European Offshore Wind Deployment Centre

Vessel Management Plan

Submitted for approval pursuant to the discharge of Section 36 Consent Condition 24

ABE-ENV-BD-0006

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0	06/03/17	First Issue

Vessel Management Plan Overview

Purpose and objectives of the Plan

This Vessel Management Plan (VMP) has been prepared to address the specific requirements of the relevant condition attached to the Section 36 Consent (S.36) issued to Aberdeen Offshore Wind Farm Limited (AOWFL).

The overall aim of this VMP is to provide detail on vessel activity associated with the construction and operation of the European Offshore Wind Deployment Centre (EOWDC - also known as the Aberdeen Offshore Wind Farm), and to describe the vessel management measures that will be put in place in respect of disturbance of birds and marine mammals, if applicable.

Scope of the Plan

This VMP covers, in line with the requirements of the S.36 Consent conditions, the following:

- The location of working ports and an indication of how often vessels will transit to and from ports;
- Vessel coordination during construction and operation;
- Working practices to minimise the unnecessary use of ducted propellers;
- The number, types and specification of vessels involved in construction and operation; and,
- Indicative corridors for vessels transiting to and from the EOWDC.

Structure of the Plan

This VMP is structured as follows:

Sections 1 and 2 set out the scope and objectives of the VMP and set out statements of compliance.

Section 3 sets out the process for making updates and amendments to this document.

Section 4 provides an overview of the EOWDC.

Sections 5 to 10 identify the location of working ports, the procedures associated with marine coordination, information on the types and numbers of vessels that will be involved in the construction, operation and maintenance of the EOWDC and indicative vessel transit routes.

Section 11 to 13 describe the marine mammal and bird sensitivities relevant to vessel management and sets out the vessel management measures in relation to environmental sensitivities including practices relating to the use of ducted propellers.

Section 14 demonstrates compliance of the VMP with the Environmental Statement (ES), Supplementary Environmental Information Statement (SEIS), Marine Licence, S.36 Consent and Marine Licence Application.

Section 15 presents the references cited within this VMP.

Appendix A demonstrates compliance with the original Application and mitigation set out in the ES and SEIS.

Plan Audience

This VMP is intended to be referred to by relevant personnel involved in the construction and operation of the EOWDC, including AOWFL personnel, Contractors and Subcontractors.

Compliance with this VMP will be monitored by the EOWDC Consents and Licensing Team and the EOWDC Ecological Clerk of Works (ECoWs).

Plan Locations

Copies of this VMP are to be held in the following locations:

- At AOWFL Head Office;

- At the premises of any agent, Contractor or Subcontractor (as appropriate) acting on behalf of AOWFL;

- All site offices dealing with marine operations;

- At the AOWFL Marine Coordination Centre;

- On all vessels; and

- With the ECoW(s).

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LIST OF ABBREVIATIONS AND DEFINITIONS

Defined Terms

Term	Definition / Description
the 2010 Act	The Marine (Scotland) Act 2010.
Adverse Weather	Weather conditions deemed to be adverse to the safety of a vessel or operational limits have been, or are forecast within a prescribed time-frame, to be exceeded and associated work activity is prevented.
Application	The Application and Environmental Statement (ES) submitted to the Scottish Ministers, by the Company on 1st August 2011 and Supplementary Environmental Information Statement submitted to the Scottish Ministers by the Company on 6th August 2012 for consent under section 36 of the Electricity Act 1989 and for a Marine Licence under 20(1) of the Marine (Scotland) Act 2010, for the construction and operation of the European Offshore Wind Deployment Centre (EOWDC) electricity generating station approximately 2 km off the coast of Aberdeenshire in Aberdeen Bay with a generation capacity of up to 100 MW.
Commencement of the Development	The date on which the first vessel arrives on the Site of European Offshore Wind Deployment Centre to begin construction in accordance with the section 36 Consent.
Commencement of the Works	The date on which the first vessel arrives on the Site to carry on any marine Licensable Marine Activity in connection with the construction of the Works, as defined by the Marine Licence.
Company	Aberdeen Offshore Wind Farm Limited (AOWFL). AOWFL is wholly owned by Vattenfall. AOWFL has been established to develop, finance, construct, operate, maintain and decommission the European Offshore Wind Deployment Centre.
Consent Plans	The plans, programmes or strategies required to be approved by the Scottish Ministers (in consultation with the appropriate stakeholders) in order to discharge conditions attached to the Offshore Consents.
Construction	As defined by the Section 36 Consent, (as per section 64(1) of the Electricity Act 1989, read with section 104 of the Energy Act 2004), construction is defined as follows: "construct", in relation to an installation or an electric line or in relation to a generating station so far as it is to comprise renewable energy installations, includes: • placing it in or upon the bed of any waters; • attaching it to the bed of any waters; • assembling it; • commissioning it; and • installing it.
Construction Method Statement (CMS)	The Statement to be submitted for approval under Condition 13 of the section 36 Consent.
Contractor	Any Contractor/Supplier (individual or firm) working on the project, hired by AOWFL.

