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## NAVIGATIONAL SAFETY PLAN KINCARDINE OFFSHORE WINDFARM PROJECT

Prepared	Checked	Reviewed	Approved
01-05-2018	01-05-2018	02-05-2018	02-05-2018
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### Revision History

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22-03-2018	A1	Internal Review		JD
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01-05-2018	C1	For Information		AC

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#### ACRONYMS, ABBREVIATIONS and DEFINITIONS

AIS	Automatic Identification Systems
AtoN	Aid to Navigation
CAA	Civil Aviation Authority
CGOC	Coastguard Operations Centre
DGC	Defence Geographic Centre
ERCoP	Emergency Response Co-operation Plan
IALA	International Association of Lighthouse Authorities
IMO	International Maritime Organisation
KIS-ORCA	Kingfisher Information Service – Offshore Renewable & Cable Awareness
KOWL	Kincardine Offshore Windfarm Limited
LMP	Lighting and Marking Plan
LNtM	Local Notice to Mariners
MCA	Maritime and Coastguard Agency
MCC	Marine Coordination Centre
MGN	Marine Guidance Note
MoD	Ministry of Defence
NAVAREA	Navigation Area
Navtex	Navigational Telex
NLB	Northern Lighthouse Board
nm	Nautical mile

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NOTAM	Notice to Airmen
NSP	Navigational Safety Plan
NtM	Notice to Mariners
OFCOM	Office of Communications
RAM	Restricted in their ability to manoeuvre
SAR	Search and Rescue
STCW	International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978
UKHO	United Kingdom Hydrographic Office
VMP	Vessel Management Plan
VTs	Vessel Traffic Service
WTG	Wind Turbine Generator
ES	Environmental Statement

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## 1. INTRODUCTION

### 1.1. Purpose of this Document

This document has been created to satisfy Condition 16 of the Section 36 (S36) Consent issued by the Marine Scotland Licensing Operations Team (MS-LOT) to Kincardine Offshore Wind Ltd (KOWL) for the Kincardine Offshore Wind Farm (hereafter referred to as the Project). Condition 16 requires the production of a Navigational Safety Plan (NSP) to provide details of the measures that will be put in place by KOWL to manage marine navigational safety during the construction and operation of the Project.

### 1.2. Scope of Document

This NSP sets out means to mitigate risks to vessels working on the Project, (as well as third party vessels) during construction and operation to ensure that navigational safety is not compromised. Matters related to the management of vessel movements are set out, for approval in the Vessel Management Plan (VMP) (KOWL-PL-0004-006) whilst matters relating to the lighting and marking design of the Project to ensure safe navigation is set out for information in the Lighting and Marking Plan (LMP) (KOWL-PL-0004-001).

In line with the relevant S36 condition (and following the guidance included within the Maritime and Coastguard Agency (MCA) Marine Guidance Note (MGN) 543 (MCA, 2016), this NSP includes details of:

- Navigational marking and lighting;
- Safety zones;
- Promulgation of information;
- Buoyage;
- Anchoring Areas; and
- Emergency Response.

### 1.3. Project Summary

The Project is considered a commercial demonstrator site, which will utilise floating foundation technology, and will be one of the world's first arrays of floating wind turbines. It has been included within the Survey, Deploy and Monitoring scheme for offshore renewable systems (similar to wave and tidal devices).

The Project is located south-east of Aberdeen approximately 8nm (15km) from the Scottish coastline, in a location that provides suitable water depth for a floating offshore wind demonstrator development (approximately 60-80m).

The project is split into the following areas:

- The Development Area – the wind farm area including the Wind Turbine Generators (WTG) and inter-array cables.
- The Offshore Export Cable Corridor – the area within which the proposed export cables will be laid, from the perimeter of the Development Area to the onshore area at Mean High Water Spring (MHWS).



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- The Onshore Area – the onshore area above MHWS including the underground cables connecting to the onshore substation at Redmoss.

This NSP focuses on the offshore elements only as per Section 36 Consent and Marine Licences granted.

In April 2016 KOWL submitted applications for consent to construct and operate the Project, which included the Original ES. In September 2016 an addendum (referred to as the ES Addendum), of additional environmental information to the Original ES, was also submitted. In March 2017 consent under Section 36 and Section 36A of the Electricity Act 1989 was granted.

Since consent was granted, there have been several necessary changes to the Project. Therefore, an application for a variation of the Section 36 consent granted by the Scottish Ministers under S36C of the Electricity Act 1989 was applied for in December 2017 (the 'Variation Application').

The table below outlines the application dates, relevant ES Documents and the components of the Project as were included in the Original Application and the Variation Application.

*Table 1-1 Summary of document timelines*

Original Documents	Addendums	Variation
<b>Date Submitted: March 2016</b>	<b>Date Submitted: September 2016</b>	<b>Date Submitted: November 2017</b>
Original Application	Original Application	S36C Variation Application
Kincardine Offshore Windfarm ES (Original ES)	ES Additional Information Addendum (ES Addendum)	Section 36C Variation ES (Variation ES)
Maximum generation capacity: 50MW	Maximum generation capacity: 50MW	Maximum generation capacity: 50MW
WTGs: 8 x 6MW	WTGs: 8 x 6MW	WTGs: 1 x 2MW and 6 x 8.4MW
Substructures: semi-submersible	Substructures: semi-spar	Substructures: combination of semi-submersible and semi-spar
Cables: 33kv inter-array and export cables	Cables: 33kv inter-array and export cables	Cables: 33kv inter-array and export cables

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### Project Components

As noted in the table above, the maximum generation capacity of the windfarm is capped at 50MW, the main difference between the various stages of the applications have been the number and size of the turbines, and the substructure type.

As applied for in the Variation Application, the Project will now consist of the following offshore components:

- WTGs: 1 x 2MW and 6 x 8.4MW
- Substructures: semi-submersible Windfloat™ design
- 33kv inter-array and two export cables

Onshore, the following construction activities will also take place (under permissions granted by Aberdeen City Council):

- Onshore substation
- Horizontal Directional Drilling landfall and onshore cable route.

