 18 and 20 of NRA.
Appropriate means to notify and provide evidence of the infringement of safety zones or ATBA's.	✓		Sections 18, 19 and 21 of NRA.
Any other measures and procedures considered appropriate in consultation with other stakeholders.	✓		Sections 19 and 21 of NRA.
<p>Standards and procedures for wind turbine generator shutdown in the event of a search and rescue, counter pollution or salvage incident in or around a wind farm.</p> <p>The wind farm should be designed and constructed to satisfy the following design requirements for emergency rotor shut-down in the event of a search and rescue (SAR), counter pollution or salvage operation in or around a wind farm:</p>			
All wind turbine generators (WTGs) will be marked with clearly visible unique identification characters which can be seen by both vessels at sea level and aircraft (helicopters and fixed wing) from above.	✓		Sections 4 and 19 of NRA.

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Issue	Yes	No	Remarks
The identification characters shall each be illuminated by a low intensity light visible from a vessel this enabling the structure to be detected at a suitable distance to avoid a collision with it. The size of the identification characters in combination with the lighting should be such that, under normal conditions of visibility and all known tidal conditions, they are clearly readable by an observer, stationed 3 metres above sea levels, and at a distance of at least 150 metres from the turbine. It is recommended that lighting for this purpose be hooded or baffled so as to avoid unnecessary light pollution or confusion with navigation marks. (Precise dimensions to be determined by the height of lights and necessary range of visibility of the identification numbers).	✓		Sections 4 and 19 of NRA
For aviation purposes, OREI structures should be marked with hazard warning lighting in accordance with CAA guidance and also with unique identification numbers (with illumination controlled from the site control centre and activated as required) on the upper works of the OREI structure so that aircraft can identify each installation from a height of 500ft (150 metres) above the highest part of the OREI structure.	✓		Sections 4 and 19 of NRA.
Wind Turbine Generators (WTG) shall have high contrast markings (dots or stripes) placed at 10 metre intervals on both sides of the blades to provide SAR helicopter pilots with a hover reference point.	✓		Section 19 of NRA.
All WTGs should be equipped with control mechanisms that can be operated from the Central Control Room of the wind farm or through a single contact point.	✓		Section 19 of NRA.
Throughout the design process for a wind farm, appropriate assessments and methods for safe shutdown should be established and agreed, through consultation with MCA and other emergency support services.	✓		Sections 19 and 21 of NRA.
The WTG control mechanisms should allow the Control Room Operator to fix and maintain the position of the WTG blades as determined by the Maritime Rescue Co-ordination Centre or Maritime Rescue Sub Centre (MRCC/SC).	✓		Sections 19 and 21 of NRA.

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Issue	Yes	No	Remarks
Nacelle hatches should be capable of being opened from the outside. This will allow rescuers (e.g. helicopter winch-man) to gain access to the tower if tower occupants are unable to assist and when sea-borne approach is not possible.	✓		Sections 19 and 21 of NRA.
Access ladders, although designed for entry by trained personnel using specialised equipment and procedures for turbine maintenance in calm weather, could conceivably be used, in an emergency situation, to provide refuge on the turbine structure for distressed mariners. This scenario should therefore be considered when identifying the optimum position of such ladders and take into account the prevailing wind, wave and tidal conditions.	✓		Section 13 of NRA.
Although it may not be feasible for mariners in emergency situations to be able to use wave or tidal generators as places of refuge, consideration should nevertheless be given to the provision of appropriate facilities.	✓		Section 19 of NRA
2. Operational Requirements			
The Central Control Room, or mutually agreed single point of contact, should be manned 24 hours a day.	✓		Sections 19 and 21 of NRA.
The Central Control Room operator, or mutually agreed single point of contact, should have a chart indicating the Global Positioning System (GPS) position and unique identification numbers of each of the WTGs in the wind farm.	✓		Sections 19 and 21 of NRA.
All MRCCs/MRSCs will be advised of the contact telephone number of the Central Control Room, or mutually agreed central point of contact.	✓		Sections 19 and 21 of NRA.
All MRCCs/MRSCs will have a chart indicating the GPS position and unique identification number of each of the WTGs in all wind farms.	✓		Sections 19 and 21 of NRA.
3. Operational Procedures			

MGN 371 COMPLIANCE			
Issue	Yes	No	Remarks
Upon receiving a distress call or other emergency alert from a vessel which is concerned about a possible collision with a WTG or is already close to or within the wind farm, or when the MRCC/MRSC receives a report that persons are in actual or possible danger in or near a wind farm and search and rescue aircraft and/or rescue boats or craft are required to operate over or within the wind farm, the MRCC/MRSC will establish the position of the vessel and the identification numbers of any WTGs which are visible to the vessel. This information will be passed immediately to the Central Control Room, or single contact point, by the MRCC/MRSC. A similar procedure will be followed when vessels are close to or within other types of OREI site	✓		Sections 19 and 21 of NRA.
The control room operator should immediately initiate the shut-down procedure for those WTGs as requested by the MRCC/MRSC, and maintain the WTG in the appropriate shut-down position, again as requested by the MRCC/MRSC, or as agreed with MCA Navigation Safety Branch or Search and Rescue Branch for that particular installation, until receiving notification from the MRCC/MRSC that it is safe to restart the WTG.	✓		Sections 19 and 21 of NRA.
The appropriate procedure to be followed in respect of other OREI types, designs and configurations will be determined by these MCA branches on a case by case basis, in consultation with appropriate stakeholders, during the Scoping and Environmental Impact Assessment processes.	✓		Section 20 of NRA
Communication and shutdown procedures should be tested satisfactorily at least twice a year. Shutdown and other procedures should be tested as and when mutually agreed with the MCA.	✓		Sections 19 and 21 of NRA.