Term	Definition / Description
Design Statement (DS)	The Statement to be submitted for approval under Condition 14 of the section 36 Consent.
Development	The European Offshore Wind Deployment Centre electricity generating station in Aberdeen Bay, approximately 2 km east of Blackdog, Aberdeenshire, as described in Annex 1 of the section 36 Consent.
Development Area	The area which includes the wind turbine generators, the Inter-array cables and part of the export cable corridor, including any other works, as shown in Part 4 of the Marine Licence (named as Lease Boundary in the Marine Licence).
Ecological Clerk of Works (ECoW)	Ecological Clerk of Works as required under condition 3.2.1.4 of the Marine Licence. primarily, but not exclusively, for environmental liaison to establish and maintain effective communications between the Licensee, contractors, stakeholders, conservation groups and other users of the sea during the period in which licensed activities authorised under this licence are undertaken.
Electricity Act	the Electricity Act 1989 (as amended).
Environmental Statement (ES)	The Statement submitted by the Company on 1 August 2011 as part of the Application.
Inter-array cables	Electricity cables connecting the WTGs.
Licensable Marine Activity	Any activity listed in section 21(1) of the 2010 Act.
the Licensee	Aberdeen Offshore Wind Farm Limited, a company registered in Scotland (registered number SC278869).
Licensing Authority	Scottish Ministers, as defined by the Marine Licence. It is important to note that Marine Scotland is acting on behalf of Scottish Ministers.
Marine Licence	Licence issued by the Scottish Ministers under Part 4 of the Marine (Scotland) Act 2010 for construction works and deposits of substances or objects in the Scottish Marine Area in relation to the Offshore Wind Farm and Offshore Export Cable Corridor.
Navigational Safety Plan (NSP)	The Plan to be submitted for approval under Condition 26 of the section 36 Consent.
Offshore Consents	• Consent granted under section 36 of the Electricity Act 1989 for the construction and operation of the EOWDC; • Declarations granted under section 36A of the Electricity Act 1989 to extinguish public rights of navigation so far as they pass through those places within the territorial sea where structures forming part of the Offshore Wind Farm are to be located; and • Marine Licence under Part 4 of the Marine (Scotland) Act 2010 for construction works and deposits of substances or objects in the Scottish Marine Area in relation to the Offshore Wind Farm and Offshore Export Cable.
Offshore Export Cables (OECs)	The offshore export cables and all associated cable protections up to MHWS.
Offshore Export Cable Corridor (OECC)	The consented area within which the offshore export cables will be laid up to MHWS.

Term	Definition / Description
Offshore Environmental Management Plan (OEMP)	The Plan to be submitted for approval under Condition 17 of the section 36 Consent.
Offshore wind farm	An offshore generating station which includes proposed WTGs, inter-array cables, meteorological masts and other associated and ancillary elements and works (such as metocean buoys). This includes all permanent and temporary works required.
Section 36 Consent	Consent granted under section 36 of the Electricity Act 1989 for the construction and operation of the EOWDC.
Scottish Marine Area	The area of sea within the seaward limits of the territorial sea of the United Kingdom adjacent to Scotland and includes the bed and subsoil of the sea within that area.
Subcontractor	Any Contractor/Supplier (individual or firm) providing services to the project, hired by the Contractors (not AOWFL).
Supplementary Environmental Information Statement (SEIS)	The Statement submitted to the Scottish Ministers by the Company on 6th August 2012 as part of the Application.
the Statement	The UK Marine Policy Statement 2011.
Vessel Management Plan (VMP)	The Plan to be submitted for approval under Condition 24 of the Section 36 Consent.
the Works	The European Offshore Wind Deployment Centre electricity generating station in Aberdeen Bay, approximately 2 kilometres east of Blackdog, Aberdeenshire, as described by the Marine Licence.

