Morecambe Offshore Windfarm: Generation Assets

Development Consent Order Documents

Volume 6

Outline Vessel Traffic Management Plan

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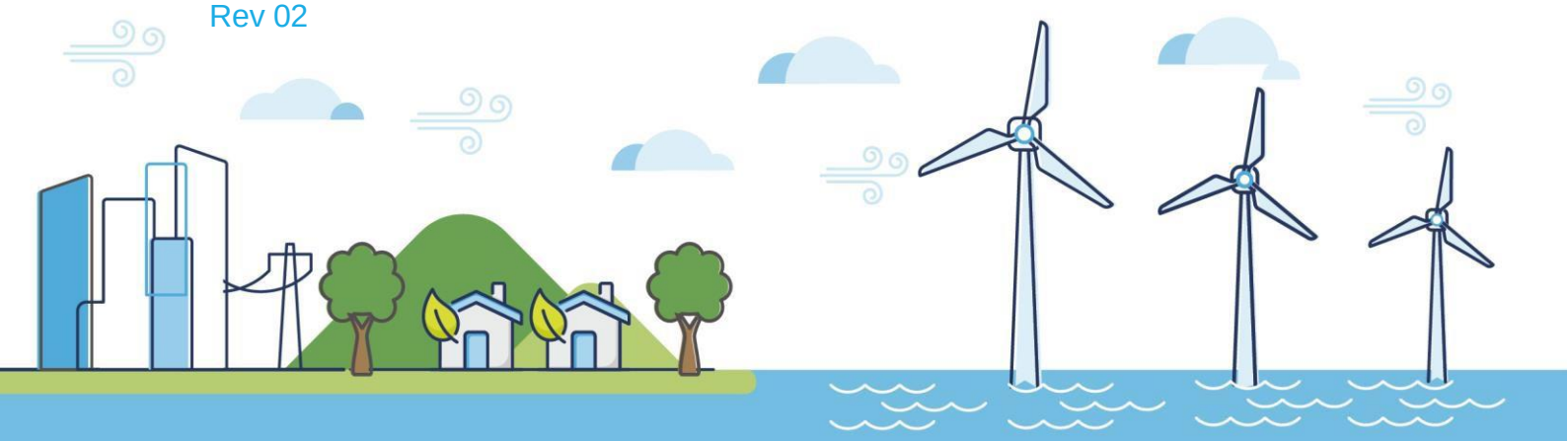
Rev 02



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Glossary of Acronyms

AC	Alternating Current
AIS	Automatic Identification System
AtoN	Aids to Navigation
CCTV	Closed Circuit Television
COLREGS	Convention on International Regulations for Preventing Collisions at Sea
CTV	Crew Transfer Vessel
DCO	Development Consent Order
DML	Deemed Marine Licence
ERCoP	Emergency Response Co-Operation Plan
GBS	Gravity Base Structure
HAT	Highest Astronomical Tide
HMCG	His Majesty's Coast Guard
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
IMO	International Maritime Organisation
IPS	Intermediate Peripheral Structures
ISM	International Safety Management
KIS-ORCA	Kingfisher Information Service – Offshore Renewable & Cable Awareness
LAT	Lowest Astronomical Tide
LNtM	Local Notice to Mariners
MAIB	Marine Accident Investigation Branch
MCA	Maritime and Coastguard Agency
MCC	Marine Coordination Centre
MGN	Marine Guidance Note
NAVAREA	Navigation Area
NRA	Navigation Risk Assessment
NtM	Notice to Mariners
OREI	Offshore Renewable Energy Installation
OSP	Offshore substation platform
O&M	Operation and Maintenance
RAM	Restricted in Ability to Manoeuvre
SAR	Search and Rescue
SNCB	Statutory Nature Conservation Body
SOLAS	International Convention on the Safety of Life At Sea
SOV	Service Operation Vessel
SPS	Significant Peripheral Structure
STCW	International Convention on Standards of Training, Certification and Watchkeeping for Seafarers

TSS	Traffic Separation Scheme
UK	United Kingdom
UKHO	United Kingdom Hydrographic Office
VHF	Very High Frequency
VTMP	Vessel Traffic Management Plan
WTG	Wind turbine generator

