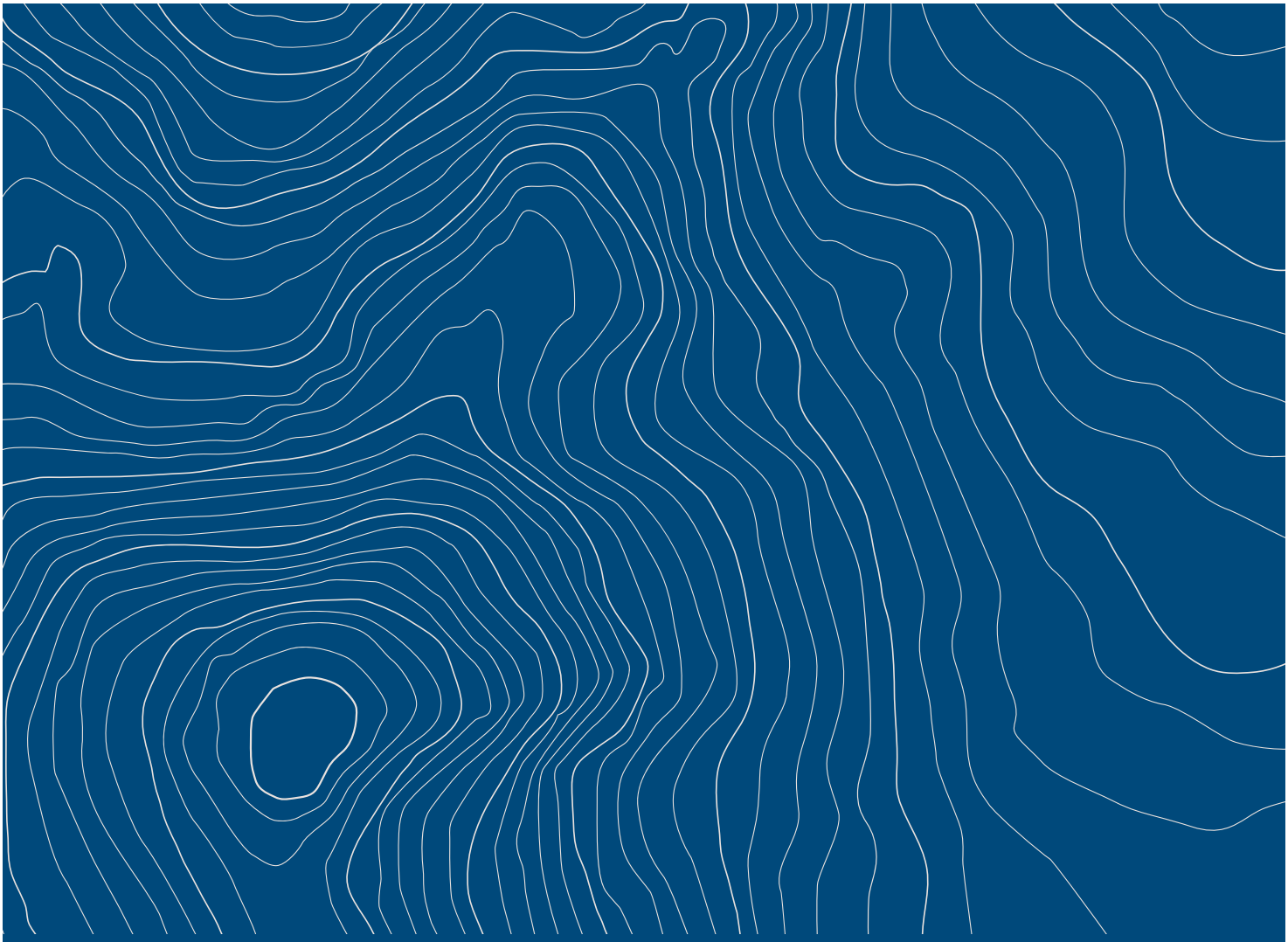

DublinArray
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EIAR Volume 7: Planning Stage Plans
Appendix 6: Vessel Management Plan

Kish Offshore Wind Ltd.

