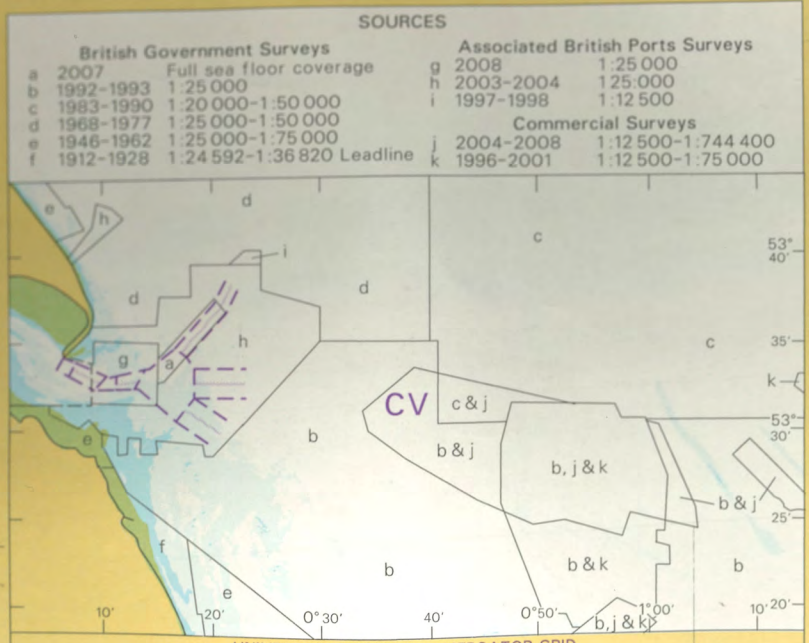
Annex A

Donna Nook Firing Range notes on Admiralty chart 107 (Edition 11) – Approaches to the River Humber



UNIVERSAL TRANSVERSE MERCATOR GRID
GRS 80 SPHEROID
ZONE 31U

Magenta numbered grid ticks in the margin represent the 10,000 metre Universal Transverse Mercator (UTM) Grid. The grid is shown in order to facilitate **the reporting of positions for military purposes only** and is not to be used for navigation. The last three digits of the grid numbers are omitted.
The ticks can be joined across to form the UTM Grid. However, when plotting grid positions directly from these ticks alone, **distortions** occur away from the chart borders, due to the projection of this chart. Grid references must give the EAST reading first, followed by the NORTH reading e.g. Kilnsea Church CV1045.

53°18'61N

DEVELOPMENT AREAS

The limits of Development Areas are charted around certain oil or gas fields. Surface vessels, subsea craft and divers may be engaged in constructing and servicing installations within these areas. Other vessels are strongly advised to keep outside the charted limits.

SUBMARINE CABLES AND PIPELINES

Mariners are advised not to anchor or trawl in the vicinity of submarine cables and pipelines. Pipelines are not always buried and their presence may significantly reduce the charted depth. They may also span seabed undulations and cause fishing gear to become irrecoverably snagged, putting a vessel in severe danger.

DONNA NOOK FIRING RANGE
(53°28′0N 0°15′0E)

Although no restrictions are placed on the right to transit the firing practice area at any time, mariners are advised to exercise particular caution whilst in the area due to intensive military air activity conducted at low level. Red flags or red lights are displayed to indicate that the area is in use. The firing practice area is operated using a clear range procedure. Exercise and firing only take place within the surface danger area (marked by the Sea Danger Area Buoys – DZ Nos 1–6, beacons and the coast) when the area is considered to be clear of all shipping. For further details, see Annual Notice to Mariners No 5, Byelaws, Practice and Exercise Areas (PEXA) Charts and Admiralty Sailing Directions.

05′ 10′

Annex B

Table 1 – Deck Manning Requirements Small Vessels in Commercial Use, of Annex 3 of the SCV Code

TABLE 1 - Deck Manning Requirements Small Vessels in Commercial Use

	CATEGORY		6	5	4	3	2	1	0
SKIPPERS QUALIFICATION ACCEPTABLE FOR GIVEN CATEGORY	Certificate of Competency -Yachtmaster Ocean (MCA Accepted)	Note A	√	√	√	√	√	√	√
	Certificate of Competency or Service - Yachtmaster Offshore (MCA Accepted)	Note A	√	√	√	√	√	√	
	MCA Boatmasters Licence Grade 1,2 & Modified Grade 3	Note A Note B	√	√	√	√	√		
	RYA/DfT Certificate of Competency or Service - Coastal Skipper	Note A	√	√	√	√			
	RYA/DfT Advanced Powerboat Certificate	2 years relevant experience	√	√	√	√			
		12 months relevant experience	√						
	Certificate of competence for appropriate area issued by Competent Authority	Note A Note C	√	√	√	√			
	RYA/DfT Day Skipper Theory & Practical Certificate	Note A 12 months relevant experience	√	√					
	Local Authority Licence for appropriate area	Note A Note D	√						
	RYA/DfT Day Skipper Practical Certificate	Note A	√						
	RYA/DfT Powerboat Level 2 Certificate	12 months relevant experience	√						
ADDITIONAL REQUIREMENTS	Unless operating in the single-handed mode in accordance with Paragraph 7 of this Annex, a second person capable of assisting the Skipper in an emergency should also be on board		√	√	√	√			
	There should also be on board a second person deemed by the skipper to be experienced.						√		
	There should also be on board a second person holding at least an RYA/DfT Certificate of Competency or Service as Coastal Skipper.							√	
	There should also be on board another person holding at least an RYA/DfT Certificate of Competency as either Yachtmaster Ocean or Yachtmaster Offshore.								√

Note 1 Qualifications differing from those tabled, but of equal standing or specialist application will be considered.

Note 2 Vessels regularly engaged on near coastal voyages from ports outside the UK, have to abide by the manning requirements of the Administration regulating that coastal area.

Note 3 Refer section 2.2.1 - RYA/DfT certificates of competency and/or service, and other MCA recognised Yachtmaster certificates, should carry the endorsement - "valid for vessels of up to 24 metres in length used for commercial purposes".

Note A Certificate should be designated motor or sail as appropriate.

Note B Existing MCA Boatmasters Licence Grade 3 is only acceptable if it has been validated for the specific area in the license prior to this Code coming into force. All Boatmasters licence holders (1, 2, and modified 3) are subject to the area limitations as defined on the certificate.

Note C Competent Authority in respect of manning requirements means either the Maritime and Coastguard Agency or an organisation that issues Certificates of Competence which has been applied for and granted recognition by the Maritime and Coastguard Agency as having the appropriate technical and administrative expertise.

Note D Local Authority Licence - only those Local Authorities that have the approval of the MCA may issue Licences under this Code.

Annex C

Section 8 – Acceptance of Fishing Vessel Certificates of Competence for Employment on Small Commercial Vessels and their Equivalence to Boat Master Qualifications of MGN 411 (M+F) dated March 2010

8.0 ACCEPTANCE OF FISHING VESSEL CERTIFICATES OF COMPETENCE FOR EMPLOYMENT ON SMALL COMMERCIAL VESSELS AND THEIR EQUIVALENCE TO BOAT MASTER QUALIFICATIONS

8.1 The Codes of Practice for Small Commercial Vessels state that they should be manned in accordance with tables given in those Codes. Qualifications differing from those tabled, but of equal standing or specialist application, will be considered. The following table aims to clarify the use of fishing qualifications on these vessels.

Fishing Certificate	Small Commercial Vessel		Boat Masters Qualification Equivalent
	Rank	Limitations/Area of Operation	
Deck Officer Certificate of Competency (Fishing Vessel) Class 1	Skipper	Category 0	Generic License Tier 1 Level 2
Skipper Full	Skipper	Category 0	Generic License Tier 1 Level 2
Deck Officer Certificate of Competency (Fishing Vessel) Class 2	Skipper	Category 1	Generic License Tier 1 Level 2
Second Hand Full	Skipper	Category 1	Generic License Tier 1 Level 2
Second Hand Special	Skipper	Category 2	Generic License Tier 1 Level 2
VQ Completion Certificate Level 4	Skipper	Category 2	Generic License Tier 1 Level 2
VQ Completion Certificate Level 3 (Skipper Inshore)	Skipper	Category 2	Generic License Tier 1 Level 2
VQ Completion Certificate Level 3 (Mate Unlimited)	Mate	Category 0	Not applicable
Engineer Officer Certificate of Competency (Fishing Vessel) Class 1	Engineer	Any vessel, any area	Not applicable
Engineer Officer Certificate of Competency (Fishing Vessel) Class 2	Engineer	Treat as Marine Engine Operators Licence (MEOL)	Not applicable

8.2 The Areas of Operation for Small Commercial Vessels are as follows:

Area Category	**Description**
0	Unrestricted service
1	Up to 150 miles from a safe haven
2	Up to 60 miles from a safe haven
3	Up to 20 miles from a safe haven
4	Up to 20 miles from a safe haven, in favourable weather and in daylight
5	To sea, within 20 miles from a nominated departure point named in the certificate in favourable weather and daylight
6	To sea, within 3 miles from a nominated departure point named in the certificate and never more than 3 miles from land, in favourable weather and daylight

Annex D

SCV Code, Section 19.1 – Nautical Publications

19. Miscellaneous Equipment

19.1 Nautical Publications

Charts and other nautical publications to plan and display the vessel's route for the intended voyage and to plot and monitor positions throughout the voyage should be carried. The charts must be of such a scale and contain sufficient detail to show clearly all relevant navigational marks, known navigational hazards and, where appropriate, information concerning ship's routeing and ship reporting schemes. Nautical publications may be contained within a consolidated publication. However, vessels operating in Area Category 6 need not carry publications. An electronic chart plotting system, complying with the requirements detailed in Marine Guidance Note MGN 262, may be accepted as meeting the chart carriage requirements of this sub-paragraph.

19.2 Signalling Lamp

A vessel should be provided with an efficient waterproof electric lamp suitable for signalling.

19.3 Radar Reflector

A vessel is to be provided with a radar reflector approved to current IMO performance standards, or other means, to enable detection by ships navigating by radar. For Category 6 vessels only, where it is not practicable for an efficient radar reflector to be fitted, they must not put to sea in fog, and if visibility starts to deteriorate they are to return to shore.

19.4 Measuring Instruments

19.4.1 Other than a dedicated pilot boat, a vessel operating in Area Category 0, 1, 2 or 3 should carry a barometer.

19.4.2 A sailing monohull vessel operating in Area Category 0 or 1, or carrying 16 or more persons should be provided with an inclinometer.

19.4.3 A sailing monohull vessel operating in Area Category 0, 1, 2 and 3 should be provided with an anemometer.

19.4.4 A sailing multihull vessel should be provided with an anemometer providing a continuous indication of apparent windspeed, with the display clearly visible at each control position.

19.5 Searchlight

A vessel operating in Area Category 0, 1, 2 or 3 should be provided with an efficient fixed and/or portable searchlight suitable for use in man-overboard search and recovery operations.

19.6 Sailing Vessels – Wire Cutting Equipment

A sailing vessel must carry appropriate wire cutting equipment, or equivalent means to clear rigging, for use in the event of dismasting.

Annex E

SMM 07-02 – Passage Planning to Working Field

Passage Planning to Working Field

SMM 07-02

1.0 Purpose

To describe the procedure for passage planning for routine field transits

2.0 Procedure

Field voyage plans must be completed for voyages to the normal operating field.