The first WTG to be deployed will be a WTG and associated substructure, anchors and mooring lines with a generating capacity not exceeding 2MW ('Turbine 1'), A condition in the existing marine licence requires Third Party Certification or Verification (or suitable alternative as agreed, in writing, with the Licensing Authority) for all WTGs, mooring systems and WTG platform structures prior to the commencement of the works. The initial period sought for such certification / verification / suitable agreed alternative of the WTG platform substructure for Turbine 1 will be limited (expected to be three years or less). This is due to the engineering life of the substructure (ten years from initial substructure construction in 2011). At the expiry of the WTG platform substructure certification, Turbine 1 will only be re-deployed if (i) the platform structure is re-certified following inspection (and only for so long as valid certification is in place) and (ii) if MS-LOT (in consultation with SNH, Historic Environment Scotland, Aberdeen City Council and Aberdeenshire Council) is satisfied that the re-deployment at the proposed location within the Site would not give rise to new or materially different likely significant effects to those identified in the seascape, landscape and visual assessment of the Variation ES. Any further re-certification would follow the same process. If Turbine 1 is not re-deployed within 6 months, it will be decommissioned (in line with condition 5 of the S36 consent on Redundant turbines). It is anticipated this position will be secured by a condition in the marine licence (and if considered necessary, also in the S36 consent).

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### Construction Programme Overview

The construction of the Project is anticipated to occur in 'Tranches' in-line with the indicative Programme outlined below. A final Construction Programme for each tranche will be provided to Scottish Ministers prior to commencement of the construction as a requirement of the consent conditions.

*Table 1-2 Indicative Construction Programme*

Tranche	Activities	Indicative Start Dates
Tranche 1	Onshore works and HDD drilling	March 2018
	Mooring installation Turbine Location 1	May 2018
	Export Cable 1 installation	May 2018
	Installation of 2MW turbine to Location 1	June 2018
Tranche 2	Export Cable 2 installation	April 2019
	Mooring installation Turbine Locations 5-7	April 2019
	Installation of inter-array cables Locations 5-7	Aug 2019
	Installation of turbines to Locations 5-7	Aug 2019
Tranche 3	Mooring installation Turbine Locations 1-3	March 2020
	Installation of inter-array cables Locations 1-3 and 8	June 2020
	Move 2MW to Location 8 (dependent on recertification and consultation as noted above)	June 2020
	Installation of turbines to Locations 1-3	June 2020

Please note, Export cable 2 may be installed as part of Tranche 1; however, at the time of writing the timing is still to be decided. This will be confirmed in due course, and this document updated if required as per Section 1.4 below.

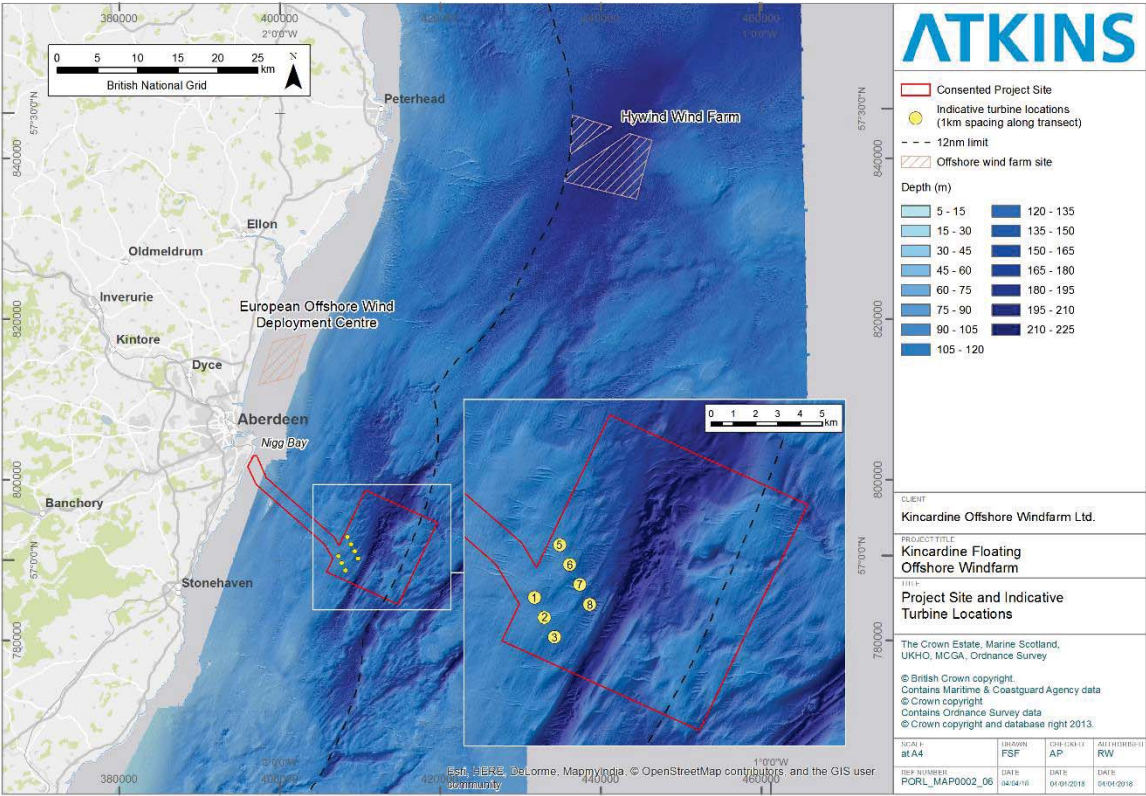


Figure 1-1 Project Site and Indicative Turbine Locations

1.4. Amending and Updating of this NSP

Where the need for an update or amendment is identified following approval from MS-LOT of the NSP, either through a consultation response, or due to practicalities arising as the Project progresses, KOWL will communicate the suggested update/amendment to MS-LOT prior to editing the approved document. If the suggested change is accepted by MS-LOT, the NSP will be redrafted, and submitted for re-approval.

It is anticipated that the NSP will be reviewed at least at the following times:

- 6 months prior to Commencement Tranche 2; and
- 6 months prior to Commencement Tranche 3.

1.5. Consent Conditions

The relevant condition within the S36 Consent setting out the requirements for an NSP for approval, that are to be discharged by this plan, are presented in full in Table 1-3.

In addition to the specific consent requirements for a NSP and the requirements thereof (as set out in Table 1-3), this NSP also includes information in respect of a number of other conditions within the Marine License which are linked to the NSP; these are set out in

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Table 1-4.

Whilst this NSP does not seek to explicitly discharge these additional conditions, it provides the relevant information on the measures to be put in place to allow them to be discharged prior to commencement of the Project, and/or during the progress of construction and during operation.