RWE SLR GoBe
APEM Group

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Dublin Array Offshore Wind Farm
Vessel Management Plan

Prepared by	Anatec Limited
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Abbreviations Table

Abbreviation	Definition
AIS	Automatic Identification System
ALARP	As Low as Reasonably Practicable
AtoN	Aid to Navigation
COLREGS	Convention on the International Regulations for Preventing Collisions at Sea (1972)
DP	Dynamic Positioning
EIAR	Environmental Impact Assessment Report
ERCoP	Emergency Response Cooperation Plan
IALA	International Association of Lighthouse Authorities
IHO	International Hydrographic Organization
IMO	International Maritime Organization
IRCG	Irish Coastguard
LMP	Lighting and Marking Plan
MCA	Maritime and Coastguard Agency
MCC	Marine Coordination Centre
MCIB	Marine Casualty Investigation Board
MSO	Marine Survey Office
nm	Nautical Mile
NRA	Navigational Risk Assessment
NtM	Notice to Mariners
OSP	Offshore Substation Platform
RAM	Restricted in Ability to Manoeuvre
SOLAS	International Regulations for the Safety of Life at Sea
UK	United Kingdom
UKHO	United Kingdom Hydrographic Office
VHF	Very High Frequency
VMP	Vessel Management Plan
WTG	Wind Turbine Generator

1 Introduction

Kish Offshore Wind Limited and Bray Offshore Wind Limited ('the Applicant') are the developers of Dublin Array Offshore Wind Farm (hereafter 'Dublin Array'), a planned offshore wind farm located in Irish waters and approximately 5 nautical miles (nm) east of Bray Head.

It has been identified through the Navigational Risk Assessment (NRA) process (Volume 4, Appendix 4.3.10-1) that maintaining documented vessel management procedures is a necessary mitigation to ensure associated risks are within As Low As Reasonably Practicable (ALARP) parameters for Dublin Array.

On this basis this Vessel Management Plan (VMP) has been produced to document the associated measures that will be in place. The document covers the following:

- Specific measures to be implemented during the construction phase;
- Specific measures to be implemented during the operations and maintenance phase;
- Measures to be implemented during the decommissioning phase;
- How information relating to Dublin Array will be promulgated;
- Approach to project vessel routeing from relevant ports to the array area; and
- Consideration for areas where anchoring may occur and where it will not occur.

The decommissioning phase is anticipated to represent a similar scenario to the construction phase in terms of increased vessel activity and therefore similar procedures will be applied (see Section 2). This is referenced where appropriate in this document, noting that the VMP will be reviewed in advance of the decommissioning phase.

A separate document has been prepared to cover vessel environmental protocols (Environmental VMP detailed within the PEMP: Volume 7, Appendix 1: PEMP).

2 Navigational Safety Measures during Construction / Decommissioning

2.1 Marine Coordination

The Applicant will establish a Marine Coordination Centre (MCC) which will be used during the construction and decommissioning phases. This will represent a central control base with overarching responsibility for ensuring impacts from project vessels to third party traffic are minimised. Measures in place on this basis to be managed from the MCC will include as a minimum;

- Permission for construction vessels to enter the construction area and attend particular assets, for example using a Permit to Work system;
- Coordination of use of guard vessels where appropriate (see Section 2.3);
- Liaison with vessels with regards to agreed routeing to destinations/berth/anchorage (where applicable, and noting that compliance with the Convention on the International Regulations for Preventing Collisions at Sea (COLREGS) (International Maritime Organization (IMO), 1972/77) will remain the navigational priority at all times i.e., the MCC will provide project vessels with relevant information as opposed to direct instruction on routeing), noting this includes liaison on at which geographical points project vessels will access the construction area;
- Monitor vessels and personnel via communication with vessels and Automatic Identification System (AIS) for any potential vessel access conflicts;
- Defining of advisory safe passing distances (see Section 2.4);
- Obtain and provide localised weather information for project vessels to plan the work being undertaken;
- Being the central internal contact point for contractors in case of an emergency; and
- Issuing of Notice to Mariners (NtM) (see Section 4.1).

A similar central MCC will be established for decommissioning.

2.2 Temporary Lighting and Marking

Based on consultation to date, it is proposed that during the construction phase, all structures will be marked via temporary lighting, and temporary buoyage will be used to mark the overall site. This will minimise vessel to structure collision risk, and alert passing mariners of the presence of the structures and works within the array area.