Glossary of Unit Terms

km	kilometre
km^2	square kilometre
kV	kilovolt
m	metre
MW	Megawatt
nm	nautical mile

Glossary of Terminology

Applicant	Morecambe Offshore Windfarm Ltd
Application	This refers to the Applicant's application for a Development Consent Order (DCO). An application consists of a series of documents and plans which are published on the Planning Inspectorate's (PINS) website.
Generation Assets (the Project)	Generation assets associated with the Morecambe Offshore Windfarm. This is infrastructure in connection with electricity production, namely the fixed foundation wind turbine generators (WTGs), inter-array cables, offshore substation platform(s) (OSP(s)) and possible platform link cables to connect OSP(s).
Inter-array cables	Cables which link the WTG(s) to each other and the OSP(s).
In-row	The distance separating WTGs in the main rows.
Inter-row	The distance between the main rows.
Morgan and Morecambe Offshore Wind Farms: Transmission Assets	"The transmission assets for the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm. This includes the OSP(s)[1], interconnector cables, Morgan offshore booster station, offshore export cables, landfall site, onshore export cables, onshore substations, 400kV cables and associated grid connection infrastructure such as circuit breaker infrastructure.
Offshore substation platform(s)	A fixed structure located within the windfarm site, containing electrical equipment to aggregate the power from the WTGs and convert it into a more suitable form for export to shore.
Platform link cable	An electrical cable which links one or more OSP(s)
Safety Zones	An area around a structure or vessel which should be avoided, as set out in Section 95 of the Energy Act 2004 and the Electricity (Offshore Generating Stations) (Safety Zones) (Application Procedures and Control of Access) Regulations 2007.
Wind turbine generator (WTG)	A fixed structure located within the windfarm site that converts the kinetic energy of wind into electrical energy.
Windfarm site	The area within which the WTGs, inter-array cables, OSP(s) and platform link cables will be present.

[1] At the time of writing the Environmental Statement (ES), a decision had been taken that the offshore substation platforms (OSPs) would remain solely within the Generation Assets application and would not be included within the Development Consent Order (DCO) application for the Transmission Assets. This decision post-dated the Preliminary Environmental Information Report (PEIR) that was prepared for the Transmission Assets. The OSPs are still included in the description of the Transmission Assets for the purposes of this ES as the Cumulative Effects Assessment (CEA) carried out in respect of the Generation/Transmission Assets is based on the information available from the Transmission Assets PEIR.

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1 Introduction

1.1 Background

1. This Outline Vessel Traffic Management Plan (VTMP) forms part of a set of documents that supports the Development Consent Order (DCO) application submitted by Morecambe Offshore Windfarm Ltd (the Applicant) for the Morecambe Offshore Windfarm Generation Assets.

2. The Morecambe Offshore Windfarm Generation Assets project (hereafter referred to as “the Project”) is located approximately 30km offshore from the Lancashire coast in the Eastern Irish Sea. The offshore infrastructure will comprise up to 35 fixed bottom wind turbine generators (WTGs), inter-array cabling, up to two offshore substation platform(s) (OSP(s)) and platform link cables between the OSP(s).

3. Morecambe Offshore Windfarm is owned by Morecambe Offshore Wind Ltd. The concession was awarded in early 2021 as part of the Crown Estate’s Offshore Wind Leasing Round 4.

4. A separate joint application is being made for the shared offshore export cable corridors for the Project and the Morgan Offshore Wind Project Generation Assets to landfall and shared onshore export cable corridors to onshore substations. The offshore export cable route associated with the windfarm site and construction activities associated with this export cable are therefore not within the scope of this Outline VTMP and will be subject to a separate VTMP for the joint Morgan and Morecambe Offshore Wind Farms: Transmission Assets, which will interface with this document.

5. A Marine Licence (ML) is required before carrying out any licensable marine activities under the Marine and Coastal Access Act 2009. There will be a deemed Marine Licence (DMLs) for the Project included within the draft DCO (Document Reference 3.1). This outline VTMP is secured through conditions within the DML in the draft DCO.