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Table 1-3 S36 Consent Condition 16

Consent Document	Condition Reference	Condition Text	Where Addressed
S. 36 Consent	Condition 16	<i>The Company must, no later than 6 months prior to the Commencement of the Development or at such a time as agreed with the Scottish Ministers, submit a NSP, in writing, to the Scottish Ministers for their written approval. Such approval may only be granted following consultation by the Scottish Ministers with MCA, Northern Lighthouse Board (NLB), Scottish Fishermen's Federation and any other navigational advisors or organisations as may be required at the discretion of the Scottish Ministers.</i>	This document sets out the NSP for approval by the Scottish Ministers.  Consultation to be undertaken by Scottish Ministers.
		<i>The NSP must include, but not be limited to, the following issues:</i>	Section 2 (Construction) and Section 3 (Operation)
		<ul style="list-style-type: none"> <li>• <i>Navigational safety measures;</i></li> </ul>	Section 2.4 (Construction) and Section 3.4 (Operation)
		<ul style="list-style-type: none"> <li>• <i>Construction exclusion zones<sup>1</sup>;</i></li> </ul>	Section 4 (Promulgation of Information)
		<ul style="list-style-type: none"> <li>• <i>Notice(s) to Mariners and Radio Navigation Warnings;</i></li> </ul>	Section 5 (Anchoring Areas)
		<ul style="list-style-type: none"> <li>• <i>Anchoring areas;</i></li> </ul>	

<sup>1</sup> Note: MCA have requested term safety zone is used instead of exclusion zone, therefore this NSP refers to construction safety zones.



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Consent Document	Condition Reference	Condition Text	Where Addressed
		<ul style="list-style-type: none"> <li>Temporary construction lighting and marking;</li> </ul>	Section 2.2 (Construction) and Section 3.3 (Operation)
		<ul style="list-style-type: none"> <li>Emergency response and coordination arrangements for the construction, operation and decommissioning phases of the Development and be in accordance with condition 3.2.1.4 of the marine licence; and</li> </ul>	Section 6 (Emergency Response Procedures)
		<ul style="list-style-type: none"> <li>Buoyage.</li> </ul>	Section 2.3 (Construction buoyage)
		The company must confirm within the NSP that they have taken into account and adequately addressed all of the recommendations of the MCA in the current Marine Guidance Note 543 (MGN 543) and its annexes that may be appropriate to the Development.	See Section 1.2.



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Table 1-4 Other Consent Conditions Relevant to this NSP

Consent Document	Condition Reference	Summary of Condition	Where Addressed
Marine License	3.2.1.4	The Licensee must, in discussion with the MCA's Search and Rescue (SAR) Branch, complete an Emergency Response Cooperation Plan (ERCoP) for the construction and operation phases.	Section 6 (Emergency Response Procedures)
Marine Licence	3.2.2.3	<p>The Licensee must, no later than 7 days prior to Commencement of the Works, notify the United Kingdom Hydrographic Office (UKHO) of the proposed Works to facilitate the promulgation of maritime safety information and updating of Admiralty charts BA741 and BA743 and publications through the national Notice to Mariners (NtM) system.</p> <p>The Licensee must, no later than 7 days prior to Commencement of the Works, ensure that local mariners, fishermen's organisations and HM Coastguard, in this case Aberdeen Coastguard Operations Centre (CGOC), are made fully aware of the Works through local Notice to Mariners (LNtM) or by any other appropriate means.</p> <p>The Licensee must, no later than 14 days prior to Commencement of the Works and prior to any WTGs being towed to the site, ensure that airmen are</p>	Section 4.3 (Promulgation of Information)




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Consent Document	Condition Reference	Summary of Condition	Where Addressed
		<p>aware of the Works through local Notice to Airmen (“NOTAM”) or by any other appropriate means.</p> <p>The Licensee must notify the Defence Geographic Centre (“DGC”) (mail to dvof@mod.uk) of the locations, heights and lighting status of the turbines, the estimated dates of construction and the maximum height of any construction equipment to be used, no later than 10 weeks prior to the Commencement of the Works, to allow for the appropriate notification to the relevant aviation communities. The DGC must be updated when the actual dates of construction are known.</p>	
		<p>The Licensee must ensure that details of the Works are promulgated in the Kingfisher Fortnightly Bulletin, prior to Commencement of the Works to inform the Sea Fish Industry of the vessel routes, the timings and the location of the Works and of the relevant operations.</p>	Section 4.9 (Promulgation of Information)

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Consent Document	Condition Reference	Summary of Condition	Where Addressed
		The Licensee must, prior to Commencement of the Works, complete an “Application for Statutory Sanction to Alter / Exhibit” form and submit this to the NLB for the necessary sanction to be granted.	Section 2.2 (Construction) and Section 3.3 (Operation)
Marine Licence	3.2.3.3	<p>The Licensee must notify the UKHO of the progress of the Works to facilitate the promulgation of maritime safety information and updating of Admiralty charts BA741 and BA743 and publications through the national NtM system.</p> <p>The Licensee must notify local mariners, fishermen’s organisations and HM Coastguard, in this case Aberdeen CGOC of the progress of the Works through LNm or any other appropriate means.</p>	Section 4.4 (Promulgation of Information)
		The Licensee must ensure that the progress of the Works is promulgated in the Kingfisher Fortnightly Bulletin to inform the Sea Fish Industry of the vessel routes, the timings and the location of the Works and of the relevant operations.	Section 4.9 (Promulgation of Information)


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Consent Document	Condition Reference	Summary of Condition	Where Addressed
		The Licensee must, in the case of damage to, or destruction or decay of, the Works, notify the Licensing Authority, in writing, as soon as reasonably practicable following such damage, destruction or decay. The Licensee must carry out any remedial action as required by the Licensing Authority, and intimated to the Licensee in writing, which may include any requirement to display aids to navigation, following consultation with the MCA, the NLB or any such advisers as required by the Licensing Authority.	Section 4.11 (Promulgation of Information)
		The Licensee must ensure that any vessels permitted to engage in the Works are marked in accordance with the International Rules for the Prevention of Collisions at Sea (COLREGS) (International Maritime Organisation (IMO), 1972) whilst under way and in accordance with the UK Standard Marking Schedule for Offshore Installations if the vessel is secured to the seabed.	Section 2.8 (Construction) and Section 3.7 (Operation)
		The Licensee must ensure that no radio beacon or radar beacon operating in the marine frequency bands is installed or used on the Works without the prior written approval of the Office of Communications (“OfCom”).	Section 4.10 (Promulgation of Information)
		The Licensee must ensure that navigable depth is not altered by more than 5% referenced to Chart Datum unless otherwise agreed, in writing, with the Licensing Authority in consultation with the MCA and NLB.	Section 2.9 (Construction) and Section 3.8 (Operation)