The process by which the temporary lights will be removed relative to the activation of the operational lighting and marking will be agreed with Irish Lights as part of the Lighting and Marking Plan (LMP) process. An LMP (Volume 7, Appendix 5) has been included with the Environmental Impact Assessment Report (EIAR) which considers the relevant guidance, the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) Guidance on the Marking of Offshore Man-Made Structures G1162 (IALA, 2021).

The use of temporary lighting is considered best practise and is applied as standard for United Kingdom (UK) offshore wind farm projects.

Lighting and marking to be implemented during decommissioning will be agreed with Irish Lights, however, is anticipated to likely be similar to that used during the construction phase in terms of use of buoyage.

2.3 Guard Vessels

Guard vessels may be required at Dublin Array at particular times during all phases, for example when other project vessels are particularly vulnerable due to partially completed works or a particular construction activity. During these periods, the construction area will be monitored by guard vessel(s) to further protect the area and to provide additional information to third-party vessels.

The decision(s) on when to use a guard vessel will be informed by a dynamic risk assessment process for the activities required to construct Dublin Array. It is noted that a guard vessel will be used during cable installation to warn approaching vessels of the ongoing works in the area inshore of the Kish and Bray Banks.

2.4 Advisory Safe Passing Distances

There is currently no framework by which statutory safety zones can be deployed by offshore wind farm developers at Irish offshore wind farms. However, the Applicant may utilise advisory safe passing distances around project infrastructure or works associated with the construction and decommissioning phases. These advisory safe passing distances will be promulgated via the means set out in Section 4, and will serve to alert passing mariners to potential hazards.

2.5 Cable Laying and Other RAM Operations

Restricted in their ability to manoeuvre (RAM) vessels will likely be utilised during the cable installation works and heavy lifting operations, and during decommissioning. RAM vessels are those restricted in their ability to manoeuvre as a result of the nature of the work they are undertaking and therefore are restricted in avoiding an approaching vessel(s). All RAM vessels involved in the construction of Dublin Array will comply with the COLREGs (IMO, 1972/77). All vessels, regardless of their nationality, are required to comply with this convention to ensure that they do not interact with vessels that are restricted in their navigational ability.

RAM vessels will display lights and shapes to indicate their restrictions. They will transmit safety warnings on Very High Frequency (VHF) to inform other vessels of their actions using the ‘Securité’ message if the messages contain important information relating to navigation. Communications between RAM vessels and the MCC will be ongoing throughout the operations.

RAM vessels will comply with vessel type regulation information transmitted through AIS and show current navigational status at all times to ensure other vessels equipped with AIS can identify that they are RAM.

Cable laying activities will also be promulgated through the notification procedure, and, if necessary, following internal risk assessment, guard vessels (see Section 2.3) or advisory safe passing distances (see Section 2.4) may be employed during the cable laying period.

2.6 Emergency Response Cooperation Planning

The Applicant will work with the Irish Coastguard (IRCG) post consent and pre-construction to develop a document that bridges Dublin Array's emergency response plans and those of the IRCG. This document will detail the procedures by which the Applicant will cooperate with IRCG in the event of an emergency incident. Draft guidance from the Department of Transport released for consultation in January 2024 provides general guidelines and requirements for such a plan, however the guidance is pending finalisation at the time of writing. The finalised version of the guidance will be used in liaison with IRCG to finalise the emergency response cooperation planning process.

The plan will be reviewed in advance of decommissioning and in liaison with IRCG.

3 Navigational Safety Measures during Operation and Maintenance

3.1 Marine Coordination

An MCC will be in place during the Operation and Maintenance phase. This may be in a different location to during the construction phase (see Section 2.1) however the overarching responsibilities will remain the same. On this basis responsibilities will include at a minimum;

- Permission for project vessels to enter the array area, for example using a Permit to Work system;
- Liaison with vessels with regards to agreed routeing destinations/berth/anchorage (where applicable, and noting that compliance with COLREGS will remain the navigational priority at all times i.e., the MCC will provide project vessels with relevant information as opposed to direct instruction on routeing);
- Monitor vessels and personnel via communication with vessels and AIS for any potential vessel access conflicts;
- Defining of advisory safe passing distances (see Section 3.4);
- Obtain and provide localised weather information for project vessels to plan any maintenance work being undertaken;
- Being the central internal contact point for contractors in case of an emergency; and
- Issuing of NtM (see Section 4.1).

The Operations and Maintenance base (where the MCC will be based) for Dublin Array is expected to be at Dun Laoghaire.