6. The Project is in the vicinity of existing oil and gas infrastructure, numerous existing operational windfarms and associated cables, marine aggregate areas, vessel routeing measures (namely the Liverpool Bay Traffic Separation Scheme (TSS) and the Off Skerries TSS) and numerous telecommunication and power cables. Additional Round 4 offshore windfarms (Mona Offshore Wind Project and Morgan Offshore Wind Project Generation Assets) are also planned to the west of the Project.

1.2 Scope and objectives of the outline VTMP

7. This Outline VTMP has been prepared to provide information and requirements for the Project vessels during both the construction and operation and maintenance (O&M) phases of the Project. The document covers:

- The ports that will be used for construction and O&M activities
- The management of vessel activities
- Requirements for Project vessels, including:
  - Passage planning
  - Minimum passing distances for other vessels and infrastructure
  - Reporting requirements
  - Requirements during periods of restricted visibility

1.3 Associated documents

8. This Plan will form one of a number of plans which will be developed before commencement of construction activities and will require consideration of other documents which affect its contents. To reduce repetition between documents, where detailed information is not required for the function of the VTMP, a summary of information may be provided with a reference to where more detailed information is provided in a separate document. The following list presents the other documents which interact with the VTMP:

- Appendix 14.1 Navigation Risk Assessment (Document Reference 5.2.14.1)
- Emergency Response Co-Operation Plan (ERCoP) (to be completed post-consent)
- Marine Pollution Contingency Plan (to be completed post-consent)
- Outline Fisheries Liaison and Co-existence Plan (Document Reference 6.3)
- Lighting and Marking Plan (to be completed post-consent)
- Offshore Construction Method Statement (to be completed post-consent)
- Outline Project Environmental Management Plan (Document Reference 6.2)

1.4 Summary of mitigation

9. Mitigation measures for navigational safety have been identified through the Navigation Risk Assessment (NRA). Where relevant, these measures will be implemented through the VTMP. The identified mitigation measures from the NRA comprise:

- **Incident Investigation and Reporting** – incident reporting requirements for vessels is covered in **Section 5.6**
- **Continued Engagement** – the ongoing communications and dissemination of information to navigation stakeholders is detailed in **Section 5.3**
- **Notices to Mariners (NtM)** – the use of and format for NtMs is provided in **Section 5.1**
- **Marine Operating Guidelines** – information and requirements for Project vessels are provided in **Section 4**
- **Compliance with International, United Kingdom (UK) and Flag State Regulations including International Maritime Organisation (IMO) conventions** – the requirement for all Project vessels to meet the national and international requirements is provided in **Section 4.7**
- **Vessel health and safety requirements** – the commitment to ensure all Project vessels meet health and safety requirements is provided in **Section 4.7**
- **Continuous Watch** – Very High Frequency (VHF) coverage and monitoring requirements is provided in **Section 4.1**
- **Vessel Traffic Monitoring** – the monitoring that will be undertaken by the Marine Coordination Centre is provided in **Section 4.1**
- **CTV (Crew Transfer Vessel) Passage Planning** – the passage planning requirements and guidance is provided in **Section 4.4**

1.5 Structure of the document

10. This Outline VTMP is structured as follows:

- **Section 1: Introduction** – provides an overview of the Outline VTMP and the information that is included
- **Section 2: Overview of the Project** – provides information relevant to the function of the VTMP
- **Section 3: Port Information** – provides information on the ports to be used for construction or O&M
- **Section 4: Management and Coordination of Vessels** – provides information on the role of the Marine Coordination Centre (MCC) and the management of vessels on passage to, from or in the vicinity of the Project

- **Section 5: Promulgation of Information** – details what information will be distributed to stakeholders and the methods used
- **Section 6: Vessel Information** – provides details on the specific types of vessels that will be used through the construction and O&M phases

1.6 Updates and amendments

11. This section will describe how any revisions to the VTMP will be undertaken and recorded. These changes will be tabulated, identifying the sections which have been updated, the reason for updating and a summary of the change. An example revision table is shown in **Table 1.1**.

Table 1.1 Example revision table

Revision Number	Changes	Date	Approved by

2 Overview of the Project

12. The Project will consist of 30 'larger' or 35 'smaller' WTGs, on either monopile, multi-legged pin-piled jacket, gravity base structures (GBS) or multi-legged suction bucket jacket foundations, and a series of inter-array and platform link cables, within an area of approximately 87km^2. The Project has an expected nominal capacity of 480MW. The water depths at the windfarm site range from 18m to 40m, relative to Lowest Astronomical Tide (LAT). The Project parameters are presented in the sections below.