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Consent Document	Condition Reference	Summary of Condition	Where Addressed
Marine License	3.2.3.4	<p>The Licensee must ensure that the Works are marked and lit in accordance with the requirements of the MCA, NLB, the Civil Aviation Authority (“CAA”) and the Ministry of Defence (“MoD”) at all times and such markings and/or lighting must be continued unless and until such time as the Licensing Authority, by notice, relevantly varies this licence under section 30(3)(c) of the 2010 Act.</p> <p>The Licensee must not display any marks and lights additional to those required by virtue of this licence and as agreed in the LMP without the written approval of the Licensing Authority following consultation with the NLB, the CAA, the MoD and the MCA.</p> <p>The Licensee must ensure that the Works are marked and lit in accordance with the International Association of Lighthouse Authorities (IALA) Recommendation O-139.</p> <p>The turbines must be lit with a single 2000 candela, red aviation light, flashing Morse ‘W’ in unison with all other turbines and in accordance with the CAA Air Navigation Order Part 28 Lights and Lighting (220).</p> <p>Turbines 4 &amp; 5<sup>2</sup>, as specified in the Application, must be fitted with synchronised sound signals with a nominal range of two nautical miles, placed</p>	<p>Section 2.2 (Construction) and</p> <p>Section 3.3 (Operation)</p>


<sup>2</sup> Noted that the turbine ID numbering referencing has since been updated. Turbines 4 and 5 as stated in the condition refer to the northernmost and southernmost WTGs.

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Consent Document	Condition Reference	Summary of Condition	Where Addressed
		<p>not less than 6 metres and not more than 30 metres above sea level. The character must be rhythmic blasts corresponding to morse letter 'U' every 30 seconds. The minimum duration of the short blast must be 0.75 seconds and the sound signal must be operated when the meteorological visibility is two nautical miles or less. The sound signal must comply with IALA recommendations and have an availability of not less than 97.0% (IALA Category 3), calculated over a rolling 3 year period.</p> <p>Each turbine must display identification panels with black letters or numbers 1 metre high on a yellow background visible in all directions. These panels shall be easily visible in daylight as well as at night, either by the use of illumination or retro-reflecting material.</p>	
Marine License	3.2.4.3	<p>The Licensee must notify the UKHO of the Completion of the Works to facilitate the promulgation of maritime safety information and updating of Admiralty charts BA741 and BA743 and publications through the national NtM system.</p> <p>The Licensee must ensure that local mariners, fishermen's organisations and HM Coastguard, in this case Aberdeen CGOC, are made fully aware of the Completion of the Works.</p>	Section 4.5 (Promulgation of Information)

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Consent Document	Condition Reference	Summary of Condition	Where Addressed
		The Licensee must, within 1 calendar month of the Completion of the Works, provide the “as-built” positions and maximum heights of all WTGs, along with any sub-sea infrastructure, to the UKHO for aviation and nautical charting purposes.	Section 4.6 (Promulgation of Information)
		The Licensee must ensure that the Completion of the Works is promulgated in the Kingfisher Fortnightly Bulletin to inform the Sea Fish Industry.	Section 4.9 (Promulgation of Information)
		The Licensee must, where any damage, destruction or decay is caused to the Works, notify the Licensing Authority, in writing, of such damage, destruction or decay as soon as reasonably practicable following such damage, destruction or decay. The Licensee must carry out any remedial action which the Licensing Authority advises the Licensee, in writing, as requiring to be taken, which may include a requirement to display aids to navigation, following consultation by the Licensing Authority with the MCA, the NLB or any such advisers as required.	Section 4.11 (Promulgation of Information)
		The Licensee must ensure that no radio beacon or radar beacon operating in the Marine frequency bands is installed or used on the Works without the prior written approval of OfCom.	Section 4.10 (Promulgation of Information)

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Consent Document	Condition Reference	Summary of Condition	Where Addressed
		As per the requirements of MCA's MGN 543 and supplementary updates, the Licensee must complete post-installation hydrographic surveys of the consented area or subsections thereof, to the International Hydrographic Organisation Order 1a survey standard. On completion of these surveys the data and a corresponding report of survey must be supplied to the UKHO, with notification to the MCA Hydrography Manager.	Section 4.12 (Promulgation of Information)
		The Licensee must not exhibit, alter or discontinue navigational lighting of the Works without the Statutory Sanction of the Commissioners of Northern Lighthouses. An 'Application for Statutory Sanction to Exhibit/Discontinue' form must be completed by the Licensee as fully as possible and returned to the NLB via e-mail to <a href="mailto:navigation@nlb.org.uk">navigation@nlb.org.uk</a> for the necessary sanction to be granted prior to exhibiting, altering or discontinuing navigational lighting.	Section 2.2 (Construction) and Section 3.3 (Operation)
Marine License	3.2.4.5	<p>The Licensee must ensure that the Works are marked and lit in accordance with the agreed LMP and the requirements of the MCA, NLB, CAA and MoD at all times and such marking and/or lighting must be continued unless and until such time as the Licensing Authority, by notice, relevantly varies this licence under section 30 of the 2010 Act.</p> <p>The Licensee must ensure that the Works are marked and lit in accordance with IALA Recommendation O-139.</p>	Section 2.2 (Construction) and Section 3.3 (Operation)



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## 2. NAVIGATIONAL SAFETY MEASURES DURING CONSTRUCTION PHASE

### 2.1. Introduction

This section sets out the navigational safety measures that KOWL will have in place during the construction of the Project including the following relevant matters required within the consent conditions:

- Safety zones during construction;
- Promulgation of information;
- Temporary lighting and marking;
- Emergency response procedures;
- Marine coordination;
- Buoyage;
- Charting requirements; and
- Marking of vessels.

It is noted that as construction will occur over three Tranches (see Table 1-2), WTGs per tranche are expected to be commissioned separately, and there will therefore be some overlap between construction and operational phases.

Details relating to the promulgation of information, anchoring areas, and emergency response requirements are set out separately in Sections 4, 5, and 6 respectively.

### 2.2. Temporary Lighting and Marking

Lighting and marking of the site during construction is set out in the LMP (KOWL-PL-0004-001) which has been submitted for approval to MS-LOT, and will be agreed with the NLB, MCA, CAA, and MOD prior to finalisation. The LMP has been drafted to comply with the relevant guidance (most notably IALA O-139 (2013)), and to satisfy the consent conditions relevant to lighting and marking.

The anticipated short duration of the WTG installation periods (48 hours) means that it is unlikely that partially completed structures will be left unattended prior to their completion. However, KOWL shall mark any incomplete WTGs, or complete WTGs that are yet to be commissioned, with temporary flashing yellow lights (FI Y 2.5s), visible throughout 360° and with a range not less than two nautical miles if considered necessary based on risk assessment.