3.2 Operational Lighting and Marking

Consultation has indicated that Irish Lights will expect the Applicant to comply with IALA G1162 Guidance on the Marking of Offshore Man-Made Structures (IALA, 2021). Precise marine lighting and marking to be implemented during the operation and maintenance phase will be agreed with Irish Lights via the LMP process. An LMP (Volume 7, Appendix 5) has been included with the EIAR which complies with the IALA Guidance on the Marking of Offshore Man-Made Structures G1162 (IALA, 2021).

3.3 Guard Vessels

As for the construction phase (see Section 2.3), guard vessels may be required at Dublin Array at particular times, for example when other project vessels are particularly vulnerable during major maintenance activity. During these periods, the works will be monitored by guard vessel(s) to further protect the area and to provide additional information to third-party vessels.

The decision(s) on when to use a guard vessel will be informed by a dynamic risk assessment process for the activities required during the operation and maintenance of Dublin Array.

3.4 Advisory Safe Passing Distances

As noted in Section 2.4, there is currently no framework by which statutory safety zones can be deployed by offshore wind farm developers at Irish offshore wind farms. However, the Applicant may utilise advisory safe passing distances around project infrastructure or maintenance works. These advisory safe passing distances will be promulgated via the means set out in Section 4, and will serve to alert passing mariners to potential hazards.

3.5 Emergency Response Cooperation Planning

As noted in Section 2.6, the Applicant will work with the IRCG to develop a document that bridges Dublin Array's emergency response plans and those of the IRCG. This document will detail the procedures by which the Applicant will cooperate with IRCG in the event of an emergency incident and will be updated in advance of the operational phase with any relevant details (e.g., as built locations of structures).

4 Promulgation of Information

This section provides information on the proposed approach to distribution and issuing NtM, and other appropriate notifications to the relevant stakeholders and other marine users.

4.1 Notice to Mariners

NtM will be issued in advance of any activity associated with Dublin Array which may impact upon navigational safety. The Applicant will liaise with the Department of Transport who may issue the NtM via their website as Marine Notices as detailed in Section 4.2. The MCC will then issue the NtM to a list of relevant and national stakeholders. This marine stakeholder list will be regularly updated to ensure contact details remain up to date and all relevant parties are included.

The NtM will be concise, detailing navigational safety information and will include the information set out in Table 4.1, which is per the Department of Transport guidance on the Required Information for the Issue of Marine Notices (Department for Transport, 2024).

Table 4.1 Content of NtM / Marine Notice

1. Type of Activity	Type of activity being undertaken, e.g., Subsea survey, Deployment of buoy, etc.
2. Duration of Activity	Starting date and approximate finishing date for operations. Marine Notices will usually state that dates given are weather dependant
3. Location	Coordinates that follow the conventional method of maritime positions, using WGS 84, where latitude is given before longitude.
4. Vessels Involved	Name of vessel, type of vessel and call sign of vessel.
5. Safety precautions taken	e.g., buoys or markers to highlight area of activity, radio transmissions to notify other seafarers (i.e., VHF channel) etc.
6. If buoys are used	Information on the type / colour of buoy and the colour and flashing sequence of any lights attached must be included.
7. Diagrams and/or maps	Will also be included. Will show extract(s) from an up-to-date admiralty chart.

Any vessels used in operations will be appropriately licensed and have the requisite Certificates, e.g., Irish Load Line Cert, in place beforehand. Issuance of a Marine Notice does not grant permission for works or operations to commence. The required permissions /

licences / certificates will be obtained in advance from the relevant authorities e.g., license to dive/survey etc. Any relevant conditions of consents will also be met.

4.1.1 NtM Issued Prior to the Commencement of Construction

The Applicant will, as soon as practicable prior to the commencement of any construction activities, ensure that the stakeholders on the marine stakeholder distribution list are made fully aware of such works through NtM (or any other appropriate means).

4.1.2 NtM upon Commissioning and During O&M

The Applicant will ensure all parties on the marine stakeholder distribution list are made fully aware of the completion of the construction works and commissioning of Dublin Array.

The Applicant will ensure that relevant stakeholders are informed via NtM of any planned and unplanned maintenance activities that are outside the day-to-day maintenance activities associated with Dublin Array.