Acronym Definitions

Term	Definition
AIS	Automatic Identification System
AOWFL	Aberdeen Offshore Wind Farm Limited
CMS	Construction Method Statement
COLREGS	International Regulations for Preventing Collisions at Sea
DS	Design Statement
E	East
ECoW	Ecological Clerk of Works
EDS HV	Electricity Distribution Services Ltd – High Voltage
EOWDC	European Offshore Wind Deployment Centre
ES	Environmental Statement
HDD	Horizontal Directional Drilling
HDPE	High Density Polyethylene
IMO	International Maritime Organization
JNCC	Joint Nature Conservation Committee
km	Kilometre
kW	Kilowatt
m	Metre
MMPP	Marine Mammal Protection Plan
MC	Marine Coordinator
MMSI	Maritime Mobile Service Identity
MW	Megawatt
N	North
nm	Nautical Mile
NSP	Navigational Safety Plan
OECs	Offshore Export Cables
OECC	Offshore Export Cable Corridor
OEMP	Offshore Environmental Management Plan
PAX	Passenger Vessel

Term	Definition
S	South
SAC	Special Area of Conservation
SEIS	Supplementary Environmental Information Statement
SHE	Safety, Health and Environment
SNCB	Statutory Nature Conservation Bodies
SOLAS	Safety of Life at Sea Convention
SPA	Special Protection Area
UKHO	United Kingdom Hydrographic Office
UXO	Unexploded Ordnance
VMP	Vessel Management Plan
VTS	Vessel Traffic Services
W	West
WTG	Wind Turbine Generator