The preparation of the voyage and passage plan must detail the following information;

- Planned tracks showing true course
- Distances for each leg
- Speed changes required
- Way points of all turn points such as harbour approaches, channel markers, harbour entrances, berths
- Identification of area's where special attention is required such as anchorages and pilotage areas where speed restrictions may be operating
- Charts required for Passage
- Nautical publications
- Tidal predictions
- Any other documents
- Sufficient fuel, lubrication oil,

To prepare a voyage and passage plan, the 'Passage Plan' form (MARF001) shall be used,

3.0 Responsibility

Master

4.0 References

Form MARF001

Annex F

Voyage Planning Form data used to plan the route held on the chart plotter log file dated 27 May 2012

VOYAGE PLANNING FORM

WINDCAT WORKBOATS

VERSION NUMBER 2 VERSION DATE 01-04-11
PAGE NUMBER 1

REPORT DETAILS	
VESSEL	Wc9
NAME of MASTER	[redacted]
DATE REPORT	November 2012

VOYAGE DETAILS	
FROM BERTH	Grimsby Fish Dock
TO Windfarm	L.I.D
VIA	

CHARTS, PUBLICATIONS AND DOCUMENTS REQUIRED FOR THE VOYAGE

1188- 107-108

WPS

WP	LATITUDE	LONGITUDE	COURSE	DIST TO GO	TIME	CHARTS	REMARKS
Grimsby Gates WPT1	53"34.971N	000"03.944W	019T	0.3	N/A	1188	PUT BEARING LINE IN PLOTTER FOR A LOW WATER GUIDE
2	53"35.255N	000"03.783W	99T	3.2NM	9.5 MINS	1188	SWITCH VTS CHANELL @ CLEE NESS BOUY FLR2 10S @WPT3
3	53"34.779N	000"01.453W	145T	3.68 NM	10 MIN	1188	
4	53"32.251N	000"04.397W	99T	4.7 NM	15 MIN	1188	SSW 2C BOUY FL R 2s
CAUTION		TARGET BOUY 53.28.69N	000.13.00W				WATCH FOR SMALL ANGLING BOATS
5	53"31.500N	000"12.310W	157T	20.4 NM	50 MIN	107/108	GIVE MONO BUOY WIDE BERTH S/W HAILE SAND FL3R 10s
6	53"13.000N	000"25.377W			END	108	NW CORNER OFF ID01
TOTAL DISTANCE	31.019 Mile						

SPECIAL ATTENTION [reporting/communication requirements, port communication channels, restricted area's, weather etc]

VESSELS SMALLER THAN 20METERS TO USE THE SOUTH SIDE OF THE RIVER AND NOT THE CHANNEL,
20 KNOT SPEED RESTRICTION IN RIVER
TETNEY MONO BUOY HAS A PIPE 290 M LONG VQY LIGHT (WIDE BERTH)
ENTERING AND LEAVING GRIMSBY FISH DOCK, MUST HAVE 11 FOOT OFF WATER ON SILL, ALWAYS ASK LOCK KEEPER CH74 FOR A READING IF LOW WATER,(IF FIRST TIME LOCK KEEPER WILL GUIDE YOU THROUGH) PUT TRANSIT LINE IN PLOTTER TRANSIT, EAST SIDE JETTY IS MOST SHALLOW
VTS HUMBER CH12 LEAVING -OUT AND CH14 IN BOUND CALL AT HAILE SAND FLATS/HUMBER PORT LIMITS
SPRING TIDES= KEEP AN EYE OUT FOR LARGE LOGS ;WATCH IN RIVER FOR SMALL ANGLING BOATS ,TARGET BOUY.

Annex G

Windcat Workboats Training Manual – Section 8 Periodic Assessment – All Crew Members

8. Periodic Assessment - All Crew Members

To ensure continuous high standards of Safety and Performance on board our vessels, it is the intention of WCW to introduce the following guidelines for the assessment of our established Master's & Crews:

- Established Masters/Crew (i.e.: more than 1 year with our company) will undergo an assessment on a 12 monthly basis.

- New Masters/Crew after initial training should be monitored and assessed during the 3 month probationary period then annually thereafter.

- All Masters/Crew will be monitored regularly by the Crew Manager/QHSE Manager/Site Manager's & via Client feedback. We will also use the reporting and maintenance compliance as acquired through our Company reporting procedures.

- Any weakness identified can be quickly addressed by providing extra training in any particular discipline (i.e. ship handling, maintenance and paperwork etc.) It is the responsibility of the Master to identify the requirements of any additional training that may be necessary for any officer or crewmember onboard the vessel that he feels that further training may be of benefit to them and/or the company in assisting those personnel to undertake the everyday tasks and those tasks specifically associated with the safe and efficient operation of the companies Safety Management System.*

.

- It will be the responsibility of the Site Manager to identify any further training requirements that may benefit the Master and/or the company in assisting those persons to undertake the everyday tasks and those tasks specifically associated with the safe and efficient operation of the companies Safety Management System and to bring this to the attention of the senior management.*

Drill evaluations forms can be used to highlight these requirements (in the case of operational/emergency requirements highlighted during the drill evaluation process)* ***OR* *the General Notification Section on the Accident/Incident form can also be used to bring this to the attention of the senior management. A copy of this form should, in this case, be forwarded onto the Crew Manager& DPA/QHSE Managers respectively*

- Regular contact between all Masters /Crew and the Site mangers/Training Master to discuss any problems on vessel operations or Health and Safety issues.

- A training record will be maintained for each crewmember.

- Periodic Assessments for seagoing staff will be conducted by one of the nominated training or assessing Skippers as defined in section 10

Annex H

SMS Section – SMM 12-03 – Internal Audits

Internal Audits

SMM 12-03

1.0 Purpose

To act as monitoring tools for the Safety Management System to identify and help correct any identified weaknesses in the system

2.0 Procedure

The Company utilises a two tier system of vessel auditing, a full "vessel" audit based on the IMCA Marine Inspection Checklist for Small Workboats and "Mini" Audits using company guidance.

Audits are also carried out on office and warehouse functions

2.1 Full Vessel Audit

The QHSE Department annually prepares an audit schedule which includes all vessels, each vessel is scheduled to be audited every year.

The audit will be carried out by trained auditors who have received auditing training either from an extern provider or "in-house".

Any findings identified by the Auditor will be discussed with the Skipper and Site Manager if present at the end of the audit. Any corrective actions will be entered on to a Service Improvement Report; this will be used for monitoring, implementation and the closure of the corrective action.

Copies of the Audit report will be circulated to;

- The Skipper
- The Operations Manager
- Technical Manager
- Site Manager

The QHSE Department will retain a copy of all audits carried out.

2.2 Mini Audit

These "audits" cover various areas as identified from the IMCA Checklist and are carried out by the Site Managers, Operations Manager and QHSE Department. The appropriate checklist is used and are carried out at least twice per year.

Any findings identified by the Auditor will be discussed with the Skipper and Site Manager if present at the end of the audit. Any corrective actions will be entered on to a Service Improvement Report; this will be used for monitoring, implementation and the closure of the corrective action.

Copies of the Audit report will be circulated to;

- The Skipper
- The Operations Manager
- Site Manager

The QHSE Department will retain a copy of all audits carried out.

2.3 Office/Warehouse Audit

Audits will be carried out on the Technical Department, Site Managers, QHSE Department and Warehouses on an annual basis as per the audit schedule.

Any findings identified by the Auditor will be discussed with the Manager/Site Manager. Any corrective actions will be entered on to a Service Improvement Report; this will be used for monitoring, implementation and the closure of the corrective action.

Copies of the Audit report will be circulated to;

- The Department Manager or Site Manager
- The Operations Manager

The QHSE Department will retain a copy of all audits carried out.

3.0 Responsibility

QHSE Department

Operations Manager

4.0 References

Marine Inspection Checklist for Small Workboats	IMCA M 189
Accident Incident Report Form	QHSEF002
Service Improvement Report Form	QHSEF008
"Mini Audit" Forms	QHSEF021, 022, 023, 024, 025, 026
Internal Audit report Form	QHSEF018

QHSE Department Audit Records

Annex I

Navigation Skills report form, QHSEF 023 Revision 1 dated 31 August 2012

Navigation Skills

Vessel Details			
Vessel		Master	
Date		Site	
Auditor		Position	

Radar

Make & Model

Setting up ☐ Switching displays ☐ Gain use ☐ Sea clutter use ☐ Rain clutter use ☐

Setting guard zones ☐ Measuring range & distance to target ☐ Cursor use ☐ Use of EBL/VRM ☐

Positioning display – centre/look ahead etc ☐ Target alarm settings ☐ Target info ☐

Radar motions – relative and true ☐ Orientation – Head up / North up Course up ☐

Comments

Plotter

Make, Model & last update

Familiarisation with menus ☐ Measuring distance ☐ Plotting courses ☐ Saving routes ☐

Editing Waypoints ☐ Editing Routes ☐ Selecting objects ☐ Set up – North up/head up/ Course up ☐

AIS use ☐ Using cursor ☐ MOB mark ☐ Knowledge of symbols used ☐

Adding points – buoys, turbines etc ☐ Compile, enter and save a complete “passage plan” ☐

Comments

Charts (See SMM 07-24 & 07-28)

Charts numbers, edition and latest corrections	Chart	Edition	Latest Correction
Latest weekly correction on board and on chart – Correction Log			
Passage plan in Use - courses and other details entered onto chart e.g. avoidance areas, call points			
Complete a passage plan MARF001 and enter courses, avoidance areas, reporting points on charts	Attach copy of passage plan		
Chart corrections practical-demonstration – SMM 07-28			
Use of parallels/plotter, dividers on board			

Auditors Comments

Auditor's Signature		Master Signature	

A copy of this report must be left on board with the Master, additional copies should be forwarded to:

1. Operations Manager
2. QHSE Department
3. Windcat Crewing

Annex J

Task-Based Risk Assessment 0020 – Night/Dark Operations dated 8 November 2012

Task Based Risk Assessment

Activity	**Night / Dark Operations**			**Date**			
Assessor	[redacted]	**Position**	**QHSE Advisor**	**Ref. Number**	**TBRA 0020**	**Rev. No**	**1**

Task & personnel involved	Hazard		Initial RISK	*Control Measures*	Residual RISK
	Description	Effect			
Separate the job into individual tasks and record in sequence. Note who is doing the work (not individual names)	Describe all hazards identified Note: Additional hazards may be caused by interaction with other work.	Describe hazard effects for each task based on observation and experience.	Risk level from Company matrix	Describe fully all controls applicable for each hazard e.g. if PPE is used as a control, it must be specifically described. All controls must be valid in that they reduce severity, likelihood or both.	Risk level from Company matrix
Loading of vessel in dark or restricted visibility **Persons at Risk** Vessel crew Vessel passengers Quay side personnel	Slips, trips and falls Dropping equipment	Falling on boarding pontoons due to poor lighting- injuries to soft tissue / strains – sprains Falling into dock – cold shock / hypothermia /drowning Damage to equipment	**M**	Adequate lightinmg at dock to comply with legislation (as a minimum lighting level) Deck lighting on vessel switched on Lifejackets c/w light units and Hi-viz worn Approritae footware to be worn at all times. Pontoon to be free from any trip hazards, electrical leads to be covered / stowed correctly Life buoys and/ or boat hooks to be available on pontoons	**L**
Vessel Tranisit during reduced visibility Persons at Risk Vessel Crew Offshore Techs	Collision with another vessel or monopile	Damage to vessel Damage to monopile Injuries to passengers Loss of life	**M**	Deckhand is to carryout lookout duties whilst the vessel is in transit. All electronic navigation equipment should be checked and verified prior to departing port. Competent Master in control with appropriate certification Vessel to proceed at a safe speed as per collision regulations Tracks of other vessels to be monitored Locations of turbines etc. To be monitored	**L**
	Obscured Visibility Glare from internal lights	Damage to structures or vessel due to poor vision or lighting	**M**	On vessels with enclosed bridge – door/curtains & blinds to be kept closed during passage and on vessels with open navigational area - all internal lighting during transit to be kept to a minimum to allow safe movement around the vessel	**L**