4.1.3 Post Commissioning

The Applicant will, upon the commissioning of Dublin Array, provide the 'as built' positions and maximum heights of all Wind Turbine Generators (WTG), Offshore Substation Platform (OSP), and any subsea infrastructure to the United Kingdom Hydrographic Office (UKHO) (who produce Ireland's Admiralty Charts) for nautical charting purposes. WTGs will be charted by the UKHO using the WTG tower chart symbol or within the development area chart symbol (as presented in Symbols and Abbreviations used on ADMIRALTY Paper Charts NP5011 (UKHO, 2020)) on charts deemed appropriate in terms of scale.

The same information will be provided to the Marine Survey Office (MSO).

4.1.4 Decommissioning

The Applicant will, as soon as practicable prior to the commencement of any decommissioning activities, ensure that the stakeholders on the marine stakeholder distribution list are made fully aware of such works through NtM and other appropriate means such as newsletters and harbour notices. Stakeholders will also be made aware following completion of decommissioning.

4.2 Marine Notices

Marine Notices are issued by the Department for Transport, and are intended to publicise important safety, regulatory and other information relating to the maritime sector in Ireland. The Department for Transport will be included on the marine stakeholder distribution list (see Section 4.1) and will therefore be provided with NtM issued by the Applicant. The Department for Transport may choose to publish the information provided in the NtM as Marine Notices.

4.3 Fishing Vessels

Details of fishing vessel liaison are provided in the Fisheries Mitigation and Management Strategy (Volume 7, Appendix 3).

4.4 Radio Navigational Warnings

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 aid to navigation (AtoN);
- Establishing new AtoN;
- Cable laying activities, where a risk is posed to passing traffic;
- Other underwater operations that may constitute potential dangers in or near shipping lanes; and/or
- Vessels not under command or undertaking significant RAM operations.

In the context of radio navigational warnings, the UKHO act as the Navigation Area (NAVAREA) 1 (NEW Atlantic) Coordinator of the IMO and International Hydrographic Organization (IHO) Worldwide Navigational Warning Service. However, IRCG are the body responsible for broadcasting the warnings.

4.5 Incident Reporting

As required under the Merchant Shipping (Investigation of Marine Casualties) Act, 2000, any marine incidents / casualties shall be reported to the MSO as soon as is practicable following the occurrence. Following the initial report any relevant details of the incident requested by the Marine Casualty Investigation Board (MCIB) will be provided.

4.6 Port and Harbour Liaison

Input raised during consultation suggested that displaying NtM or similar information in local ports and harbours may increase recreational user awareness of Dublin Array and any associated works. On this basis the Applicant will request with the relevant harbour masters, Port Authority or marina operator that appropriate information (indicatively the NtM) be displayed in a readily available location e.g., notice boards. As a minimum this will include Dublin Port, Dun Laoghaire Harbour, Bray Harbour, Howth Harbour, Wicklow and Greystones Harbour Marina.

5 Vessel Movements

Vessels to be used during the construction, operation and maintenance and decommissioning of Dublin Array cannot be precisely determined at this stage. However, this section provides indicative details of the vessel types that could be used during the construction phase, and how many vessel movements could be expected for each of those types.

5.1 Construction Phase

Table 5.1 presents the estimated maximum number of vessel movements for each potential vessel type. These numbers have been defined for assessment purposes within the EIAR, and, therefore, are indicative only. Further detail is provided in Volume 2, Chapter 6: Project Description.

Table 5.1 Estimated Maximum Vessel Round Trips to Port (Construction)

Parameters	12-15MW
Scour Layers Vessel	316-335
Foundation Installation Spread	79-89
WTG Installation Spread	184-185
Commissioning Vessels	78
Accommodation Vessels	0
Inter Array Cable Vessels	63
Inter Array Rock Berm Vessels	5
Export Cable Vessels	62
Export Cable Rock Berm Vessels	15
Landfall Cable Installation Vessels	0
Substation Installation Vessels Topside	24
Substation Installation Vessels Foundation	12
Other Vessels	1,095
Total	**2,789-2,811**

5.1.1 Offshore Temporary Occupation Area

Included as part of the design of Dublin Array will be the Offshore Temporary Occupation Area. This comprises the sea area adjacent to the Offshore Development Boundary and will be primarily utilised temporarily by vessels during the construction and decommissioning of Dublin Array (with the potential for maintenance or repair activities to the turbines or cables necessitating its use in the operational phase). An overview of the temporary occupation area is presented in Figure 5.1.