1 INTRODUCTION

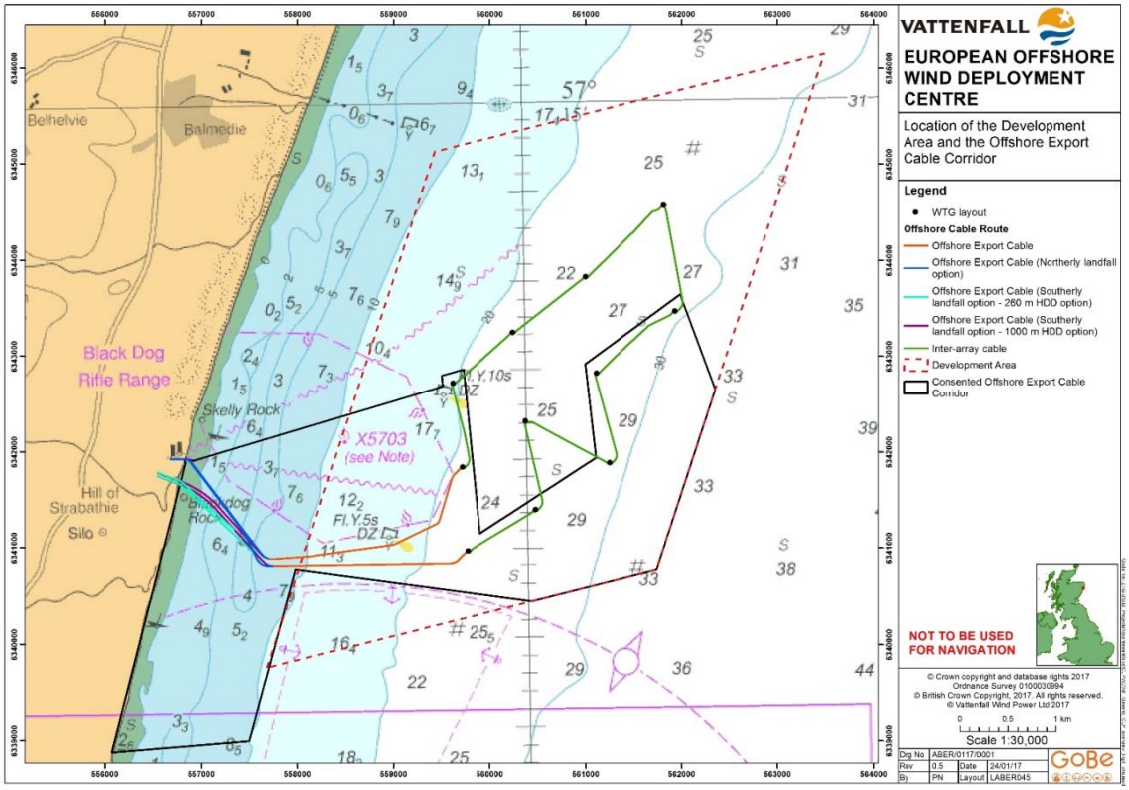
1.1 Background

On 26 March 2013, Aberdeen Offshore Wind Farm Limited (AOWFL) received consent from the Scottish Ministers under Section 36 (S.36) of the Electricity Act 1989 for the construction and operation of the European Offshore Wind Deployment Centre (EOWDC - also known as the Aberdeen Offshore Wind Farm) and on 15 August 2014 a Marine Licence was attained under section 25 of the Marine (Scotland) Act 2010 (reference 04309/16/0). This Marine Licence was most recently varied on 30 September 2016 (reference 04309/16/1).

The EOWDC is located approximately 2 to 4.5 kilometres (km) offshore to the north east of Aberdeen, Scotland, within Aberdeen Bay. The Offshore Export Cables (OECs) will be between 3.7 - 4 km long and will reach landfall at Blackdog, Aberdeenshire (Figure 1). A further overview of the EOWDC is contained in *Section 4* of this document.

AOWFL is a company wholly owned by Vattenfall and was established to develop, finance, construct, operate, maintain, and decommission the EOWDC.

Figure 1 – Location of the Development Area and the Consented Offshore Export Cable Corridor.



1.2 Objectives of this Document

The S.36 Consent contains a variety of conditions that must be discharged through approval by the Scottish Ministers/Licensing Authority prior to the commencement of any offshore construction works. One such requirement is the approval of a Vessel Management Plan (VMP), which is to provide details of vessel management during construction and operation.

The relevant conditions setting out the requirements for a VMP for approval, that are to be discharged by this VMP, are presented in full in Table 1.

Table 1 – Consent conditions to be discharged by the VMP

Consent Document	Condition Reference	Condition Text	Where Addressed
S.36 Consent	Condition 24	Prior to the Commencement of the Development, a Vessel Management Plan (VMP) must be submitted to, and approved by, the Scottish Ministers in consultation with SNH and any such other ecological or other advisors as may be required at the discretion of the Scottish Ministers.	This document sets out the VMP for approval by the Scottish Ministers. Consultation to be undertaken by Scottish Ministers.
		The VMP must include, but is not limited to, the following issues: (a) Individual vessel details;	*Section 7*
		(b) Number of vessels;	*Section 8*
		(c) Whether ducted propellers will be in operation;	*Section 13*
		(d) How vessel management will be coordinated, particularly during construction but also during operation; and	*Section 6*
		(e) Location of working port(s), how often vessels will be required to transit between port(s) and the site and the routes used.	*Section 5* (location of ports), *Section 8* (transit frequency) and *Section 9 (*routes used)
		The Development must be constructed and operated in accordance with the VMP, and the VMP must be cross-referenced with the Project Environmental Management Plan, the Construction Method Statement (CMS), the Design Statement (DS) and the Navigational Safety Plan (NSP).	*Section 2 and Section 1.3*

In addition to the specific consent requirements for a VMP and the requirements thereof (as set out in Table 1), this VMP also includes information in respect of a condition within the Offshore Consents which is linked to the VMP; as set out in Table 2.

Whilst this VMP does not seek to explicitly discharge this condition, it does provide relevant information, as described in Table 2.