2.1 Wind turbine generators

13. Parameters for WTGs have been considered for a range of sizes, with a number of foundation options under consideration. Given the range in WTG sizes, two WTG scenarios have been used to encompass the Project Design Envelope:

- More (35) smaller WTGs
- Fewer (30) larger WTGs

14. The current WTG design envelope for the windfarm site is outlined in **Table 2.1**.

Table 2.1 WTG design envelope

WTG parameter	Smaller WTGs	Larger WTGs
Maximum number of WTGs	35	30
Rotor diameter (m)	260	280
Maximum blade tip height (m) above Highest Astronomical Tide (HAT)	290	310
Maximum hub height (m above HAT)	160	170
Minimum rotor clearance above sea level (m above HAT)	25	
Indicative rotor speed range (rotations per minute (RPM))	8.42	7.09
Maximum rotor swept area for total windfarm site (km^2)	1.858	
Minimum separation between WTGs (m) in-row	1,060	1,260*
Minimum separation between WTGs (m) inter-row	1,410	1,680*

**While the spacing of turbines may vary dependant on the rotor size, as described in Chapter 5 Project Description) the worst case and minimum spacing for all turbines is defined by the smallest WTGs i.e. 1,060m and 1,410m.*

2.2 Offshore substation platform

15. The Project will include up to two OSPs, up to 70m in height (including helideck and lightning protection) above HAT, 50m in length and 50m in width. If two OSPs are developed, then these will require two platform link cables to connect the OSPs to each other. The OSP will have multiple foundation options as per WTG foundations:

- Dimensions
- Height above sea level
- Foundations

2.3 Inter-array and platform link cables

16. The Project design accounts for a maximum length of 70km of inter-array cables installed within the Project area, with a minimum burial depth of 0.5m and target burial depth of 1.5m, and additional cable protection along approximately 10% of the route, in addition to at cable crossings and entry points to WTGs and OSP(s). Inter-array cables are expected to operate at 66kV or 132kV Alternating Current (AC). It is expected that 132kV AC cables may not be sufficiently ready or available on an industry-wide level for installation, but this higher voltage has been retained pending further electrical studies.

17. Should the Project require two OSPs, two platform link cables will be required to connect each of the OSPs to enable transfer of generated power from one side of the windfarm site to the other and ensure electricity transmission can continue in the event of one cable failing. Platform link cables are expected to

operate at 66kV or 275kV AC. There will be a maximum of two platform link cables of up 5km in length (each), with a minimum burial depth of 0.5m and a target burial depth of 1.5m.

18. The Project design allows for foundation and unburied cable protection including bagged solutions (including geotextile sand containers, rock-filled gabion bags or nets, and grout bags, filled with material sourced from the site or elsewhere), flow energy dissipation devices and concrete mattresses.

2.4 Layout

19. The Project layout has not been finalised but will adhere to the following layout principles:

- All surface offshore infrastructure will be confined within the windfarm site
- A minimum inter-row turbine spacing of 1,410- will be maintained between main rows of all WTGs
- A minimum in-row turbine spacing of. 1,060 will be maintained between all WTGs in the main rows
- The layout will meet the requirements of Maritime and Coastguard Agency (MCA) Marine Guidance Note (MGN) 654 to facilitate Search and Rescue (SAR) access

20. Once the layout has been formalised, a figure will be presented showing the turbine layout, OSP(s) location(s), inter-array cables, platform link cables (if required) and the naming convention for infrastructure.