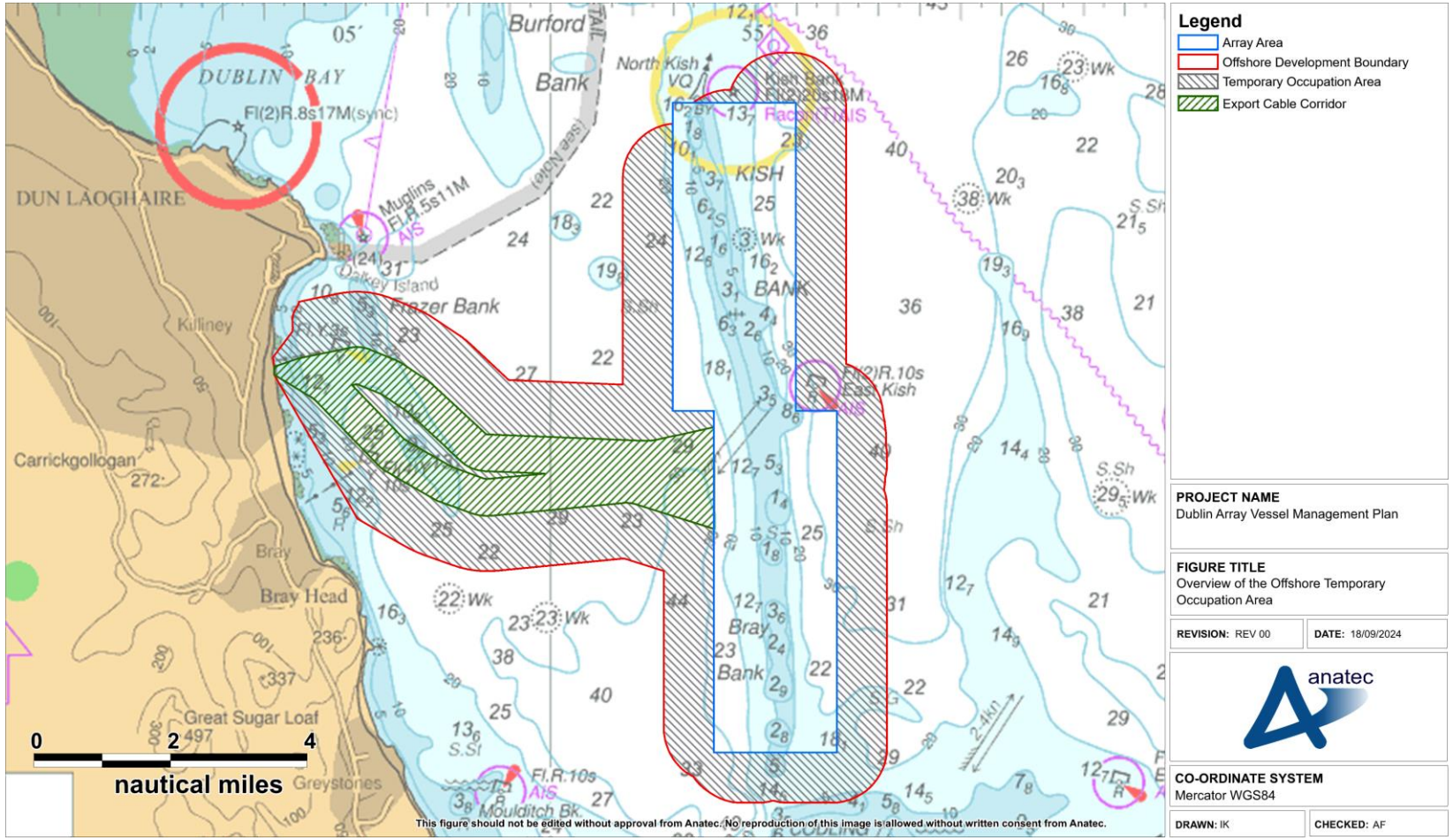

Figure 5.1 Overview of the Offshore Temporary Occupation Area

Vessels within the Offshore Temporary Occupation Area will be involved in the following activities:

- Survey and unexploded ordnance (UXO) clearance;
- Foundation installation;
- Turbine installation;
- Cable installation; and
- Construction buoyage implementation (within 500m of array area).