Task Based Risk Assessment

Task & personnel involved	Hazard		Initial RISK	*Control Measures*	Residual RISK
	Description	Effect			
Working on vessel deck in hours of darkness or restricted visibility while underway Persons at Risk Vessel crew Vessel passengers	Slips, trips and falls	Falling over due to vessel movement and wet deck- injuries to soft tissue / strains – sprains Fall overboard reulting in drowning/ hyperthermia / cold shock	H	Safety footwear to be worn on deck and a lifejacket c/w light units at all times. When working on deck unless a harness is worn Work not to be started or must cease if vessel motion becomes too heavy Passengers to remain seated in cabin during transit	L
Approaching turbine/Stucture Persons at Risk Vessel crew Vessel passengers	Collision with TP / Installation	Damage to structure or vessel due to poor vision or lighting	M	Structures to be tracked by radar and GPS whilst in wind farm. Structure to be transferred to should be fully lit (utilising vessel floodlights) in advance of docking on it.	L
Working/Transfer on vessel deck in hours of darkness or restricted visibility Persons at Risk Vessel crew Vessel passengers	Slips, trips and falls	Falling over due to poor lighting and items on deck- injuries to soft tissue / strains – sprains Fall overboard reulting in drowning/ hyperthermia / cold shock	H	The deck lit when working/preparing for transfer on deck. Persons to only use the designated walkways when walking round. All passengers accompanied at all times. Good housekeeping practises should be enforced and all items stowed prior to departure. No loose items permitted on deck.	L
Transfer to any offshore structure in hours of darkness or restricted visibility Persons at Risk Vessel crew Vessel passengers	Slips trips and falls on ladder Fall into water	Falling into sea – cold shock / hypothermis/ drowning	M	Toolbox talk carried out prior to commencement Deck hand controls operation, only one passenger on fore deck at a time Safety harness must be worn with attachment Weather conditions to be monitored Deck and ladder fully lit when transferring. Survival suits to be worn on all night time transfers even if the water temperature is above 12 degrees. PLB to be armed for all transfers. PLB must be tested prior to use.	L

Task Based Risk Assessment

Task & personnel involved	Hazard		Initial RISK	*Control Measures*	Residual RISK
	Description	Effect			
Transfer to any offshore structure in hours of darkness or restricted visibility Continued	Entrapment or fall into water	Crush injuries	H	Toolbox talk Weather monitored throughout the transfer. Lifts to be visible at all times Transfers shall be abandoned if other vessels are operating in the immediate vicinity.	M
All tasks Persons at Risk Vessel Crew Offshore Techs	Man overboard Falling overboard whilst vessel in transit	Drowining & Hypothermia	H	Passengers to remain within cabin at all times Crew member to gain approval from Master before going on deck If access is required TRANSFER SUITS, PLB, LIFE JACKET c/w LIGHT must be worn. For transfers only one passenger goes out from cabin when signalled, remaining passengers stay within cabin	L

Assessor's Signature(s)	[redacted]	**Date**	**27th June 2012**	**Next revision due**	**7th November 2013**
QHSE Review by	[redacted]	**Signature**	[redacted]	**Date**	**8th November 2012**

Annex K

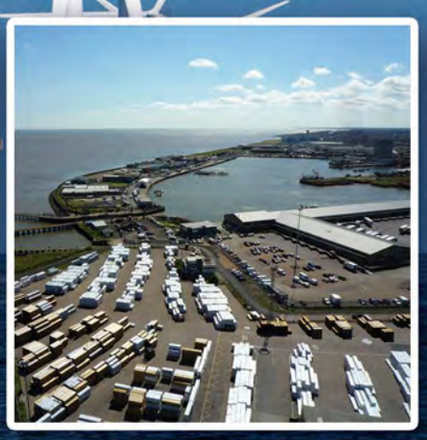
Associated British Ports Humber Estuary Services – Recommended Route for Wind Farm Transfer Vessels

ASSOCIATED BRITISH PORTS

Humber Estuary Services

Recommended Route for Wind Farm Transfer Vessels

www.humber.com

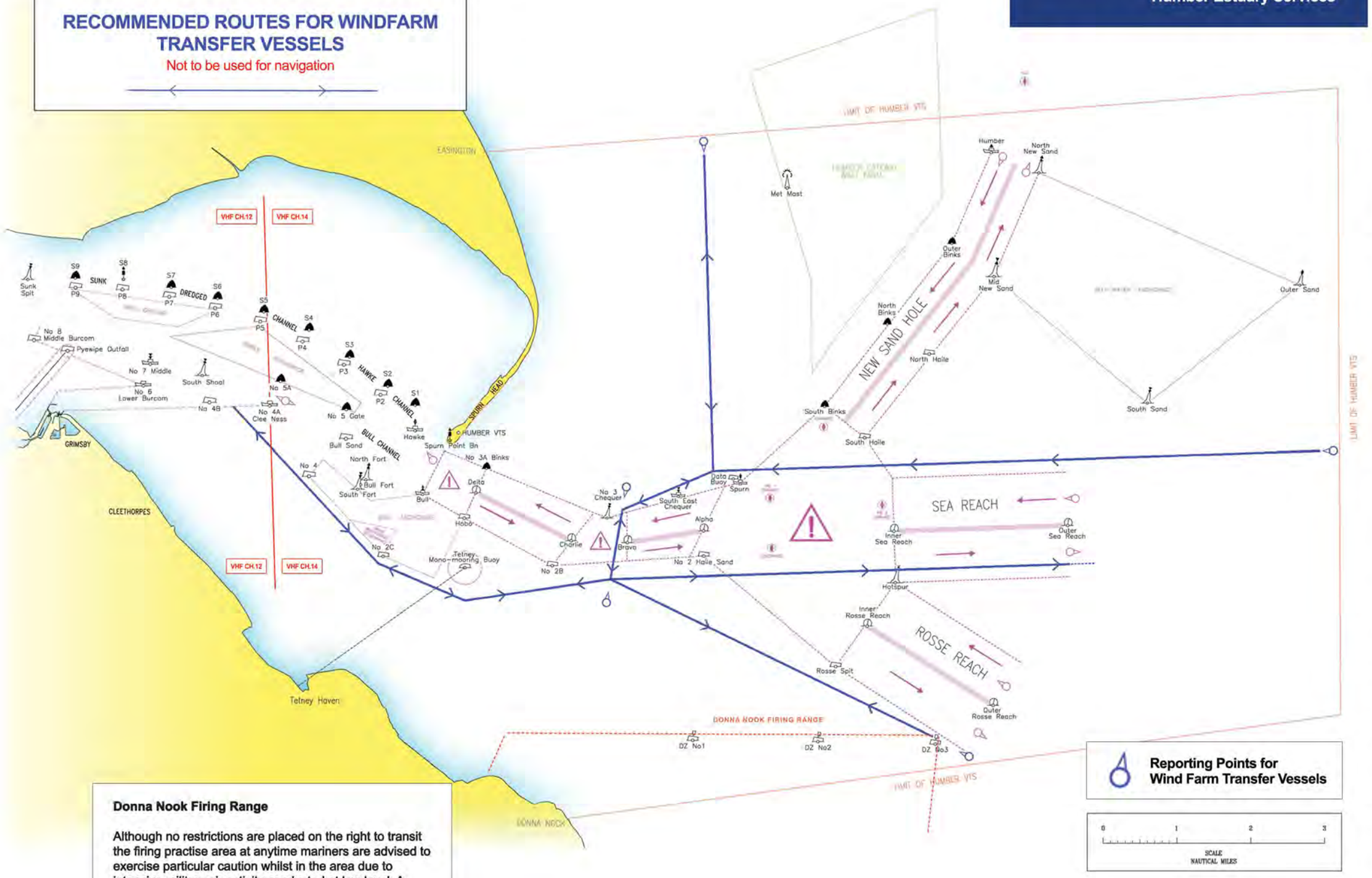


Main image courtesy of Siemens

RECOMMENDED ROUTES FOR WINDFARM TRANSFER VESSELS

Not to be used for navigation

ABP ASSOCIATED BRITISH PORTS
Humber Estuary Services



Reporting Points for Wind Farm Transfer Vessels

SCALE NAUTICAL MILES 0 1 2 3

VHF Communications

Departure from Grimsby

Call VTS Humber on VHF Channel 12 giving destination and number of persons onboard.

Maintain a listening watch on channel 12 until passing the meridian of longitude passing through No.4 A Clee Ness Light Float then change to channel 14 until clear of the VTS area.

Arrival from Sea

Call VTS Humber on VHF Channel 14 giving destination and number of persons onboard when entering the VTS area

Maintain a listening watch on channel 14 until passing the meridian of longitude passing through No.4 A Clee Ness Light Float then change to channel 12 until arrival at destination.

Intership channels for navigation purposes only

West of Clee Ness Channel 10

East of Clee Ness Channel 13

ABP Standing Notice to Mariners No 2 gives further details and is available for download on Humber.com

Recommended Track for Wind Farm Transfer Vessels

The recommended track is intended to avoid conflict with commercial traffic using the main approach channels, Bull anchorage and Tetney Mono Buoy. Two reporting points have been established to assist safe crossing of the main channel in the precautionary area between the BRAVO and CHARLIE buoys.

Outwards when approaching the No. 2 Bravo buoy call VTS Humber on Channel 14 for permission to cross the channel.

Inwards when approaching the No.3 Chequer buoy call VTS Humber on Channel 14 for permission to cross the channel.

Navigation Rules

Masters must comply with the International Rules for Preventing Collisions at Sea and the General Directions for Navigation in the Humber (S.H. 1). The Humber Navigation Byelaws 1990 must also be complied with. Copies of these publications can be downloaded from Humber.com.

Vessels are expected to formulate a passage plan for navigating the estuary.

VTS Humber issues two hourly weather and navigation broadcasts at 3 minutes past the odd hour on VHF Channels 12,14 & 15. These broadcasts should be monitored as they may contain information that may effect the safe navigation of the vessel.

Speed in the Harbour Area

Wind Farm Transfer vessels are restricted to 20 knots in the Humber Harbour Area. In conditions of restricted visibility of less than 0.5 nautical miles the maximum permitted speed is 10 knots. Vessels encountering areas of restricted visibility are required to report to VTS Humber.

Donna Nook Firing Range

Although no restrictions are placed on the right to transit the firing practise area at anytime mariners are advised to exercise particular caution whilst in the area due to intensive military air activity conducted at low level. A broadcast is made on VHF Channel 16 when the range is active.Further information can be obtained from the Coastguard or Donna Nook Range on VHF Ch.16.

Leisure Craft & Fishing Vessels

The recommended track for wind farm transfer vessels is also used by small craft entering and leaving the Humber. Transfer vessel masters are reminded of Rule 5 of the Collision Regulations 'that they shall at all times maintain a proper look-out by sight and hearing as well as by all available means appropriate in the prevailing circumstances and conditions so as to make a full appraisal of the situation and risk of collision.'

Tidal Rates and Heights

Vessels are advised to keep clear of floating marks due to the very strong set that can be experienced in the estuary.
Tidal heights are promulgated in the two hourly broadcasts and are also available on request from VTS Humber.