It is noted that due to the intention to install the WTGs over three Tranches (see Table 1-2), operational lighting and marking of certain WTGs will become active prior to the installation of the remaining structures. Details of operational lighting and marking are presented in the LMP, with a summary provided in this document in Section 3.3.

Prior to commencing construction of the Project, KOWL will complete an “Application for Statutory Sanction to Alter/Exhibit” form and submit this to the NLB for the necessary sanction to be granted. KOWL will display no other lights/marks other than those agreed with the NLB, MCA, CAA and MOD within the LMP.



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### 2.3. Construction Buoyage

Based on the short durations of the construction periods during each Tranche, and based on the small geographical area of the site, it has been agreed with the NLB that no buoyage will be required to mark construction activities. However, temporary buoyage may be required to mark any subsea infrastructure that poses a temporary hazard to passing traffic prior to the corresponding WTG installation (noting a guard vessel may also be used for this purpose in addition to, or instead of temporary buoyage). Any procedures must be risk assessed and mitigations agreed in advance with the NLB and MCA.

### 2.4. Authorised Construction Safety Zones

Section 95 and Schedule 16 of the Energy Act 2004 set out the requirements for applying for safety zones to be placed around an offshore renewable energy installation. The Electricity Regulations 2007 details the necessary requirements for application. This applies to territorial waters in or adjacent to Scotland, and also within the Renewable Energy Zone.

In line with these requirements, KOWL are to submit an application to Marine Scotland, accompanied with a layout plan, construction programme, and proposals for consulting and notifying the relevant stakeholders.

KOWL's intention is to apply for 500m construction safety zones surrounding each WTG during its installation. Any active authorised safety zones will be monitored by a guard vessel or other designated on-site vessel (that is not restricted in its ability to manoeuvre or overseeing crew transfers) (see Section 2.5).

The status and location of safety zones will be promulgated on a regular basis throughout any construction period via the method set out in Section 4 of this NSP.

As per MGN 543, in applying and gaining consent for a safety zone, KOWL commits to monitor the zone for unlawful infringements. Any infringements will be reported to relevant authority accompanied with supporting evidence (for example, Automatic Identification System (AIS) recording, or guard vessel/construction vessel statement).

### 2.5. Guard Vessels

It is currently anticipated that, during construction, a guard vessel will be on site during the installation of cables and moorings associated with each of the WTG tranches, which will occur approximately two months in advance of the installation of the corresponding WTGs. A guard vessel may also be utilised during the hook up of the mooring lines to the WTGs as per risk assessments.

It is noted that a Guard Vessel (or other designated on-site vessel that is not restricted in its ability to manoeuvre or overseeing crew transfers) will be required to monitor any active safety zones.

### 2.6. Marine Coordination Centre

KOWL will establish a Marine Coordination Centre (MCC) in Aberdeen from which all construction activities will be managed. All communications (both internal and third party) will be managed from the MCC.

The movements of all KOWL project vessels will be monitored and managed from the MCC during construction. All KOWL project vessels will be required to seek permission from the MCC prior to

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approaching the site or entering a safety zone (see Section 2.4) and will adhere to protocols established by the MCC in relation to leaving the safety zone. A record of the work undertaken by all KOWL vessels will be maintained at the MCC, including records of any marine incidents.

The MCC will also be responsible for collecting localised weather conditions and forecasts, and will provide this information to KOWL project vessels where appropriate.

The MCC will be the main internal point of contact during emergency situations, and will hold the master copy of the ERCoP. Detailed records of any emergency incidents (as per relevant guidance) will be maintained at the MCC.

The movements of passing traffic (not associated with KOWL) within the vicinity of the site will also be monitored by the MCC via AIS.

## 2.7. Recommended Routes

Indicative transit routes for use by KOWL project vessels when approaching the construction areas or entering/departing working ports have been identified, and are presented in the VMP (KOWL-PL-0004-006). It is noted that these routes are not intended to be prescriptive, and all KOWL vessels will comply with COLREGS (IMO, 1972 as amended) as the navigational priority, and will passage plan as per SOLAS (IMO, 1974).

## 2.8. Construction Vessels

KOWL requires that all vessels involved in the construction of the Project meet the required, recognised standards, and will comply with the international maritime rules (as adopted by the relevant flag state) and the relevant regulations for their class and area of operation.

KOWL will conduct independent vessel audits on construction vessels as necessary to ensure that they meet these standards and are appropriate for the purpose of their prescribed roles.

KOWL requires that all vessels involved in the construction of the Project will comply with the procedures set out in this document and in other relevant consent plans such as the VMP and the LMP. As such, it will be ensured that all relevant documentation is made available and understood by the vessels or vessel operators as appropriate.

Vessel crews will be required to meet the requirements for the size, type and area of operation in line with the Standards for Training, Certification and Watchkeeping (STCW) 1978 set out by their flag state, and any site specific requirements implemented by KOWL above their operational standards.

All vessels involved in the construction of the Project will display lights and shapes as per the International Regulations for Preventing Collisions at Sea (COLREGs) (IMO, 1972 as amended). All construction vessels will also be equipped with AIS transponders.

Further details of the vessels expected to be used during construction are set out in the VMP (KOWL-PL-0004-006) submitted for approval. It is noted that as per Condition 14 of the S36 Consent (and Condition 3.1.3 of the Marine License), KOWL will submit a full list of all vessels to be used during the construction of the Project to MS-LOT, no later than 14 days prior to the Commencement of the Project.

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## 2.9. Subsea Cables

As per Condition 17 of the S36 Consent, KOWL will produce a Cable Plan, which will include a burial risk assessment to estimate the achievable burial depths along the cables, and identify areas where additional cable protection (e.g., rock dumping, mattresses) are necessary. This will include an assessment of underkeel clearance to identify any areas of seabed where navigable water depth may be reduced. The final Cable Plan, and the anticipated changes in navigable water depths will be discussed and agreed with the NLB and MCA prior to approval.

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### 3. NAVIGATIONAL SAFETY MEASURES DURING OPERATIONS AND MAINTENANCE

#### 3.1. Introduction

The following section sets out the navigational safety measures to be implemented by KOWL during the operational phase of the Project, including details on:

- Marine Coordination;
- Operational Lighting and Marking;
- Operational safety zones;
- Recommended routes and entry/exit gates; and
- Operational and maintenance vessels.