Although the majority of activities will occur within 500m of the array area, the barges used may have an anchor spread of up to 1,500m, and as such the full extent of the spreads may reach but not exceed the boundaries of the Offshore Occupation Area.

It is noted that the shipping channel passing the southwest corner of the array area and Temporary Occupation Area was raised during consultation as an area of concern given that third party vessels could be “squeezed” at this point, due to the shallow sea area also to the west, which could lead to increased encounters. The approach to use of construction vessels in this area will follow the following principles:

- Where practicable, vessels operating on Dynamic Positioning (DP) will be used;
- If vessels using anchor spreads are required, the anchors (and hence marker buoys) will not be placed in the inshore shipping routes (Routes 3 and 7 percentiles as shown in Figure 5 of Volume 3, Chapter 10: Shipping and Navigation).

5.2 Operational Phase

As per Volume 2, Chapter 6: Project Description there will be a maximum of 1,095 annual round trips to port from Crew Transfer Vessels, 47 trips for large vessels, and 36 trips for auxiliary vessels. It is noted that actual maintenance vessel requirements will need to be determined as and when the need arises.

5.3 Decommissioning Phase

Vessel movements per year during the decommissioning phase will closely resemble those during construction in terms of vessel type and numbers (see Section 5.1).

6 Project Vessel Routeing

Requirements for project vessels to comply with COLREGS (IMO, 1972) shall remain the key navigational priority at all times. All vessels shall passage plan as per the International Regulations for the Safety of Life at Sea (SOLAS) (IMO, 1974).

While there may be "typical" routes that project vessels use to and from site, vessels are likely to deviate from such routes for a variety of reasons at the discretion of the vessel's Master, and navigational safety will remain the key factor at all time. Key factors include:

- 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;
- Due to the vessel originating from or being bound for a destination not indicated by the transit routes (noting array access may be required on the eastern boundary);
- Advice from the MCC or other responsible persons in charge of coordinating and managing construction vessel traffic; and
- Such other reasons as the Master of a vessel may deem relevant for the purposes of ensuring the safety of his vessel or another vessel.

7 Anchoring

7.1 Anchorage Areas

7.1.1 Project Vessel Anchoring

Anchoring is at the discretion of the Vessel Master but can be in conjunction with the information provided by the MCC or port authorities where relevant. However, standard marine practice requires that when a vessel proceeds to anchor, consideration is given to:

- Water depth;
- 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 fishing or recreational boating; and
- Avoidance of main commercial routes, pilot boarding area or other navigational features such as spoil grounds or subsea cables.

All vessels associated with Dublin Array will take the above into consideration prior to anchoring as per standard marine practice. Construction, Operation and Maintenance, and Decommissioning vessels requiring anchorage within the array area will request permission to do so from the MCC.

As referenced in Section 5.1.1, barges may have an anchor spread of up to 1,500m. There is, therefore, the potential for anchors (of which there are likely to be eight to ten) to be placed anywhere within the Offshore Temporary Occupation Area during the foundation or cable installations.

7.1.2 Summary of NRA Findings

The NRA (Volume 4, Appendix 4.3.10-1: Navigational Risk Assessment) includes identification of charted anchorage areas and preferred anchorages. There are four anchorages located in proximity to Dublin Array, most notably the charted anchorage associated with Dublin Port, which is located within Dublin Bay. It is noted that consultation with Dublin Port indicates that vessels also anchor further south outside of Dublin Bay when the designated anchorage is at capacity. This aligns with the vessel traffic analysis undertaken in the NRA (Volume 4, Appendix 4.3.10-1).

The remaining three areas are historic / preferred anchorages. Of note is the anchorage associated with Dún Laoghaire, of which anchoring is not permitted within the harbour itself. However, suitable anchorage is charted outside the harbour limits.

The anchorage areas are shown in Figure 7.1. It is noted that these are not necessarily areas that project vessels will use for anchoring, and the factors listed in Section 7.1.1 will be considered by every project vessel prior to planned anchoring.