Pilot Boarding & Landing Areas

Pilots board and land in the precautionary area to the east of the Alpha buoy care and caution must be exercised when navigating in these areas. Large vessels (VLS) are serviced to the North East of the Humber Light Float.

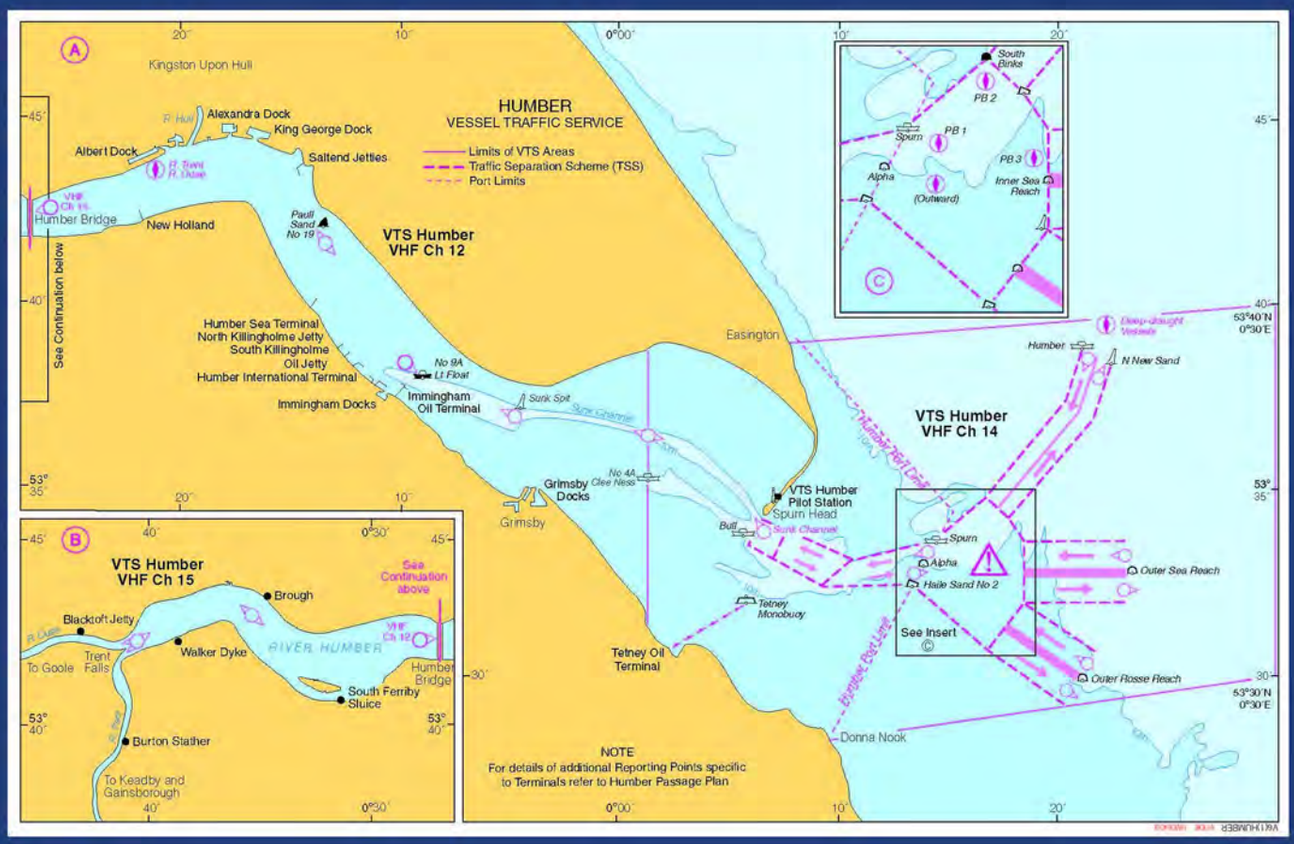
Tetney Mono - Mooring Buoy (TMB)

A 500 metre restricted area has been established around the buoy. The buoy is used by large tankers and a wide berth is required at all times. When not in use a floating 290 metre pipeline marked by yellow flashing lights extends from the buoy.

Tankers bound for the TMB approach at the No.3 Chequer buoy which involves the vessel crossing the main navigation channel. When a vessel bound for the TMB passes Spurn Light Float, an appropriate river broadcast is made by VTS Humber. The broadcast advises of the vessels position and intentions and that the work boat SPURN HAVEN will be transferring personnel and equipment to the vessel.

Vessel Traffic Services

Vessel Traffic Services (VTS) Humber, which is located at Spurn Point, operates a 24-hour service for all river users. Its major function is to monitor and regulate navigation of those parts of the Humber Estuary and Rivers Ouse and Trent within the jurisdiction of the Harbour Master, Humber. The system is compulsory for all sea-going vessels and craft when entering the Humber VTS area. The Service provides AIS coverage throughout the VTS area and radar tracking within the area bounded by the Humber Bridge and the seaward limits of the VTS area.



Annex L

SMS – Section SMM 07-17, paragraph 2.2 – Watch Keeping at Sea [sic]

1.0 Purpose

To ensure that the vessel is navigated in a safe manner and complies with all International and Field requirements

2.0 Procedure

2.1 Safe Speed

The vessel must be operated at a safe speed in relation to visibility, sea state, traffic density, traffic routes, other activities occurring in the area and as per considerations in the passage plan.

The Client may also set a “maximum” safe speed that must not be exceed except in emergencies.

2.2 Watch keeping Duties

The Master or Officer of the Watch (OOW) should remain at the steering position when the vessel is manoeuvring or on passage to/from the location and the watch-keeper’s duties include but are not limited to the following

- Navigating the vessel at a safe speed
- Collision avoidance as per COLREGS
- Navigation as per the passage plan (SMM 07-01 & SMM 07-02)
- Lookout duties
- Monitoring radio channels as appropriate i.e. distress, port, field etc.
- Making periodic checks on navigational equipment
- Monitoring the progress of the vessel

The watch-keeper must not undertake any other duties that would interfere or compromise the keeping of a safe navigational watch

3.0 Responsibility

Master

4.0 References

COLREGS – International Regulations for Preventing Collisions at Sea

MGN 315(M) – Keeping a Safe Navigational Watch on Merchant Vessels

International Chamber of Shipping Bridge Procedures Guide

Annex M

Island Panther Brochure

ISLAND SHIPPING
TUGS & WORKBOATS

VESSEL SPECIFICATION

ISLAND Panther *16 Metre Windfarm Support Catamaran*

Water-jet propelled, wind-farm support and crew transfer vessel designed to land wind-farm personnel and equipment onto offshore wind turbines. The Island Panther is fitted with a purpose built fendering system & boarding platform. Her raised bridge deck ensures all round 360º visibility. A versatile catamaran, the Island Panther can also be used for wind-farm monitoring surveys, diving & maintenance work

Vessel Type	Wildcat 53
Classification	MCA Workboat Code Cat 2 IRL P5 Passenger Boat Licence
Flag	UK
Built	March 2011
Builder	Safehaven Marine
Dimensions	L 16 x B 6.3 x 0.9 (Draft) metres
Complement	12 passengers and 2 crew
Range	450 nm
Displacement	26 tonnes
Gearboxes	2 x Twin Disc
Main Engines	2 x Scania D16 V8
BHP	2 x 750
Propulsion	2 x Ultra Dynamics UJ451 Waterjets
Maximum Speed	25 knots
Cont. Operating Speed	20 knots
Deck Area Aft	15m²
Deck Area Fwd	12m²
AC Generator	Paguro 9 kVA, 8kW
Electrical System	230v A.C. 50hz & 24v D.C.
Capstan	500 kg
Hydraulic Crane	Palfinger Marine PK 2300M
Fuel	5,000 litres, transfer 4,000
Fresh Water	1,000 litres, transfer 800
Accommodation	2 Berths, Galley, Mess, Shower/WC, Changing Area. Hot & Cold FW, Fridge/Freezer.
Storage	Windturbine Spares & Consummables below deck
Navigation Equipment	Radar, ARPA, Chart Plotter, Video 2 x Echo Sounder, 2 x GPS, AIS Class A, GMDSS, 2 x VHF, Sat Compass, Wind Speed & Direction Indicator, Loud Hail System, Navtex, Sea Marshall MOB System.
Electronic Equipment	CCTV. TV/DVD, Wifi

VESSEL CHARTER
- Tug, Workboat and Wind-farm Support Vessels
- Towage & Salvage
- Barge & Anchor Handling
- Dredging & Marine Civil Engineering Support
- Diving, Underwater Inspection & Repair

SURVEY & CONSULTANCY SERVICES
- Windfarm Surveys for Construction & Monitoring - Hydrographic, Geophysical & Environmental
- Subsea Cable Survey
- Scour Monitoring & Control
- Client Representation & Consultancy

Island Shipping Ltd., Dispensary Lane, Wicklow, Ireland.
T: +353 404 61623 E: info@IslandShipping.ie W: www.IslandShipping.ie

ISLAND Panther *16 Metre Windfarm Support Catamaran*

Annex N

Extracts from Sheringham Shoal Captain’s Handbook

Sheringham Shoal Captain`s Handbook

Health, safety and environment (HSE)
Work process requirements, WR2170, Final Ver. 1, valid from 2012-01-20

Owner: Marine Manager

Validity area: MPR RE WOP SHERINGHAM SHOAL/United Kingdom/All value chains/On- and offshore

Statoil

2.4 Roles and responsibilities

Before entering the Sheringham Shoal Windfarm. the Captain must have read and complied with the requirements set in the procedure for the Sheringham shoal. This section describes the responsibility of the parties involved for handling logistics between Wells-next-the-Sea and SSWF. It further describes any requirements set while operating in the SSWF.

2.4.1 The Captain's responsibility

In no way does this handbook limit the Captain's responsibility under national and/or international laws, regulations and conventions.

The vessel Captain operating on the SSWF has the following areas of responsibility:

- Compliance with sailing orders issued by Scira-Marine.
- Acting proactively and continuously considering deviation from sailing orders in cooperation with Scira-Marine.
- Reporting information of relevance to sailing orders to Scira-Marine including Notice to Mariners.
- Follow operations as described in Sheringham Shoal procedures.
- Refuse personnel under the influence of alcohol or drugs going offshore while the vessel is under contract for operations of the Sheringham Shoal Windfarm
- Responsible for the state of the vessel and all activities onboard.
- Responsible for Emergency Response as 1st line Emergency Manager when the vessel is involved.
- Otherwise complying with this Captain's handbook.

2.4.2 Scira Marine responsibility

Scira-Marine coordinates all traffic to/from the SSWF. Scira-Marine areas of responsibility are as follows:

- Overall surveillance of the SSWF.
- Responsibility adding positively to the HSE regime for Sheringham Shoal operations.
- Responsible for the coordination of Sheringham Shoal operations.