#### 3.2. Marine Coordination

Operation and maintenance phase activities will be managed by the MCC, which will continue to be based in Aberdeen following commissioning of the WTGs. All communications (both internal and third party) will be coordinated from the MCC and will be integrated into the operational and maintenance phase of the project.

The movements of KOWL Project vessels will be monitored and managed from the MCC.

#### 3.3. Operational Lighting and Marking

Lighting and marking of the site during construction is set out in the LMP (KOWL-PL-0004-001) which will be submitted for approval to MS-LOT, and will be agreed with the NLB, MCA, CAA, and MOD prior to finalisation. The LMP has been drafted to comply with the relevant guidance (most notably IALA O-139 (2013)), and to satisfy the consent conditions relevant to lighting and marking.

As agreed with the NLB, each WTG will be fitted with the same lighting and marking, to allow for the possibility that the WTGs may move Locations. Each WTG will therefore be fitted with:

- 5nm lights (flashing yellow) positioned to ensure 360° visibility, and dimmable to 25% output;
- ID marking (both marine and aviation) (ID marking will remain consistent by Location, i.e., the ID marking of a WTG will be repainted should it move Location);
- Sound signals (at least 2nm range), to be activated when visibility falls below 2nm;
- AIS transmitters;
- Warning signs indicating the presence of subsea infrastructure (mooring lines and cables);
- Red aviation light (2000cd with 360° visibility), dimmable to 10% output; and
- Blade markings (compliant with Annex 5 of MGN543).

KOWL will complete an “Application for Statutory Sanction to Alter/Exhibit” form and submit this to the NLB for the necessary sanction to be granted as appropriate.

#### 3.4. Authorised Operational Safety Zones

KOWL will apply for safety zones of 500 m to be applied during major maintenance work undertaken during the operational phase. Major maintenance is defined as any activity at a WTG requiring the presence of a large vessel (e.g., a heavy lift vessel or jack up). A NtM will be issued prior to any safety zones being deployed.

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As per MGN 543, in applying and gaining consent for a safety zone, KOWL commits to monitor the zone for unlawful infringements. Any infringements will be reported to the relevant authorities with accompanying supporting evidence (for example, AIS or guard vessel/maintenance vessel).

### 3.5. Guard Vessels

KOWL may employ the use of a guard vessel during periods of major maintenance, including to monitor safety zones as required by risk assessments. A guard vessel may also be temporarily deployed in the event that failure of an aspect/component of the Project may compromise navigational safety, for example the failure of an AtoN, or a section of the cable becoming exposed.

### 3.6. Recommended Routes

Indicative transit routes for use by KOWL project vessels when accessing the site or working ports to be used during operation have been identified, and are presented in the VMP (KOWL-PL-0004-006). It is noted that these routes are not intended to be prescriptive, and all KOWL vessels will comply with COLREGS (IMO, 1972 as amended) as the navigational priority, and will passage plan as per SOLAS (IMO, 1974).

### 3.7. Operational and Maintenance Vessels

KOWL will require that all vessels involved in the operation and maintenance of the Project meet the required and recognised standards, and that they comply with international maritime rules as adopted by the relevant flag state, and the regulations relevant to their vessel class and area of operation.

KOWL will conduct independent vessel audits on operation and maintenance vessels as necessary to ensure that they meet these standards and are appropriate for the purpose of their prescribed roles.

KOWL requires that all vessels involved in the operation of the Project will comply with the procedures set out in this document and in other relevant consent plans such as the VMP (KOWL-PL-0004-006) and the LMP (KOWL-PL-0004-001). As such, it will be ensured that all relevant documentation is made available to the vessels or vessel operators as appropriate.

Vessel crews will be required to meet the requirements for the size, type and area of operation in line with the STCW 1978 keeping set out by their flag state, and any site specific requirements implemented by KOWL above their operational standards.

All vessels involved in the operation of the Project will display lights and shapes as per COLREGS (IMO 1972). All associated vessels will also be equipped with AIS transponders.

A summary of the anticipated vessel types to be used during the operational phase will be provided by KOWL as it is noted that final vessel details are not available at the time of writing.

### 3.8. Subsea Cables

As per Condition 17 of the S36 Consent, KOWL will produce a Cable Plan, which will include a burial risk assessment to estimate the achievable burial depths along the cables, and identify areas where additional cable protection (e.g., rock dumping, mattresses) are necessary. This will include an underkeel clearance assessment. The final Cable Plan, and the anticipated changes in navigable water depths will be agreed with the NLB and MCA prior to approval. The cables will be monitored on an annual basis to ensure cable protection remains effective.

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## 4. PROMULGATION OF INFORMATION

### 4.1. Introduction

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

### 4.2. Local Notices to Mariners (LNtMs)

LNtMs will be issued in advance of any activity associated with the Project which may impact upon navigational safety. KOWL will issue LNtMs to a list of relevant local and national stakeholders, identified as being relevant to shipping and navigation, and which may be affected by the construction and operation of the Project. This list will be regularly updated to ensure contact details remain up to date, and that all relevant parties are included.

The LNtMs will be concise, detailing navigational safety information and may include, but not be limited to, the information set out in Table 4-1. A standard template will be defined prior to issue of the first LNtM.

*Table 4-1 LNtM Content*

<b>Title</b>	<p>Clearly state the document is an LNtM and a short relevant title about the scope of the topic</p> <p>This will include the date of issue and the notice number.</p>
<b>Supplementary Information</b>	Details of the organisation and Project issuing the LNtM and any relevant LNtMs issued prior to the current one
<b>Detail</b>	<ul style="list-style-type: none"> <li>• Date / time of start / finish and location of work (co-ordinates);</li> <li>• Vessels on site including call signs;</li> <li>• Activity being undertaken; and</li> <li>• Specific risks to navigation.</li> </ul>
<b>Contact Details</b>	Sufficient details to allow mariners to contact the organisation issuing the LNtM including the MCC / 24 hours emergency contact
<b>Guard Vessel and Safety Zone Detail</b>	Details of any guard vessels or safety zones present and in force.
<b>Hyperlinks to Additional Information</b>	Provided only if absolutely necessary.

The organisations to which LNtMs will be issued to includes the UKHO. Upon receipt of any LNtMs, the UKHO will decide whether to include any of the contained information in their Weekly Admiralty NtMs (see Section 4.7).



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#### **4.3. LNtM Issued Prior to the Commencement of the Project**

KOWL will, no later than seven days prior to the commencement of any offshore construction activity notify the UKHO of the works to facilitate promulgation of information. Additionally, KOWL will, no later than seven days prior to the commencement of any offshore construction activity, ensure that local mariners, fishermen's organisations, and HM Coastguard (via Aberdeen CGOC) are made fully aware of the Licensable Marine Activity through LNtMs (or any other appropriate means).