Table 2 – Other consent conditions relevant to this VMP

Consent Document	Condition Reference	Condition Text	Where Addressed
Marine Licence	3.1.2	Vessels, agents, contractors and sub-contractors The Licensee must provide, as soon as reasonably practicable in advance of their engagement in any Licensed Marine Activity, the name and function of any vessel, agent, contractor or sub-contractor appointed to engage in the Works. The notification must include the master's name, vessel type, vessel **International Maritime Organization** (IMO) number and vessel owner or operating company. Any changes to the supplied details must be notified to the Licensing Authority, in writing, prior to any vessel(s), agent(s), contractor(s) or sub-contractor(s) engaging in the licensed activities. All agents, contractors, sub-contractors, and vessel operators must abide by the conditions set out in this licence. Only those vessels, agents, contractors or sub-contractors notified to the Licensing Authority are permitted to carry out any part of the Works. The Licensee must satisfy themselves that any such vessels, agents, contractors or sub-contractors is aware of the extent of the Works for which this licence has been granted, the activity which is licensed and the terms of the conditions attached to this licence. The Licensee must give a copy of this licence, and any subsequent variations that have been made to this licence in accordance with section 30 of the 2010 Act, ensuring it is read and understood, to the masters of any vessels, agents, contractors or sub-contractors engaged in the Works.	All vessel details known at the time of submission are given in *Section 7* of this VMP[1]. All vessels/contractors used will be promulgated via Local Notice to Mariners (LNtM) on a weekly basis, as set out in the NSP. The procedure for altering this, and other consent plans and related documents, is given in *Section 3* of this VMP. *Section 6.4* of this plan notes the distribution of the VMP to all vessels and contractors working on EOWDC.

[1] It is noted that a comprehensive list of all vessels is not currently available. A comprehensive list will be submitted seperately at a later date, but prior to their engagement in any Licensable Marine Activity covered under this Marine License.

1.3 Linkages with other Consent Plans

This VMP document sets out vessel management measures. However, ultimately it will form part of a suite of approved documents that will provide the framework for the construction and operation of the EOWDC – namely the other consent plans required under the S.36 Consent and Marine Licence.

Indeed, Condition 24 of the S.36 Consent (see Table 1 above) requires this VMP to be, so far as is reasonably practicable, consistent with a number of other consent plans, namely (in the order listed in the consent condition):

- The Offshore Environmental Management Plan (OEMP) (EOWDC Document reference: ABE-ENV-DB-0012) (required under Condition 17 of the S.36 Consent);
- The Construction Method Statement (CMS) (EOWDC Document reference: ABE-ENV-DB-0014) (required under Condition 13 of the S.36 Consent);
- The Design Statement (DS) (EOWDC Document reference: ABE-ENV-BD-0017) (required under Condition 14 of the S.36 Consent); and
- The Navigational Safety Plan (NSP) (EOWDC Document reference: ABE-ENV-QB-0008) (required under Condition 26 of the S.36 Consent).

These plans named in the consent clearly have a link to the VMP in so far as they provide additional details on vessel activity and the safety of navigation (i.e. the CMS and the NSP), provide details on the control of construction and operational activities to mitigate or manage potential environmental impacts (i.e. the OEMP).

The OEMP, CMS, DS and NSP will be submitted for approval by the Scottish Ministers and consistency between these documents will be achieved by ensuring that all relevant documents are consistent with the terms of any previously submitted or approved documents.

1.4 Structure of this VMP

In response to the specific requirements of the S.36 Consent condition, this VMP has been structured so as to be clear that each part of the specific requirements has been met and that the relevant information to allow the Scottish Ministers to approve the VMP has been provided. The document structure is set out in Table 3.

Table 3 – VMP document structure

Section		Summary of Content
1	Introduction	Background to consent requirements and overview of the VMP scope and structure, identifies those other Consent Plans relevant to the VMP and provides a statement of consistency between this VMP and those plans.
2	Statements of Compliance	Sets out the AOWFL statements of compliance in relation to the VMP Consent Condition and the broader construction process.
3	Updates and Amendments to this VMP	Sets out the procedures for any required updating or amending of the approved VMP and subsequent further approval by the Scottish Ministers.