- Monitoring weather conditions / planning
- Monitor of all personnel movements to/from and inside SSWF
- Preparing the sailing orders / instructions
- Follow operations as described in Sheringham Shoal HSE Plan
- Follow operations as described in Sheringham Shoal Transportation of Personnel to Wind Turbine Generator
- Follow operations as described in Sheringham Shoal Emergency Response Plan
- Inform other users of the wind-farm area, or the access routes to this area, such as fishermen, of any scheduled operations.
- Liaison with the Wells Harbour Master on the use of Wells Harbour, parts transport and the Feeder Vessel
- Will arrange onshore transport and hotel bookings for Scira and Statoil personnel as instructed by Statoil vessel rep.
- Will arrange offshore transport for all personnel as instructed by the Statoil vessel's Representative.
- Responsible for the marine induction and verification of all personnel certification, NOK forms and PPE compliance and authorisations.
- Activate/de-activate work releases if required

4 Field information

4.1 Field Data

Installation	**Sheringham Wind Farm**
Operator	Scira Offshore Energy
Type	88 fixed installed WTG's + 2 fixed installed sub stations SWP 3,6 MW – 107m
Mooring	Monopiles
Coordinates	See Appendix C
UTM	See Appendix C
REFSYS	Lighting and Marking
Water depth	17-22 meters
Height above sea level	Turbine height = 80 meters. Rotor diameter = 107 meters
Other info	Fixed installed

4.2 Lighting & Marking Construction phase (2010-2012)

During the Construction phase the wind farm will be temporary marked with the following buoys at the following positions.

- North Cardinal Latitude 53º 09'.913N, Longitude 01º 07'.686E (VQ light)
- South Cardinal Latitude 53º 06'.361N, Longitude 01º 10'.000E (VQ (6) + LFl 10 sec)
- East Cardinal Latitude 53º 07'.318N, Longitude 01º 12'.287E (VQ (3) 5 sec)
- West Cardinal Latitude 53º 08'.956N, Longitude 01º 05'.413E (VQ (9) 10 sec)

In addition to these cardinal buoys, yellow pillar special mark buoys are established and maintained, one in each of the following positions, and each exhibiting a Fl Y 2.5s light:

- Latitude 53º 10'.735N., Longitude 01 º 04'.249E
- Latitude 53º 09'.095N., Longitude 01 º 11'.123E
- Latitude 53º 05'.530N., Longitude 01 º 13'.443E
- Latitude 53º 07'.179N., Longitude 01 º 06'.569E

The lights are exhibited at a focal plane height of about 4-5 metres and have a nominal range of 5 nautical miles. The buoy body has a diameter of about 2-3 metres.

During the construction phase, each transition piece will be furnished with a solar driven lantern.

4.3 Lighting & Marking after the construction phase

Turbine towers A1, F1, K1, K5, K8, F8, A8 and A5 will be marked as *significant peripheral structures* each exhibiting a Fl Y 5s light (flashing yellow every 5 seconds) about 12 metres above HAT but below the arc of the turbine blades. The navigation lights will be visible all round the towers to shipping and have a nominal range of 5 nautical miles and be exhibited at least at night and when the visibility reduces to 2 nautical miles or less.

6 SSWF Operational requirements

6.1 Channel/frequency plan Scira Marine

VHF listening watch: Every day: 24-hours watch. Listening on VHF CH-10 and private channels set up between Scira Office and Scira personnel transfer vessels.

Scira Marine VHF and UHF Private Channel Plan:

1. VHF -
2. VHF -
3. VHF -
4. VHF -

1. UHF –
2. UHF –
3. UHF –
4. UHF –
5. UHF –
6. UHF –

Call Sign: **Scira Marine**

VHF channel 1 – Main coordination Private VHF Ch 01 (all vessel movements)
VHF Scira 2 – Vessel to TP team
VHF Scira 3 – Vessel to Sub station
VHF Scira 4 – Siemens Operations

UHF 1 – Marine mammal observation
UHF 2 – Lifting operations
UHF 3 - Wells Harbour logistic transportation
UHF 4 – Flood Watch Wells-next-the-Sea

ALL VESSELS IN THE FIELD ARE TO LISTEN ON VHF PRIVAT CHANNEL 1.

6.2 En route to/from SSWF

As a general rule: all vessels entering and leaving the SSWF must report to to Scira Marine giving POB and destination in field/port.

All PTV'S shall call Scira Marine when 2 nm from intended entrance/gate to the SSWF, requesting permission to enter the SSWF and stating intended infield destination, they will then be advised by Scira Marine to proceed to the intended infield destination or to stand-by and await further instructions. Scira Marine will confirm destinations as per work authorisation scheme. Once the vessel has been given permission to enter the SSWF the vessel can then procceed through the advised entrance/gate and to the intended infield destination, once on location the Master shall inform Scira Marine of this.

All Construction Vessels including **Flotel Vessels** on-route to the SSWF shall call Scira Marine at least 1 hour before ETA SSWF and will be advised by Scira Marine of traffic movement and of which gate/entrance the vessel can approach.

For all **All Construction Vessels** including **Flotel Vessels**, at a distance of at least 2nm from the SSWF the Construction Vessel shall call Scira Marine again, and will then be advised to proceed to the intended infield work location or to stand-by and await further instructions. Once the vessel has been given permission to enter the SSWF the vessel can then proceed through the advised entrance/gate and to the intended work location, once on location the Master shall inform Scira Marine of this.

Any vessel not equipped with card "Offshore Profile" system are to report all personel movements (POB lists) to Scira Marine as soon any changes to the POB-lists do occur while in the field.

6.3 Sailing route Wells-next-the-Sea to/from SSWF

Reference is made to Appendix D.

In the Appendix I is visualised the preferred route to/from the wind-farm.

From Wells outer buoy to:

- A: 052 º 59.6' N 000 º 51.3' E, then to
- B: 053 º 01.5' N 000 º 54.8 E, then to
- C: 053 º 01.5' N 001 º 00.0' E, then to
- D: 053 º 06.3' N 001 º 10.0' E, from here head on a Northerly course entering the wind farm field.

Any changes of course in order reaching a specific location in the field can only be done when passing the Southerly Cardinal buoy.

From the wind-farm to Wells outer buoy:

The route is to be reversed thus:
Head inside the wind-farm towards the Southern Cardinal buoy. When passing this buoy, turn southerly to:

- D: 053 º 06.3' N 001 º 10.0' E, then to
- C: 053 º 01.5' N 001 º 00.0' E, then to
- B: 053 º 01.5' N 000 º 54.8' E, then to
- A: 052 º 59.6' N 000 º 51.3' E, then to Wells outer buoy.

Great caution is to be taken with regards to other users such as fishermen, equipment of fishermen , tourists and other users in the area. Good bridge watch utilising all available means including good seamanship is to be practised.

Both the Blackeney Overfalls and the Sheringham Shoals are to be avoided. Heavy fishing is to be expected in these areas.

6.4 Safe anchorage

Refer to Appendix E and map for the safe anchorage area which has been surveyed for UXO's but not tested for core penetration. Vessels may use this area for safe anchorage. The flotel anchors at position: 053 º 07' 786 N 001 º 13' 270 E while positioned east of the SSWF.

6.5 SSWF Enter/Exit zones

Refer to Appendix E visualising the Enter/Exit zones to/from the SSWF. Agreements have been made with the local fishing Industry and other users to the manner vessels are to enter/leave the SSWF.

The grey border lines visualise the restricted borders which are not allowed being used for exit/entry of the SSWF. The grey border lines cover a "buffer zone" of 700 meters around the SSWF. The "bufferzones" were created due to the anchor lines of the foundation installation vessel exceeding the SSWF perimeters, including the grey boder lines. Prior entry of these "bufferzones", the fishery is to be notified in good time advance. These "bufferzones" are open for fishery thus fishing equipment can be expected.

Any observed fishing gear/buoys/boats on route to the SSWF windfarm is to be reported to Scira Marine immediately. Please note the anchor position of the floatel.

6.5.1 Safety Zones

Each construction site (construction vessel while constructing) has a 500-meter safety zone. Some vessels use 4 point mooring systems and may have larger exclusion zones up to 1000 meters. Prior to entering, the vessel Captain is to ask permission to enter the safety zone. Permission is given by the Captain of the construction vessel to enter. The vessel Captain is to report time of entry/departure of safety-zone to Scira-Marine and log into vessel's log

6.6 Standby/guard Vessels

The SSWF has during the construction phase a guard-vessel. One of the primary tasks of the guard-vessel is to guard/warn the SSWF of any other users such as fishery, merchant navy, private vessels, and will also execute the MMO survey. The Standby/Guard vessel will be updated daily by Scira-marine and should update Scira Marine of any un-operational vessel activities etc immediately and then followed up in the daily reports.

6.6.1 Fishery

The SSWF is not closed for fishery. As for any other vessel, the fishing vessel do have to obey the safety zones, as desribed in section 6.5.1 and are not allowed entring these areas. The sailing route to/from SSWF (section 7.5. of this document) has been established in corporation with the fishery. Fishery will stay clear of the sailing route but great care is to be taken. Also inside the SSWF, fishery vessels can be met. Great care is to be taken and the fishery positions are to be logged and reported back to Scira-marine.

6.7 AIS and Wavebuoy

The wind-farm is equipped with a wave buoy. This buoy is a yellow buoy emitting a light being yellow and having a group flashing (5) every 20 seconds character - (Fl Y (5) 20s)
Location of mooring (WGS84): 53° 9.37' N 001° 9.398' E

Data from the wave buoy can be obtained by accessing the following web-site:

[redacted]

Each vessel is to have it's AIS beacon activated (i.e. ON) and correctly programmed. Scira-Marine will monitor the movements of the vessels.

6.8 Weather Reporting SSWF

Statoil's Metocean Services provide via the internet daily weather reports for the SSWF area. The area "Scira" is to be selected on the following web-site:

[redacted]

6.9 Delivery of diesel oil Offshore

A reference is made to procedure "Sheringham diesel Offshore Diesel Oil Transfer" for the transfer of diesel oil offshore.

8 Emergency response

Emergency response service consists of services and tasks relating to hazard and accident situations at the Sheringham Wind farm, including radar monitoring, oil spill response, man-over-board assistance, as well as standby duty around the facility. The vessels captain must have received training for playing the role of a line 1 emergency response manager during an emergency.

8.1 Emergency response for Sheringham Shoal Wind Farm

Vessels on standby duty must have been provided with and studied the following before taking up such duty:

1) The captain's handbook
2) VHF radios
3) Channel/frequency plan for the Sheringham wind-farm
4) Copy of the Sheringham Shoal Offshore Wind Farm Emergency Response Scenarios

Refer to procedure "Sheringham Emergency Response Plan". (SSH-ST-HSE-X03-02)

8.2 Emergency response, own vessel

Please note that in case of an emergency the vessel shall always contact the MRCC (Yarmouth Coastguard Maritime Rescue and Coordination Centre on 999 or Channel 16 according to the Sheringham Shoal Offshore Wind Farm Emergency Response Procedure.Refer to procedure "Sheringham Emergency Response Plan".) In addition, the Marine Coordinator (Scira Marine) is to be notified.

8.3 Emergency response Harbour Wells-next-the-Sea

The port of Wells limits are 2 NM North of the harbour and also 2 NM East and West. Any incidents, in this area need to be reported to the HM.

Collisions, stranding, vessels adrift or any obstructions to the channel must be reported to the Harbour Master and the Scira Marine Coordinator. Incidents need to be entered in the report book in the Harbour Office.