It is noted that, as per civil aviation requirements, KOWL will arrange a NOTAM with the CAA at least 14 days prior to the start of construction. KOWL will also notify the DGC of the locations, heights and lighting status of the WTGs, at least 10 weeks prior to commencement of offshore construction. Full details of promulgation of information relevant to aviation are given in the LMP.

#### **4.4. LNtM Issued During Construction**

The MCC will be responsible for notifying the UKHO and the standard list of stakeholders as to the progress of the construction of the Project. Notifiable activities include anything deemed to pose a risk to navigational safety, including any faults to navigational aids (noting that the NLB will be required to be informed should an AtoN fail). It is also a requirement under the ERCOP to ensure the MCA are aware of what vessels are on site (and how to contact them). An LNtM template approved by the MCA to satisfy this will be held by the MCC.

#### **4.5. LNtM Issued upon Commissioning and During Operation**

KOWL will ensure that local mariners, fishermen's organisations and the CGOC are made fully aware of the final completion of the construction works and the commissioning of the Project.

It is noted that as WTGs will be commissioned for each Tranche individually, the relevant stakeholders will be made aware upon each commissioning.

#### **4.6. Post Commissioning**

KOWL will, upon the completion of each Tranche, provide the "as-built" positions and maximum heights of the corresponding WTGs, and any associated subsea infrastructure to the UKHO for aviation and nautical charting purposes.

#### **4.7. Admiralty Notices to Mariners (UK Hydrographic Office)**

Admiralty NtMs are issued by the UKHO and are based on the information provided within LNtM. The UKHO issues these on a weekly basis to provide physical corrections to charts and associated publications. It is the responsibility of mariners to look up the Weekly Editions of Admiralty NtMs which can be found on the UKHO website and to make any necessary corrections to the charts on board their vessel.

#### **4.8. UK Hydrographical Charts**

WTGs will be charted by the UKHO using the turbine tower or Development Area chart symbol (found in publication 'NP5011 – Symbols and Abbreviations used in Admiralty Charts') (UKHO 2011) on charts deemed appropriate in terms of scale.

Similarly, the UKHO will display the submarine cables associated with the Project on charts deemed appropriately scaled.

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#### 4.9. Kingfisher Bulletins and KIS-ORCA

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. Information is available in fortnightly bulletins (Kingfisher – Offshore and Marine Renewables) or downloadable from the KIS-ORCA website.

##### **KIS-ORCA Notifications prior to and During Construction**

KOWL will ensure that details of the Project are promulgated in the Kingfisher Fortnightly bulletins, as soon as is reasonably practicable prior to commencement of construction of the Project, to inform the Sea Fish Industry of the vessel routes, timings, and location of the Project, and of the relevant operations.

KOWL, through the MCC, will ensure that the progress of the construction of the Project is promulgated in the Kingfisher Fortnightly Bulletin to inform the Sea Fish Industry of the vessel routes, the timings and location of the construction activities.

Notifications to the Kingfisher Fortnightly Bulletin may include, for example, an overview of the Project, roles and responsibilities, method statements relevant to the scope of the work for which the notification is issued, offshore activity schedule, navigational safety procedures, advisory safety zones and any relevant drawings or other Project information.

##### **KIS-ORCA Notifications upon Commissioning and During Operation**

KOWL will ensure that the completion of the Project is promulgated in the Kingfisher Fortnightly Bulletin to inform the Sea Fish Industry.

KOWL will ensure notices are issued to the Kingfisher Fortnightly Bulletin detailing any planned or unplanned maintenance activities that are outside the day to day maintenance carried out at the Project.

#### 4.10. 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 aids to navigation;
- Establishing major new aids to navigation;
- Cable laying activities, where a risk is posed to passing traffic;
- Other underwater operations that may constitute potential dangers in or near shipping lanes;  
or
- Vessels not under command or significant RAM operations.

Once details of an activity on site have been issued through the standard LNTM process, the UKHO will then decide if the warning should be transmitted as a Radio Navigational Warning. The UKHO will then issue the navigational warning.

In the context of Radio Navigational Warnings, the UKHO act as the Navigation Area (NAVAREA) 1 (NE Atlantic) Co-ordinator for the IMO and International Hydrographic Organisation Worldwide



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Navigational Warning Service and also as the UK Co-ordinator for issuing coastal navigational warnings. The MCA however is the overarching body responsible for broadcasting the warnings and are the organisation responsible for charging (costs associated) to broadcast them.

For information, the broadcasts are under the control of the UKHO and tend to be made as follows:

- For vessels in NAVAREA 1, broadcasts are made through Enhanced Group Call Safety NET within 30 minutes of receiving the navigational warning or at the next scheduled broadcast (every 12 hours);
- Broadcast by Navigational Telex (Navtex) twice a day as UK Coastal Navigational Warnings by appropriate Navtex stations at each transmission time (every four hours), or upon receipt of the information if it is of a vital nature; and
- Broadcast by VHF or Medium Frequency radio from selected MCA stations at the next scheduled broadcast and every 12 hours thereafter.

As per the LMP (KOWL-PL-0004-001), AIS will be installed on all seven WTGs, however upon final commissioning it is anticipated that AIS will only be actively transmitted from the northernmost and southernmost WTGs (KIN-03 and KIN-04). This will be agreed with the NLB. KOWL will seek relevant licenses from OFCOM in advance of any AIS transponder being commissioned.

#### **4.11. Notification of Damage, Destruction, or Decay**

KOWL will, as soon as is reasonably practicable, inform MS-LOT of any damage, destruction, or decay of the Project structures or infrastructure. KOWL will carry out any remedial action required by MS-LOT and in consultation with NLB and MCA. Temporary AtoNs will be installed if necessary while the works are carried out.

#### **4.12. Hydrographic Surveys**

As required by MGN 543, KOWL will undertake post construction hydrographic surveys, with the results provided to the UKHO and the MCA.

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## 5. ANCHORING AREAS

### 5.1. Introduction

This section provides details of anchorage areas identified within the vicinity of the Project, in addition to areas where anchoring should be avoided. Anchoring is at the discretion of the vessel Master but can be in conjunction with information provided by the MCC. 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 for other anchored vessels;
- Consideration of static fishing gear;
- Avoidance of known areas of other vessel based marine activity such as fishing or recreational boating; and
- Avoidance of main commercial routes, pilot boarding areas or other navigational features.