Section		Summary of Content
4	Development Overview	Provides an overview of the Development.
5	Location of Base Ports	Describes the location and specifications of the construction lay down ports, ports to be used during the operational phase and the Marine Coordination Centre.
6	Management and Coordination of Vessels	Summarises the process for the management and coordination of vessels during the construction and operational phases of the Development.
7	Types and Specifications of Vessels	Describes the types of vessels that will be used during the construction and operational phases of the Development.
8	Numbers and movements of Vessels	Describes the numbers of vessels during the construction and operational phases of the Development and the anticipated movements between the EOWDC and ports.
9	Indicative Transit Route Corridors	Sets out the indicative vessel transit routes that may be used during the construction and operational phases of the Development.
10	Reporting in Compliance with the VMP	Sets out the reporting procedures that will be implemented during all stages of the EOWDC.
11	Environmental Sensitivities relevant to Vessel Management	Provides an overview of marine mammal and bird sensitivities in the vicinity of EOWDC and the conclusions of the Environmental Statement (ES) and Supplementary Environmental Information Statement (SEIS) with regards to vessel disturbance.
12	Potential Effects of Increased Vessel Activity on Environmental Sensitivities	Summarises the potential effects on marine mammal and ornithological receptors of increased vessel activity.
13	Working Practices related to Ducted Propeller Use	Sets out a summary of matters related to ducted propeller use in relation to marine mammal sensitivities.
14	Compliance with the Application, ES and SEIS	Sets out how the mitigation measures related to vessel management and mitigation relating to potential impacts on environmental sensitivities identified in the ES and SEIS are to be delivered.
15	References	Provides a list of references used within this VMP
Appendix A – Compliance with ES/SEIS Mitigation Measures		Demonstrates compliance with the mitigation set out in the ES and SEIS.

2 STATEMENTS OF COMPLIANCE

2.1 Introduction

The following statements are intended to re-affirm the AOWFL commitment to ensuring that the EOWDC is constructed and operated in such a manner as to meet the relevant requirements set out by the Offshore Consents, as well as other broader legislative requirements.

2.2 Statements of Compliance

AOWFL, in undertaking the construction and operation of the EOWDC, will ensure compliance with this VMP as approved by the Scottish Ministers (and as updated or amended from time to time following the procedure set out in *Section 3* of this VMP).

AOWFL, in undertaking the construction and operation of the EOWDC, will ensure compliance with other relevant Consent Plans, as approved by the Scottish Ministers, and as identified in *Section 1.3* above.

AOWFL, in undertaking the construction and operation of the EOWDC, will ensure compliance with the limits defined by the original Application, the project description defined in the Environmental Statement (ES) and Supplementary Environmental Information Statement (SEIS) and referred to in Annex 1 of the S.36 Consent in so far as they apply to this VMP (unless otherwise approved in advance by the Scottish Ministers / the Licensing Authority).

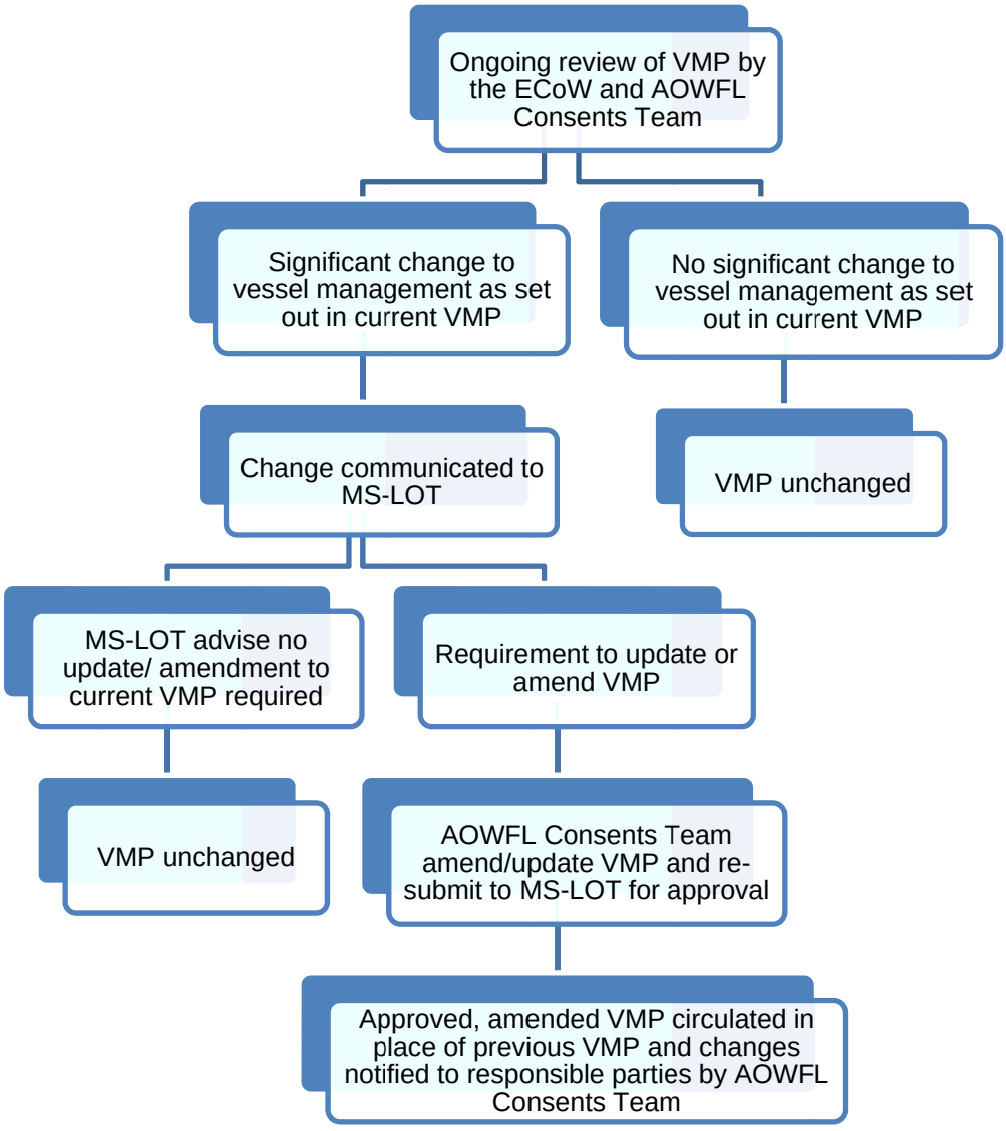
AOWFL, in undertaking the construction of the EOWDC, will comply with AOWFL Safety, Health and Environment (SHE) systems and standards, the relevant SHE legislation and such other relevant legislation and guidance so as to protect the safety of construction personnel and other third parties.