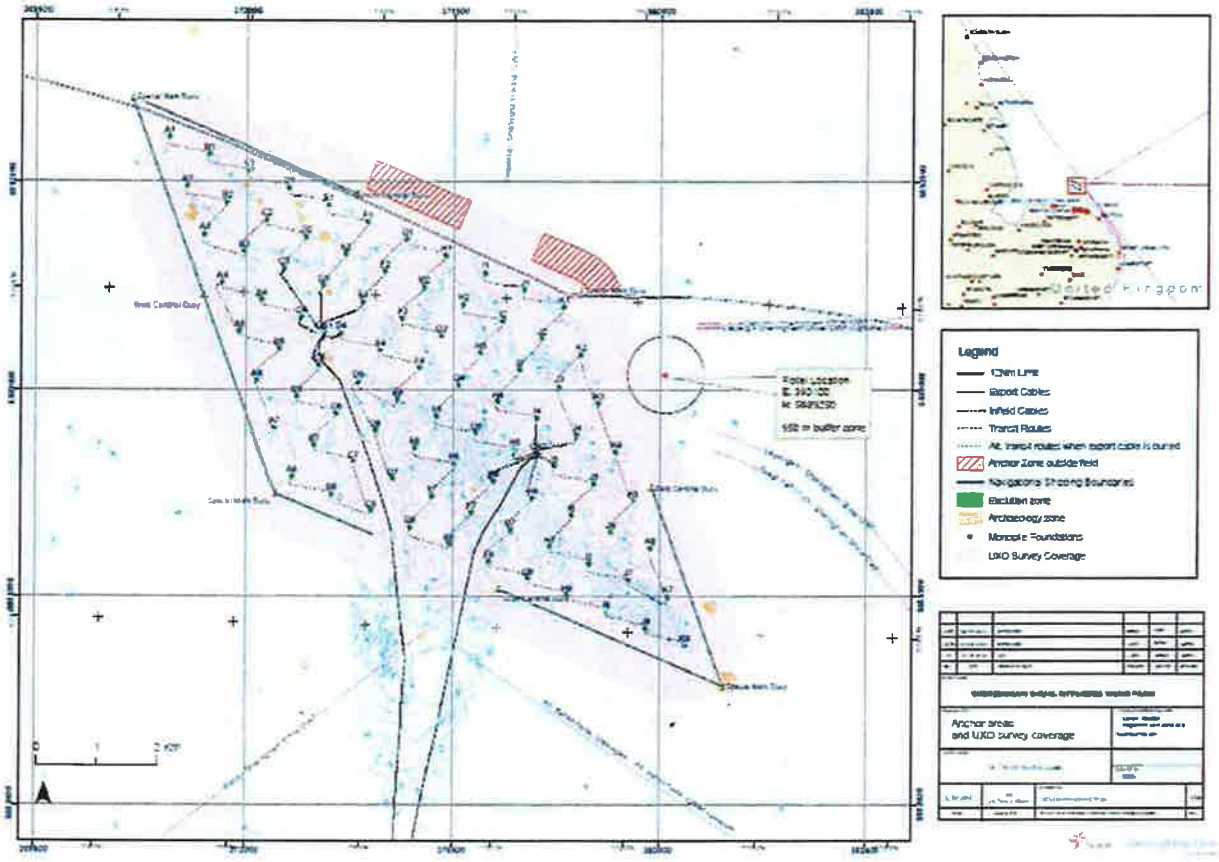
No Oil, Bait, Sewage, bilges or any other substance may be allowed to enter the Harbour and any accidental discharge must be reported to the Harbour Master immediately. Vessels with direct discharge toilets should seal off exit ports. Persons causing pollution are liable to substantial fines.

The Pollution Responds Team will be lead by the Harbour Master or nominated deputy. The pollution incident responds centre will be established at the Wells Harbour office.

Incident Controller:	Harbour Master
On scene Supervisor:	Deputy Harbour Master
Clean up Operations Team:	Harbour Staff, Harbour Commissioners, and casual labour drafted as required.

The response will initially be protective or containment booms by Harbour Staff assisted by other key partners when necessary. When requested by the HM or his nominated deputy, assistance is to be provided. The outer harbour is utilised with a boom allowing closing-off of the outer harbour from it surroundings. Any spillage must be immediately reported to the Harbour Master and the Scira Marine Coordinator (Scira Marine).

App D Safe Anchorage



Annex O

MGN 372 (M+F), Offshore Renewable Energy Installations (OREIs): Guidance to Mariners Operating in the Vicinity of UK OREIs

Maritime and Coastguard Agency

MARINE GUIDANCE NOTE

MGN 372 (M+F)

Offshore Renewable Energy Installations (OREIs): Guidance to Mariners Operating in the Vicinity of UK OREIs

Notice to other UK Government Departments, Offshore Renewable Energy Installation Developers, Port Authorities, Ship owners, Masters, Ships' Officers, Fishermen, Rescue Organisations and Recreational Sailors.

PLEASE NOTE:-
Where this document provides guidance on the law it should not be regarded as definitive. The way the law applies to any particular case can vary according to circumstances - for example, from vessel to vessel and you should consider seeking independent legal advice if you are unsure of your own legal position.

Summary

This Marine Guidance Note (MGN) highlights the issues to be taken into account when planning and undertaking voyages in the vicinity of offshore renewable energy installations (OREIs) off the UK coast.

Key Points

- Offshore renewable energy installations present new challenges to safe navigation, but proper voyage planning and access to relevant safety information should ensure that safety is not compromised.
- At present most OREIs are wind farms, though prototype installations using wave or tidal power have been established off the UK coast.
- Information is provided to enable appropriate voyage planning decisions to be made.
- The Guidance Note should be read in conjunction with MCA's other MGN entitled "Offshore Renewable Installations (OREI) – Guidance on UK Navigational Practice, Safety and Emergency Response Issues".

1 Introduction:

1.1 The number of offshore renewable energy installations (OREIs) around the UK coast is increasing. At present most are wind farms, though tidal and wave energy installations are being developed and some prototype installations have been established which may be close to shipping routes.

1.2 In June 2008 five offshore wind farms were operational, with a further twenty four in construction or at various stages of planning. These are mainly located in three strategic areas – East Irish Sea, the Greater Wash and the Thames Estuary. There are also sites in other English, Welsh, Scottish and Northern Irish areas. In the future, other strategic wind farm sea areas may be designated.

1.3 Wind farms can be very large, some approaching 100 square nautical miles. The sites may be irregular in shape and adjacent developments can be in close proximity to each other. In addition single wind turbines may be established as isolated units.

1.4 Wave and tidal energy devices are currently sited on an ad hoc basis, where wave or tidal stream conditions are optimum but where interference with other marine activities is, as far as practicable, minimised.

1.5 This Guidance Note will enable masters and skippers to make an informed risk assessment for the intended voyage. This should be taken into account together with the guidance on voyage planning found in other publications, relating to the implementation of SOLAS V Regulation 34 ("Voyage Planning"). Reference should be made to the MCA publication *"Safety of Navigation, Implementation of SOLAS Chapter V, 2002"* (Second Edition with amendments - June 2007) which is also accessible on the MCA website. MCA and IMO Guidance on Voyage Planning are contained in Annexes 24 and 25 of that publication. Further reference to MCA's other MGN entitled: "Offshore Renewable Energy Installations (OREI) – Guidance on UK Navigational Safety and Emergency Response Issues" is recommended.

1.6 Mariners are reminded of the requirement to navigate safely at all times and this Guidance Note aims to assist mariners in carrying out that obligation. OREIs are a new development and this guidance is of a general nature, based on the information available to date. It should be noted that specific details of individual sites may vary. As additional information becomes available in the light of experience, the guidance may be reviewed and updated. Notes on United Kingdom Hydrographic Office (UKHO) charts and Sailing Directions should be studied. Details will be included in the next edition of NP100, The Mariner's Handbook.

1.7 Any urgent Maritime Safety Information relating to OREIs will be promulgated by Notices to Mariners and Radio Navigation Warnings.

1.8 The ANNEX to this MGN contains illustrations of various OREIs and their markings.

2 Wind Farms:

2.1 **Visibility and appearance:** Wind Farms are readily identifiable both visually and by radar from a considerable distance in good meteorological conditions. The turbines typically comprise: a foundation below sea level, a yellow transition section not less than 15 metres high measured above the Highest Astronomical Tide (HAT), above which is a platform forming the base of the turbine tower, which may be typically 70 - 80 metres in height. At the top of the turbine tower is the nacelle, a box shaped structure housing the generator. The turbine blades are located opposite the nacelle. Each turbine blade can be more than 60m in length. The structures above the yellow transition section are usually painted matt grey. (See illustrations in ANNEX) The total height of a turbine and rotors is currently up to about 150 metres. Theoretically an observer with a height of eye 3 metres would be able see the tips of the blades at 28 nautical miles. The more substantial nacelle would, if 70m high, be visible to the same observer at 20 nautical miles in clear visibility.

2.2 **Navigational Aids:** Wind farms are marked by aids to navigation as specified by the General Lighthouse Authorities (GLA). The International Association of Lighthouse Authorities (IALA) *Recommendation O-117 on the Marking of Offshore Wind Farms*

requires offshore wind turbines to be marked so as to be conspicuous by day and night, with consideration given to prevailing conditions of visibility and vessel traffic. In certain cases cardinal marks may also be permanently placed adjacent to wind farms. During construction standard cardinal marks will be used around the area.

2.2.1 A corner structure, or other significant point on the boundary of the wind farm, is called a Significant Peripheral Structure (SPS). The SPS will be marked with lights visible from all directions in the horizontal plane. These lights should be synchronized to display simultaneously an IALA "special mark" characteristic, flashing yellow, with a range of not less than five (5) nautical miles. Aids to navigation on individual structures are placed below the arc of the rotor blades, typically at the top of the yellow section.

2.2.2 As a minimum, each SPS will show synchronised flashing characteristics. In some cases there may be synchronisation of all SPSs. In the case of a large or extended wind farm, the distance between SPSs should not normally exceed three (3) nautical miles.

2.2.3 Selected intermediate peripheral structures (IPS) on the boundary of a wind farm between SPSs will be marked with flashing yellow lights which are visible from all directions horizontally. The characteristics of these lights areas differ from those displayed on the SPSs, and have a range of not less than two (2) nautical miles. The distance between such IPS or the nearest SPS should not exceed two (2) nautical miles. The characteristics of the lights and marks will be shown on the chart.

2.2.4 Single structures, not part of a group of turbines, are marked, according to the *IALA Recommendation O-114 on the marking of offshore structures*, with a white light flashing Morse code "U".

2.3 **Other illumination and identification aids:** In addition to the navigational aid lights marking the SPSs and selected IPS of a wind farm, IALA permits:

a) Illuminating of peripheral structures and all structures within the wind farm

b) Racons, which may have the Morse characteristic "U".

c) Radar Reflectors and Radar Target Enhancers; and/or

d) AIS as an Aid to Navigation (as per IALA Recommendation A-126).

Mariners should consult the largest scale chart available for details.

2.4 **Sound signals:** Where required on a wind farm, the typical range of such a sound signal shall not be less than two (2) nautical miles. Details will be given on the chart.

2.5 **Markings:** Individual turbines will be marked with a unique alphanumeric identifier which should be clearly visible at a range of not less than 150 metres. At night, the identifier will be lit discretely, (e.g. with down lighters), enabling it to be seen at the same range. Wind turbines are therefore readily visible in good conditions; however it should be remembered that they may not be so easily seen at night or in reduced visibility from the wind farm interior. Fixed red aviation lights on the tops of the nacelles may be visible to surface craft, and care must be taken not to confuse these with vessels' sidelights or marine navigational aids, despite the possibility of them appearing to have a flashing characteristic when seen through rotating turbine blades.

2.6 **Charting:** All wind farms off the UK coast will be charted by the UKHO either by a group of black wind turbine chart symbols, or an outer limit with an encircled black wind turbine symbol. The outer limit will be in black dashed line, or a magenta T-

shaped dashed line if there are navigational or other restrictions in the area; see Admiralty Chart 5011(INT1) - *Symbols and Abbreviations used in Admiralty Charts*. Whether all submarine cables associated with wind farms will be charted depends upon the scale of the chart. As with all submarine cables mariners should note the hazards associated with anchoring or trawling near them. Heed should also be taken of any chart notes relating to wind farms.