2.5 Marine lighting and marking

21. This section will summarise the marine lighting and marking requirements from the separate Lighting and Marking Plan, which will be completed once the layout has been finalised, following guidance documentation, namely:

- G1162 The Marking of Offshore Man-Made Structures (International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA), 2021)
- MGN 654 (MCA, 2021)

22. The Lighting and Marking Plan will be agreed with Trinity House. This section will provide information on:

- Locations and characteristics of construction buoyage
- Locations and characteristics of operational buoyage
- Identification of Significant Peripheral Structures (SPS) and Intermediate Peripheral Structures (IPS)

3 Location of ports

3.1 Construction port(s)

23. The construction port(s) that will be used have not been determined. Once they are, this section will contain the following information:

- Location of the ports
- Relevant harbour authority
- Activities undertaken at and from the port
- Associated vessels
- Port requirements including reporting, local traffic management, pilotage, etc

3.2 Operation and Maintenance (O&M) port(s)

24. Once the O&M port(s) have been determined, this section will provide information on the following areas:

- Location of ports
- Location of MCC
- Relevant harbour authority
- Location of O&M berths
- Activities undertaken from each location
- Associated vessels
- Port requirements including reporting, local traffic management, pilotage, etc

4 Management and coordination of vessels

4.1 Marine coordination centre

25. The MCC acts as a central point of contact for management of Project vessels. The MCC will monitor vessels through use of radar, Automatic Identification System (AIS) receiver, VHF radio and Closed-Circuit Television (CCTV) as appropriate. The MCC has the following responsibilities:

- Management of project vessel movements
- Monitoring of vessel movements en route to, from and at the windfarm site
- Issue NtM on behalf of the project and contractors

- Implement and manage the Emergency Response Cooperation Plan and Marine Pollution Contingency Plan during an emergency situation
- Report any defects to Aids to Navigation (AtoN) as required in the Lighting and Marking Plan
- Promulgate information of movements to navigational stakeholders
- Enforcement of safety zones
- Coordination with the wider Project team

4.2 Construction phase

26. The MCC will monitor the movements of construction vessels to ensure that they follow the requirements of this VTMP, particularly regarding passage planning and communications.

27. Construction activities are managed from the MCC and will route the vessels to anchorages or berths as necessary. Permission for construction vessels to enter construction safety zones will be managed by the MCC using a 'Permit to Work' system.

28. The MCC will obtain and provide localised weather information for construction vessels to assist in planning the work to be undertaken. In the event of forecast weather above the limitations for construction activities, the MCC will provide updated information as soon as practicable and arrange for vessels to shelter in appropriate anchorages or at berths.

29. Once construction ports have been confirmed, additional information on the coordination of construction vessel arrivals to the windfarm site will be provided in this section.

4.2.1 Vessels Restricted in Ability to Manoeuvre (RAM)

30. Vessels will be Restricted in their Ability to Manoeuvre (RAM) during some construction activities including cable installation works and heavy lift operations. Vessels are classed as RAM as a result of the nature of the work they are undertaking imposing a restriction on their normal ability to take action to avoid other vessels. All RAM vessels involved in construction activities will comply with the Convention on International Regulations for Preventing Collisions at Sea (COLREGs).

31. RAM vessels will display appropriate navigation lights and day shapes to indicate their restrictions. They will transmit safety warnings on VHF to inform other vessels of their actions using the 'Securité' message if the messages contain important information relating to navigation.

32. Communications between RAM vessels and the MCC will be ongoing throughout the operations. RAM vessels will show current navigational status

at all times to ensure other vessels equipped with an AIS can identify that they are RAM.

33. RAM activities will also be promulgated through the notification procedure and guard vessels will be employed to ensure safety of operations.

4.2.2 Construction safety zones

34. Section 95 and Schedule 16 of the Energy Act 2004 set out the basic requirements for applying for a safety zone to be placed around or adjacent to an Offshore Renewable Energy Installation (OREI). The Electricity (Offshore Generating Substations) (Safety Zones) (Applications Procedures and Control of Access) Regulation 2007 provides the procedures to be used when applying for a safety zone as well as requirements for the control of access.

4.3 O&M Phase

35. During operation, provisions for vessel coordination will be established through the MCC and be similar to the construction phase.

4.4 Passage planning

36. Passage planning will be undertaken as per the International Convention for the Safety of Life at Sea (SOLAS). The Master of the vessels is responsible for maintaining the passage plan and updating as necessary. Information which may require an update to the passage plan includes:

- Prevailing weather, tidal, or sea state conditions
- Environmental limits for operations
- New navigational hazards notified through NtM or other such sources
- Instructions from the MCC or other responsible persons in charge of coordinating and managing project vessel traffic
- Any other reason the Master of a vessel may deem relevant for the purpose of ensuring the safety of theirs or another vessel

4.4.1 Indicative construction transit routes

37. It should be noted that these indicative routes are not intended to be prescriptive for the purposes of navigation and will not be followed precisely by every vessel. All vessels shall passage plan as required under SOLAS (IMO, 1974). Once the construction ports have been determined, the routes to the windfarm site will be identified and presented in this section. Areas where Project vessels will cross other routes will be identified along with typical entry, departure points from the windfarm site and any specific information to be taken into account for passage planning. Vessel crew will also undertake briefings on requirements from other plans such as to minimise impacts on marine mammals, basking sharks and rafting seabirds (see **Section 7**).