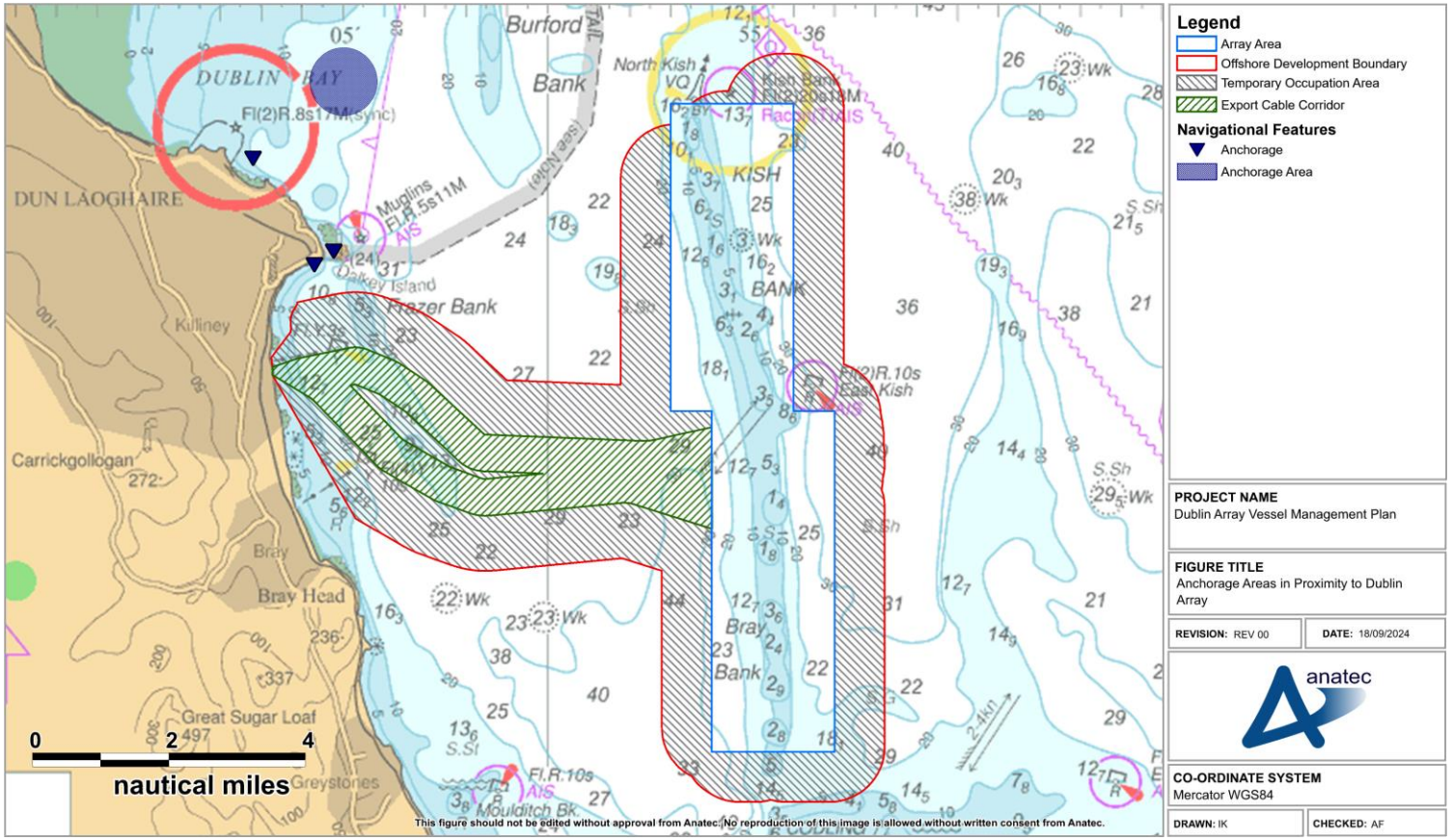

Figure 7.1 Anchorage Areas

7.1.3 Areas to Avoid when Anchoring

There is no charted information to indicate that anchoring is prohibited in any areas within the vicinity of the array area. The closest such area identified is at the entrance to Dun Laoghaire Harbour.

Project vessels would not use any such area for anchoring, noting that the factors listed in Section 7.1.1 will also all be considered.

It is noted that during consultation, it was agreed that Dublin Array will engage with Irish Lights in the event of any wind farm activities within the Temporary Occupation Area encroaching within 500m from the centre point of the Kish Light. This commitment was introduced to address concerns from Irish Lights over the potential for dragged anchor incidents in proximity to the Kish Light.

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