2.7 Effects of Wind Farms and Wind Turbines on routeing options

In planning a voyage mariners must assess all hazards and associated risks. The proximity of wind farms and turbines should be included in this assessment. This section provides information on the effects of wind farms and their turbines, which should be taken into account:

2.7.1 **Spacing:** Turbines within a wind farm are generally spaced 500 metres or more apart depending on the size of the turbine. In order to make best use of the wind resource, turbine spacing is proportional to the rotor size and the down-wind wake effect created. In general terms, the larger the rotor the greater the spacing. Small craft may be able to navigate safely within the wind farm boundaries, while larger craft will need to keep clear.

2.7.2 **Depth of water:** The majority of wind turbines now operating or planned are located in relatively shallow water, e.g. on shoals or sand banks. The limited depth of water therefore provides a natural constraint between larger vessels and turbines. However it is expected that new generations of wind farm will be constructed in deeper water, where navigable channels in the vicinity may restrict vessels to a particular route passing close to a wind farm boundary.

2.7.3 **Seabed changes:** Wind farm structures could, over time, affect the depth of water in their vicinity. In dynamic seabed areas with strong tidal streams, changes in the scouring of the seabed may occur. This may result in depth information being unreliable. Once a wind farm has existed for a few years there will be a better appreciation of any tidal scour or changes of depth. Wind farm developers are required to make an assessment of any potential changes in sedimentation that may occur as a consequence of their plans. Development may be permitted where the assessed effect is considered tolerable. In practice though the actual effect could differ, so mariners should bear this in mind and allow sufficient under-keel clearance with a suitable margin of safety. Some wind turbines have scour protection in the form of boulders and/ or concrete mattresses placed around their base.

2.7.4 **Tidal streams:** Wind farm structures may obstruct tidal streams locally, creating eddies nearby. Mariners should be aware of the likelihood of such eddies which are only likely to be significant very close to the structures.

2.7.5 **Small craft:** Vessels involved in turbine maintenance and safety duties may be encountered within or around a wind farm. Fishing vessels may also be operating in the area. Mariners should be alert to the likely presence of such vessels and be aware that the structures may occasionally obscure them. This is particularly relevant at night. Large vessels may also become obscured, for example if they are on the opposite side of a wind farm. A good lookout should be therefore be maintained at all times by all available means, as required by the International Regulations for Preventing Collisions at Sea (COLREGS).

2.7.6 **Shore marks:** In coastal areas shore marks may also become obscured by wind farm structures. Mariners should be particularly alert to this. In particular, the characteristics of lights at night may need careful verification if turbines

temporarily mask them. The ship's position should be checked by other means when a wind farm obscures coastal marks.

2.7.7 **Transformer stations:** In or adjacent to larger wind farms offshore electrical transformer-stations may be present. These are of similar appearance to small offshore production platforms. Submarine cables link turbines to this sub-station from where the generated power is exported to the shore. Whether all submarine cables are charted depends upon the scale of the chart; in some cases only the export cable may be shown. All craft operating within a wind farm should therefore avoid anchoring except in emergencies as the anchor could easily become fouled.

2.8 Effects on Communications and Navigation systems

In 2004 the MCA and Qinetiq conducted trials at the North Hoyle wind farm to determine any impact of wind turbines on marine communications and navigations systems. The results from the full report, available on the MCA web site, are summarised below.

2.8.1 The trials indicated that there is minimal impact on VHF radio, Global Positioning Systems (GPS) receivers, cellular telephones and AIS. UHF and other microwave systems suffered from the normal masking effect when turbines were in the line of the transmissions.

2.8.2 The turbines produced strong radar echoes giving early warning of their presence. At close range, however, the trials showed that they may produce multiple reflected and side lobe echoes that can mask real targets. These develop at about 1.5 nautical miles, with progressive deterioration in the radar display as the range closes. Where a shipping lane passes within this range considerable interference may be expected along a line of turbines .Target size of the turbine echo increases close to the turbine with a consequent degradation of target definition and bearing discrimination. These effects were encountered on both 3cm and 10 cm radars.

2.8.3 Similar effects were found during the BWEA-funded trials undertaken off the Kentish Flats wind farm in 2006. Radar antennae which are sited unfavourably with respect to items of the ship's structure can enhance these effects. Careful adjustment of radar controls can suppress some of these spurious radar returns but mariners are warned that there is a consequent risk of losing targets with a small radar cross section, which may include buoys or small craft, particularly yachts or GRP constructed craft, therefore due care should be taken in making such adjustments.

2.8.4 If these interfering echoes develop, the requirements of the COLREGS Rule 6 *Safe speed* are particularly applicable and must be observed with due regard to the prevailing circumstance. In restricted visibility Rule 19 *Conduct of vessels in restricted visibility* applies and compliance with Rule 6 becomes especially relevant. In such conditions mariners are required, under Rule 5 *Lookout* to take into account information from other sources which may include sound signals and VHF information, for example from a VTS, or AIS. Mariners should bear in mind though that not all vessels are equipped with AIS.

2.8.5 Where adequate safe water exists it may be prudent in planning the voyage of larger vessels to set tracks at least 2nm clear of turbine fields.

2.9 Rotor effects

2.9.1 Offshore wind turbines located around the UK are required to have the lowest point of the rotor sweep at least 22 metres above Mean High Water Springs. This clearance should be ample for the majority of small craft. Those with a greater air draught should be aware of this height, and take appropriate care. It would, in any case, be imprudent for larger vessels to be this close to a turbine, other than in an emergency.

2.9.2 In harvesting energy turbines “de-power” the wind. Research indicates that a 10% reduction in wind velocity in the lee of a wind turbine may be expected. This wind-shadow effect is predicted to exist within the vertical air column up to heights of 15 metres. The impact of the wind-shadow reduces with distance in the lee of a turbine. The inter-turbine spacing affects the impact of rotor wash or wake. The width of the rotor wake is about 150 metres, which is broadly similar to the rotor diameter. As the rotor wake interacts with the sea surface further shadow effects are predicted. The wind, having changed its flow through the rotors, will be expected to recover downwind of the turbine. Consequently, wind-sheer may occur as the wind back fills.

2.9.3 In simple terms, the effect of a turbine rotor harvesting the wind can be pictured as a horizontal cone, centred on the rotor hub with the approximate diameter of the rotor. The cone extends down-wind, attenuating to a point at a distance proportional to the wind velocity. This down-wind effect will also be dependent upon the azimuth of the rotor. The impact on a vessel will be proportional to its windage area and, for a sailing vessel, the mast height.

2.9.4 Mariners, particularly yachtsmen, need to be aware of these effects. By day the normal visual clues should be noted and changes in leeway or the balance of tidal stream to wind power anticipated. Extra care should be taken at night, when visual clues are not so easily detected.

3 Offshore Wave and Tidal Energy Installations:

Unlike Wind Farms, systems using wave or tidal energy may not be clearly visible to the mariner.

3.1 Wave energy convertors (WECs) capture kinetic energy carried by waves Wave energy convertors are likely to be located at or near the surface from an attachment or mooring point on the seabed. WECs may be visible or semi-submerged. The following definitions are used:

3.1.1 Attenuator: An attenuator is a floating device which works in parallel to the wave direction and effectively rides the waves. Movements along its length can be selectively constrained to produce energy One example consists of large linked floating cylinders which are connected by a hydraulic system. Potential energy is stored via hydraulic rams, which operate as the hinged units move in the waves. The generated pressure is used to drive turbine generators inside the cylinders.

3.1.2 Point absorber: A point absorber is a floating structure which absorbs energy in all directions through its movements at/near the water surface

3.1.3 Oscillating Wave Surge Converter: An arm oscillates as a pendulum mounted on a pivoted joint in response to the movement of water in the waves.

3.1.4 Oscillating water column: An oscillating water column is a partially submerged, hollow structure. Waves cause the water column to rise and fall allowing

trapped air to flow to and from the atmosphere via a turbine the rotation of the turbine is used to generate electricity.

3.1.5 Overtopping device: This type of device relies on physical capture of water from waves which is held in a reservoir above sea level, before being returned to the sea through conventional low-head turbines which generates power. An overtopping device may use collectors to concentrate the wave energy.

3.1.6 Submerged pressure differential: These devices are typically located near shore and attached to the seabed. The motion of the waves causes the sea level to rise and fall above the device, this pressure differential being used to generate electricity.

Other devices may have unique and very different designs to the more well-established types of technology.

3.2 Tidal energy convertors (TECs) capture potential energy from the movement of large bodies of water as the tides ebb and flow. TEC devices may be surface or sub surface structures incorporating a generator fixed or moored to the sea bed , which captures the potential energy present in the moving body of water associated with a tidal stream. Power take-off is normally via cables to an electrical terminal.

3.2.1 Horizontal axis turbine: This type of device extracts energy from moving water in much the same way as wind turbines extract energy from moving air using a vertical rotor plane.

3.2.2 Horizontal axis turbine (enclosed blade tips): The funnel-like collecting device, usually with Venturi effect to accelerate water column, sits submerged in the tidal current. The flow of water can drive a turbine directly or the induced pressure differential in the system can drive an air-turbine.

3.2.3 Vertical axis turbine: This device extracts energy from moving in a similar fashion to that above, however the turbine is mounted on a vertical axis, i.e. Using a horizontal rotor plane

3.2.4 Oscillating Hydrofoil. A hydrofoil attached to an oscillating arm and the motion is caused by the tidal current flowing either side of a wing, which results in lift.

3.3 Methods for fixing WECs and TECs to the seabed From the mariner's perspective it is important to realise that there are various methods by which devices can be fixed to the seabed, which will affect their visibility above the surface.

3.3.1 Seabed Mounted / Gravity Base Devices: physically sit on the seabed by virtue of the weight of the combined device/foundation. In some cases there may be additional fixing to the seabed.

3.3.2 Pile Mounted: This principle is analogous to that used to mount most large wind turbines, whereby the device is attached to a pile penetrating the ocean floor.

3.3.3 Floating Flexible Mooring: The device is tethered via a cable/chain to the seabed, allowing considerable freedom of movement. This allows a device to swing as the tidal current direction changes with the tide.

3.3.4 Floating Rigid Mooring: The device is secured into position using a fixed mooring system, allowing minimal movement.

3.3.5 Hydrofoil Inducing Down force The device uses a number of hydrofoils mounted on a frame to induce a positioning down force from the tidal current flow.

3.4 Transformer Station or Hub – A special structure containing power conversion equipment either within or outside the wave / tidal; energy array to which individual generators are connected via a power cable. A submarine cable transfers the power ashore from the hub. A hub may be a separate fixed or floating platform.