38. Vessels may deviate from these indicative routes for a variety of reasons at the discretion of the vessel's Master, for example due to:

- Compliance with COLREGS (IMO, 1972) or SOLAS (IMO, 1974)
- Prevailing weather, tidal or sea state conditions
- Navigational hazards as indicated on charts, or notified through NtM, or other such sources
- Such other reasons as the Master of the vessel may deem relevant for the purposes of ensuring the safety of their vessel or another vessel

4.4.2 Indicative O&M transit routes

39. Once the O&M ports have been determined, this section will present information on the routes between the windfarm site and port. This will include navigational charts showing an indicative passage plan for vessels including reporting points, crossing points for other regional routes, entry and exit points for the windfarm site along with any other wind farms that may need to be crossed.

4.4.3 Anchoring

40. Anchoring is at the discretion of the vessel Master but can be in conjunction with the information provided by the MCC when outside of the windfarm site. When determining the appropriate location to anchor consideration is given to:

- Available water depth
- Potential seabed obstructions
- Seabed type and charted hazards including cables/pipelines
- Weather and tidal information including current and predicted weather
- Avoidance of prohibited anchorage areas
- Consideration of other anchored vessels
- Avoidance of known areas of other marine activity such as oil and gas support, fishing or recreational boating
- Avoidance of main commercial routes
- Pilot boarding area or other navigational features, such as spoil grounds or subsea cables
- Available swinging area

41. Non-project vessels would not generally anchor within the windfarm site unless there is an emergency situation while transiting it. Construction and O&M vessels requiring anchorage within the windfarm site will require permission to do so from the MCC.

4.5 Reporting protocol

42. All vessels associated with the Project are required to report to the MCC via the means prescribed once the MCC has been developed. The times in which Project vessels would be required to report to the MCC include:

- On departure from port to advise of intended activities and estimated time of arrival at the windfarm site
- On approach to the windfarm site, vessels will request permission to enter from the MCC
- When transiting between areas of the windfarm site
- Postponement of activities at the windfarm site
- On completion of activities vessels will report to the MCC
- Before transfer of personnel and upon completion of transfer
- On arrival at the port

43. The format of the reporting will include the following information:

- Vessel name
- Persons on board
- Activities to be undertaken
- Structure where activities are taking place (if relevant)
- Intended route

4.6 Interface with Transmission Assets VTMP

44. Once the Transmission Assets activities, ports and vessels have been determined a VTMP for its activities will be created. This section will define where the responsibilities are split between the Transmission Assets VTMP and the Project VTMP.

4.7 Other requirements

45. All Project vessels will be surveyed and certified to the appropriate national and international standards for that type of vessel. This includes, but is not limited to, requirements under the following legislation:

- The Health and Safety at Work Act (HM Government, 1974)
- SOLAS (IMO, 1974)
- The International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) (as amended) (IMO, 1995)
- The International Safety Management (ISM) Code (IMO, 1993)

- The International Convention for the Prevention of Pollution from Ships (MARPOL) (IMO, 1973)

5 Promulgation of Information

46. This section provides information on the proposed approach to distributing and issuing NtMs and other appropriate notifications to the relevant stakeholders and other marine users.

5.1 Local Notices to Mariners (LNtMs)

47. LNtMs will be issued to a list of relevant local and national stakeholders in advance of any activity which may impact upon navigational safety. The list of stakeholders will be regularly updated to ensure contact details remain up to date, and that all relevant parties are included. The organisations to which LNtMs will be issued includes the UK Hydrographic Office (UKHO), which will decide whether to include any of the information in their Weekly Admiralty NtMs.