All vessels associated with the Project will take the above into consideration prior to anchoring as per standard marine practise. Construction / maintenance vessels requiring anchorage within the Development Area will request permission to do so from the MCC.

### 5.2. Anchoring Areas

Three anchorage areas within the vicinity of the Project have been identified based on a review of Admiralty Charts and the Pilot Book (UKHO, 2016). The areas identified are presented in Figure 5-1, with a summary of each then provided in the proceeding list.

- Aberdeen anchorage is located 2nm north of Aberdeen, with anchorage available over sand in depths of 14m and above;
- A drilling rig anchorage is charted 5nm south east of Aberdeen, however it is not in regular use; and
- Anchorage is available in Stonehaven Bay in the charted position, with good holding ground over depths of 11m.

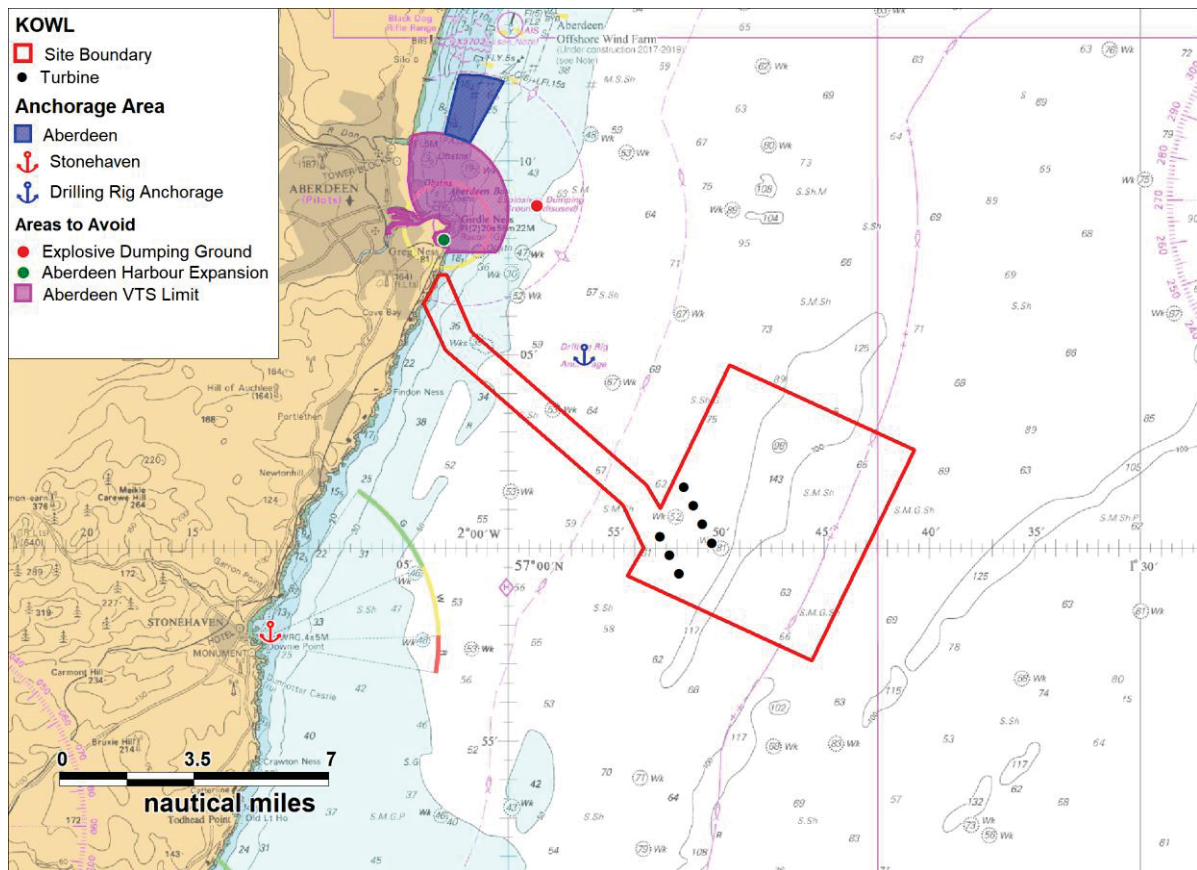


Figure 5-1 Anchorage areas relative to the Project

### 5.3. Anchorage Areas to be avoided

There were no areas to be avoided by anchoring vessels identified within the immediate vicinity of the Project, however a review of Admiralty Charts and consultation to date have indicated the following areas near Aberdeen that should be avoided. The location of each is included in Figure 5-1.

- A disused explosive dumping ground, 7nm north west of the site;
- Nigg Bay, where the Aberdeen Harbour expansion is to be built; and
- Aberdeen Vessel Traffic Service (VTS) Limits (vessels seeking anchorage should use the designated anchorage north of the VTS Limits, as shown in Figure 5-1).

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## 6. EMERGENCY RESPONSE PROCEDURES

### 6.1. Introduction

This section sets out the key emergency and incident planning and reporting procedures to be followed during all phases of the Project.

### 6.2. Emergency Response Co-operation Plan

KOWL has prepared a full ERCoP (KOWL-PL-0004-008) for the Project, which has been issued to the MCA for consultation.

The ERCoP includes the following information:

- Emergency contact and quick reference information;
- Project information including site location, coordinates and site control measures;
- Roles and responsibilities of KOWL in an emergency;
- KOWL contact information;
- Emergency response team;
- Liaison arrangements and information exchange;
- Project design parameters relevant to emergency response;
- Construction activities;
- SAR facilities and SAR response capabilities including cumulative capabilities;
- Medical advice and assistance;
- Firefighting, chemical hazards, trapped persons etc.;
- Shore reception arrangements;
- Suspension/ termination of SAR action;
- Criminal action and accidents to persons;
- Media relations;
- Exercises;
- Unexploded ordnance and wreck materials located on or near to an OREI;
- Wreck or wreck materials;
- Counter pollution;
- Search Planning; and,
- Liaison.

### 6.3. UK Marine Reporting Requirements

Within UK waters, all vessels are required to report any incidents related to navigational safety by the quickest means possible to the Marine Accident Investigation Branch (MAIB). The MAIB has a dedicated reporting line for this purpose (+44 (0)23 8023 2527), which is staffed 24 hours a day. This includes all accidents and serious injuries.

Information required will include:

- Details of the incident;
- Details of the vessel(s) involved; and
- Details of personnel involved.

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It is noted that it is the vessel (or vessel operators) responsibility to report any incident they are involved in or witness. However, KOWL will ensure to log details of all incidents internally, and will cooperate fully with any subsequent investigations by the MAIB.

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