Note: *Animated illustrations of current and proposed wave and tidal devices can be seen on www.emec.org.uk*

3.5 Visibility and Marking of Wave and Tidal Energy Installations:

Visibility will depend on the device type. Some installations are totally submerged while others may only protrude slightly above the sea surface. Marking will be based on IALA *Recommendation 0-131 on the marking of offshore wave and tidal energy devices*, which states that:

"Wave and Tidal energy extraction devices should be marked as a single unit or as a block or field as follows:

a. *When structures are fixed to the seabed and extend above the surface, they should be marked in accordance with the IALA recommendations contained in the marking of offshore wind farms – O-117.*

b. *Areas containing surface or sub-surface energy extraction devices (wave and/or tidal) should be marked by appropriate navigation buoys in accordance with the IALA Buoyage System, fitted with the corresponding topmarks and lights. In addition, active or passive radar reflectors, retro reflecting material, racons and/or AIS transponders should be fitted as the level of traffic and degree of risk requires.*

c. *The boundaries of the wave and tidal energy extraction field should be marked by lit Navigational Lighted Buoys, so as to be visible to the mariner from all relevant directions in the horizontal plane, by day and by night. Taking the results of a risk assessment into account, lights should have a nominal range of at least 5 (five) nautical miles. The northerly, easterly, southerly and westerly boundaries should normally be marked with the appropriate IALA Cardinal mark. However, depending on the shape and size of the field, there may be a need to deploy intermediate lateral or special marks.*

d. *In the case of a large or extended energy extraction field, the distance between navigation buoys that mark the boundary should not normally exceed 3 (three) nautical miles.*

e. *Taking into account environmental considerations, individual wave and tidal energy devices within a field which extend above the surface should be painted yellow above the waterline. Depending on the boundary marking, individual devices within the field need not be marked. However, if marked, they should have flashing yellow lights so as to be visible to the mariner from all relevant directions in the horizontal plane. The flash character of such lights should be sufficiently different from those displayed on the boundary lights with a range of not less than 2 nautical miles.*

f. *Consideration should be given to the provision of AIS as an Aid to Navigation (IALA Recommendation A-126) on selected peripheral wave and/or tidal energy devices.*

g. A single wave and/or tidal energy extraction structure, standing alone, that extends above the surface should be painted black, with red horizontal bands, and should be marked as an Isolated Danger as described in the IALA Maritime Buoyage System.

h. If a single wave and/or tidal energy device which is not visible above the surface but is considered to be a hazard to surface navigation, it should be marked by an IALA special mark yellow buoy with flashing yellow light with a range of not less than 5 nautical miles, in accordance with the IALA Buoyage System. It should also be noted that many tidal concepts have fast-moving sub-surface elements such as whirling blades.

i. The Aids to Navigation described herein should comply with IALA Recommendations and have an appropriate availability, normally not less than 99.0% (IALA Category 2).

j. The relevant Hydrographic Office should be informed of the establishment of an energy extraction device or field, to permit appropriate charting of same.

k. Notices to Mariners should be issued to publicise the establishment of a wave and/or tidal energy device or field. The Notice to Mariners should include the marking, location and extent of such devices/fields.

Contingency Plans

Operators of wave and/or tidal energy extraction devices or fields should develop contingency plans and emergency response plans which address the possibility of individual devices breaking loose and becoming floating hazards. Automatic location and tracking devices should be considered. Developers and/or operators should have a reliable maintenance and casualty response regime in place to ensure the required availability targets are met. This will include having the necessary A to N spares on hand, with provision made at the design stage, where necessary, to ensure safe access.

However it should be noted that surface buoys used to mark wave or tidal energy devices may not be visible, at all states of the tide due to the nature of the tidal stream.

4 Safety Zones or Exclusion Zones

4.1 At the time of publishing this Guidance Note there are a few temporary exclusion zones in place around some UK offshore wind farms currently under construction. However, it is likely that safety zones will be introduced at other wind farm sites in the near future, and will be monitored and policed.

4.2 Temporary Safety Zones may be established (upon successful application to the Department for Business Enterprise and Regulatory Reform (BERR) and the MCA) during the construction, major maintenance and decommissioning of OREIs. Such Safety Zones will be promulgated by Notices to Mariners and Radio Navigation Warning broadcasts. Safety Zones will be monitored by support craft which may include fishing vessels employed by developers as Guard Vessels. Mariners should give such zones a wide berth. Skippers of fishing vessels operating in the area should make themselves aware of any information promulgated by the local OREI Fishing Liaison Officer.

4.3 Permanent Safety Zones are not expected to be established around entire wind farm arrays, as compelling risk-assessed arguments would be required for their establishment. However, applications for the establishment of safety zones around single installations or several installations making up an array will be considered on a case by case basis by BERR and the MCA, taking site specific conditions into account. An electronic version of the BERR guidance note on applying for Safety Zones around OREI can be found on the BERR website at www.berr.gov.uk

4.4 The nominal safety zone around an operational wind turbine is expected to have a 50 metre radius however the UKHO may not be able to show a limit of this size on charts or ENCs due to scale of coverage. Additionally, it may be necessary to limit access for specific activities (such as trawling) where the infrastructure requires restriction of such activity. In such cases the requirements will be promulgated separately. The UKHO will publish information for specific sites on charts and in their publications when the extent of this change is known.

4.5 With respect to other types of OREI, the establishment of safety zones may be more proscriptive, since wave and tidal devices may not be fixed in position, may extend horizontally for considerable distances on or below the sea surface, and may have potentially dangerous moving parts. Their low profiles may make them difficult to detect visually or by radar. Operational developments will include research and trial units whose positions may vary at short notice.

4.6 Access

Mariners should be aware that there is no right of access to any type of OREI. They are private property and appropriate warning signs are displayed. In any event access requires skill and is limited by sea state, and should only be undertaken in controlled circumstances by trained personnel.

4.7 Emergencies

4.7.1 In emergencies such as engine or steering failures close to or within OREI, mariners should immediately inform HM Coastguard and be prepared to use anchors if necessary, being aware of submarine cables and other seabed obstructions.

4.7.2 Mariners may, in extreme emergency, seek refuge on wind turbine towers. Access is via vertical ladders which may be encrusted with marine growth in the inter-tidal zone. Boarding turbines is hazardous and difficult, but the towers can provide refuge if the circumstances require. Very limited shelter from the elements can be obtained pending rescue, as internal access to the turbine tower will not be possible

4.7.3 If taking refuge on a turbine tower mariners are warned that the rotors will continue to turn until others become aware of their plight. In such circumstances mariners should alert HM Coastguard by the best means available, remembering that the turbine tower may obscure line of sight communications, so they may need to adjust their position on the platform.

4.7.4 Once alerted, HM Coastguard can contact the wind farm operations control room which can remotely shut down individual turbines. Wind farms have an active Safety Management System requiring them to park rotor blades in a suitable configuration to permit helicopter operations, although there may be occasions when the prevailing conditions preclude helicopter rescue from turbines. In such conditions distressed mariners may have to wait for evacuation by sea, when sea conditions permit.

4.7.5 Mariners in extreme emergency are unlikely to be able to use wave or tidal turbines as places of refuge.

4.7.6 When responding to a distress call or alert from within a wind farm or other OREI mariners should make a careful assessment of the risks associated with entering the area, taking into consideration the guidance outlined above. Large vessels may be unsuitable for requisitioning but all mariners should initially

respond as required by international law and immediately relay the details to the nearest Coastguard Station.

4.8 Options

4.8.1 In taking account of this guidance there are, in simple terms, three options for mariners:

(a) Avoid the OREI area completely,

(b) Navigate around the edge of the OREI, or

(c) In the case of a wind farm, navigate, with caution, through the wind farm array.

4.8.2 The choice will be influenced by a number of factors including the vessel's characteristics (type, tonnage, draught, manoeuvrability etc), the weather and sea conditions,

4.8.3 Mariners should be aware that radar targets may be obscured when close to a wind turbine field.

4.8.4 These notes do not provide guidance on a safe distance at which to pass an OREI, as this depends upon individual vessels and conditions. However where there is sufficient sea room it is prudent to avoid the area completely (option (a) above).

4.8.5 In some sea areas, additional information may be promulgated by Vessel Traffic Services.

5 Way ahead

This guidance may be updated in the future as more experience of offshore wind farms and other OREIs has been gained. Problems of an urgent nature relating to all OREI types should be reported immediately to HM Coastguard. Mariners may wish to report effects or other problems they experience to the Navigation Safety Branch of the MCA.

6 Conclusion

Although offshore renewable energy installations present new challenges to safe navigation around the UK coast, proper voyage planning, taking into account all relevant information, should ensure a safe passage and the safety of life and the vessel should not be compromised.

More Information

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Maritime and Coastguard Agency
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105 Commercial Road
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SO15 1EG

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MCA Website Address: www.mcga.gov.uk

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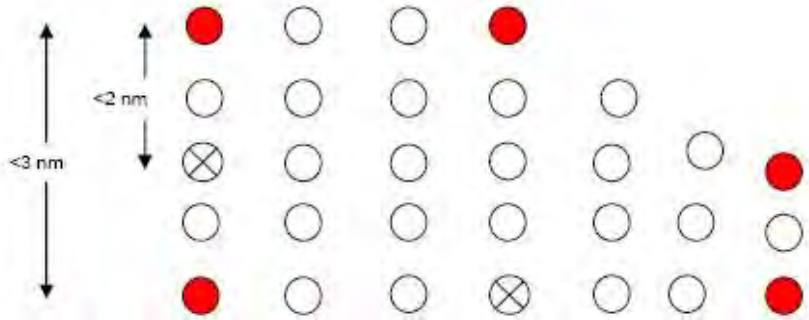
ANNEX

Marking and appearance of OREIs

1. Example of wind farm marking

SPS – lights visible from all directions in a horizontal plane. Lights synchronised to display an IALA "special mark" characteristic, flashing yellow, with a range of not less than five (5) nautical miles.

Intermediate structures – on the periphery of the farm other than SPSs – marked with flashing yellow lights visible in all directions in a horizontal plane with a characteristic different from the SPSs and a range of not less than two (2) nautical miles

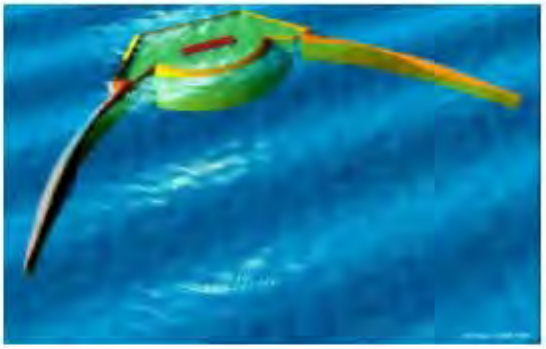


(Photos Courtesy Npower Renewables)

2. Examples of Wave and Tidal Installations

Pelamis Ocean Power Delivery (wave turbine installation) – Recommended colour above the waterline is yellow. *(Photos Courtesy Pelamis Wave Power)*

"Seaflow" project – tidal turbine installation. Coloured red and black as isolated danger. *(Photos courtesy Marine Current Turbines Ltd.)*



"Wave Dragon" – wave turbine installation- recommended colour above the water is yellow. *(Photos courtesy Wave Dragon Ltd).*

Annex P

Promulgated Safety Alert SA 31 on 17 December 2012 – Simrad GB Routestorage

SAFETY ALERT

Number SA 31 Issue Date 17/12/2012

Subject **SIMRAD GB60 Routestorage**

This “problem” only affects the plotters on Windcat 15, Windcat 16 and Windcat 18 and needs**URGENT**action.

A possible “problem” has been identified with the storage and use of routes entered into the plotter if they are not locked in.

The Simradhand book highlights the problem and solution

13.3 Locking and unlocking a route

After finishing a route, the route and waypoints should be locked to prevent accidentally deleting or moving any key route information.

To lock the entire route(including all waypoints), right-click on any route leg and select **Locking** followed by **Lock Route and Marks** commands.

If the route or waypoint at a later time should be edited, the route is made editable by selecting the **Unlock Route and Marks** command

All Routes should be checked and then locked to prevent accidental modification.

HAVE YOUR SAY!

We are always pleased to hear your comments, views, suggestions& observations on Safety, Environmental or Health related issues

You can call us at the Lowestoft Office on **01502 532 550** or email us at **qhse@windcatworkboats.com**