5.1.1 LNtM issued prior to commencement of the development

48. Prior to the commencement of any construction activity, local mariners, fishing organisations and His Majesty's Coast Guard (HMCG) will be made fully aware of the Licensable Marine Activity through LNtMs (or other appropriate means).

5.1.2 LNtM during construction

49. The MCC will notify the UKHO and the standard list of stakeholders as to the progress of the construction of the Project following milestones determined through consultation with navigational stakeholders. These LNtMs will provide an updated description of the infrastructure currently in place, upcoming vessel movements and the areas where work is being undertaken. Notifiable activities include anything that could pose a risk to navigational safety, including any fault to navigational aids.

5.1.3 LNtM upon commissioning and during operation

50. On completion of the construction works and the commissioning of the Project, local mariners, fishers' organisations and HMCG will be notified via LNtMs. In addition, LNtMs will be issued for any planned and unplanned maintenance activities that are outside the day-to-day maintenance activities associated with the Project.

5.2 Kingfisher bulletins and KIS-ORCA

51. The Kingfisher Information Service – Offshore Renewable & Cable Awareness (KIS-ORCA) project is a joint initiative between Subsea Cables UK and

Renewable UK and is being managed by the Kingfisher information Service of Seafish.

5.2.1 KIS-ORCA notifications for construction

52. Details of the vessel routes, timings, location of the windfarm site, and of the relevant construction operations will be promulgated to the online Kingfisher bulletin to inform the Seafish public body.

53. The MCC will ensure that the progress of construction is promulgated in the Kingfisher fortnightly bulletin to inform Seafish of the vessel routes, timings and location of the construction activities. The bulletins will include contact details, offshore activity schedule, navigational safety procedures, advisory safety zones and any relevant drawings or other information specific to the activity.

5.2.2 KIS-ORCA notifications upon commissioning and during operation

54. On completion of the construction works and the commissioning, a Kingfisher bulletin will be issued online to inform the commercial fishing industry. During the operational phase, a Kingfisher bulletin will be issued online detailing any planned or unplanned maintenance activities that are outside day to day maintenance.

5.3 Navigational stakeholders

55. This section will provide information on the continued engagement and supply of information to navigational stakeholders. This includes the Marine Navigation Engagement Forum and any specific regular consultation that is required with nearby operations e.g., oil and gas infrastructure as well as other offshore renewable projects.

5.4 Radio navigational warnings

56. Radio navigational warnings may be issued if an activity or incident poses a danger to other marine users. Examples of when radio navigational warnings could be issued are:

- Failures to light signals, fog signals, buoys, or other AtoN
- Establishing new AtoN
- Cable laying activities, where a risk is posed to passing traffic
- Significant RAM operations
- Emergency situations

57. Once details of an activity on site have been issued through the standard NtM process, the UKHO will decide if the warning should be transmitted as a radio navigational warning and, if required, issue the navigational warning. In the

context of radio navigational warnings, the UKHO act as the Navigation Area (NAVAREA) 1 (northeast Atlantic) Coordinator and also as the UK Coordinator for issuing coastal navigational warnings. The MCA however is the overarching body responsible for broadcasting the warnings.

5.5 UK hydrographic charts

58. The precise location and maximum heights of all WTGs and construction equipment over 150 m above LAT and the details of any lighting fitted to WTGs, will be provided to the UKHO. The windfarm site and individual WTGs are charted using the WTG Tower or Development Area chart symbol (found in NP5011 – Symbols and Abbreviations) used in Admiralty Charts on charts deemed appropriate in terms of scale. Submarine cables will be included on appropriately scaled charts.

59. On the completion of the construction and commissioning, the accurate positions and maximum heights of all WTGs and any subsea infrastructure, will be provided to the UKHO for charting purposes.

5.6 UK marine reporting requirements

60. Within UK waters, all vessels are required to report any marine incidents by the quickest means possible to the Marine Accident Investigation Branch (MAIB). Regulations defined by the MAIB provide detail on what needs to be reported and the accompanying MGN 564 Marine Casualty and Marine Incident Reporting provides further guidance on the process for reporting a marine casualty or incident.

6 Vessel information

61. Vessel crews will be required to meet recognised standards and comply with the international maritime regulations (as adopted by the relevant flag state) and regulations for their class and area of operation. Independent vessel audits on construction vessels will be conducted as necessary to check that standards are met and are appropriate for the purpose of the crew's designated role(s).

6.1 Construction vessels

62. The following sections will set out examples of those types of vessels that will be used during the construction works, specifically relating to:

- WTG installation
- Foundation and substructure and topside installation for OSP
- Inter-array and OSP platform link cable installation (if required)
- Construction support (e.g. guard vessels)

63. The following section provides the template for information on the vessels that will be used during construction.

6.1.1 WTG installation

64. The WTG will be undertaken by vessels with the details provided in **Table 6.1**.

Table 6.1 WTG installation vessel parameters (template)

Parameter	Value
Vessel Name	
Vessel Type	
Vessel Role	
Length Overall	
Beam	
Summer Draught	
Gross Tonnage	
Propulsion Type	
Station Keeping	

6.2 Operational and maintenance vessels

65. The following sections will set out examples of those types of vessels that will be used during the O&M phase, this includes:

- CTVs
- Service operations Vessels (SOVs)
- Vessels that may be used for maintenance activities e.g. jack-up barge

66. Information provided on these vessels will match that provided in the example (**Table 6.1**) above.

7 Management of environmental issues

67. This section provides an overview of the controls and procedures to be considered by Project vessels to minimise vessel collision and disturbance to marine mammals, basking sharks, red throated diver and common scoter during construction and operation and maintenance activities. Final details would be provided in the Project Environmental Management Plan (PEMP) following finalisation of the Project design in consultation with Statutory Nature Conservation Bodies (SNCBs) and updated in this section.

7.1 Marine mammal and basking shark measures

68. Project vessel movements, where possible, would follow set vessel routes and hence, areas where marine mammals and basking sharks are accustomed to vessels, in order to reduce any increased collision risk.

69. All Project vessel movements would be kept to the minimum number that is required. In the instance of Project related vessels transiting to and from the port, the vessels would endeavor to stay at least 1km from the coast, where possible. However, it is noted that this distance could not be committed to within existing shipping channels/entrance into ports.

70. In order to reduce the risk of marine mammal and basking shark collisions and disturbance, meetings would be undertaken with all Project vessel operators, including adherence to an agreed Code of Conduct which would be detailed in the PEMP.

71. The Code of Conduct for good practice to avoid marine mammal and basking shark collisions with Project vessels and to reduce disturbance would include, but not be limited to:

- Project vessels to avoid deliberately approaching marine mammals and basking sharks when sighted and reduce speed when within 100m of a marine mammal where practical and safe
- Project vessels to avoid abrupt changes to course or speed should marine mammals and basking sharks approach the vessel or bow-ride
- Where possible, Project vessels would maintain a steady speed, and direction, to allow any marine mammal and basking sharks to predict where the vessel may be headed, and to move out of the way or avoid surfacing in the path of the vessel
- Project vessels to give consideration of minimum distances (outside of shipping routes) from seal haul-out sites, particularly during sensitive periods such as pupping and moulting
- Protocol for masters of Project vessels to report any marine mammal and basking shark collisions
- Vessels to allow groups of marine mammals and basking sharks to remain together and avoid deliberately driving through them
- Vessels to avoid coming between a mother and calf and allow marine mammals and basking sharks an escape route

7.2 Ornithology measures

72. Potential impacts on red throated diver and common scoter during construction and operation and maintenance works would be mitigated through the following measures included in the Code of Conduct:

- Minimising project maintenance vessel traffic, where possible, during the most sensitive time period in 1st November to 31st March within Liverpool Bay SPA

- Restricting Project vessel movements on transit to and from the array where possible to existing navigation routes (to areas where red throated diver and common scoter density is likely to be lowest)
- Where necessary, maintain direct transit routes for Project vessels (to minimise transit distances through areas used by red throated diver and common scoter)
- Avoidance of over-revving of engines by Project vessels (to minimise noise disturbance)
- Considering the potential for Project crew transfer vessels (CTV) to travel in convoy en route to the windfarm site and seeking to do so where it is considered practicable
- Project vessels to avoid rafting birds where possible either to/from array area from operational port and/or within the windfarm site (dependent on location) and where possible avoid disturbance to areas with consistently high diver density.

8 References

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