AOWFL will, in undertaking the construction of the EOWDC, ensure compliance with all other relevant legislation and require that all necessary licences and permissions are obtained by the Contractors and Subcontractors through condition of contract and by an appropriate auditing process.

3 UPDATES AND AMENDMENTS TO THIS VMP

Where it is necessary to update this VMP, in light of any significant new information related to vessel management, AOWFL proposes to use the change management process set out in Figure 2 to identify such information, communicate changes to the Scottish Ministers, re-draft the VMP, seek further approval of amendments or updates, and disseminate the updated version of the VMP.

Figure 2 – VMP Change Management Procedure



4 DEVELOPMENT OVERVIEW

4.1 Introduction

This section provides a brief overview of the EOWDC and Figure 1 shows the location of the EOWDC in Aberdeen Bay.

4.2 Development Overview

The Development will consist of the following main components:

- 11 Wind Turbine Generators (WTGs);
- Three-legged jacket substructures each installed on suction bucket foundations;
- A network of circa 9.7 km of Inter-array cables, buried or mechanically protected, subsea cables to connect strings of turbines together;
- Two buried or mechanically protected, subsea OECs, totalling up to ~8 km in length, to transmit the electricity from the WTGs to one of two cable landfall locations[2] at Blackdog, within Aberdeen Bay, and connecting to the onshore buried cables for transmission to the onshore substation and connection to the National Grid network.

Further details of the wind farm layout and design will be set out, for approval, in the DS (EOWDC Document reference: ABE-ENV-BD-0017).

[2] Two landfall options are currently under consideration within the Consented Offshore Export Cable Corridor; the final landfall option will be chosen prior to construction and notified to the Licensing Authority (see Section 6 for more information on the landfall options).

5 LOCATION OF BASE PORTS

5.1 Introduction

Condition 24 of the S.36 Consent requires that this VMP include the location of the base (working) ports, specifically:

e) Location of working port(s), how often vessels will be required to transit between port(s), and the site and the routes used.

Information in relation to the number of transits from each port is given in *Section 8*.

For the purposes of the VMP a working port is considered as a base port.

5.2 Construction Ports

The following ports will be used during the construction phase:

- Foundations will be assembled in the Smulders Projects UK Assembly Yard located at Wallsend, on the River Tyne, with subsequent delivery to Peterhead, acting as a local feeder port. The foundations will then be delivered to the site from Peterhead.
- Cables will be loaded from facilities at JDR Cables, Hartlepool, UK, prior to delivery to the site.
- The WTGs will be delivered directly to the site from the MHI Vestas quay at Esbjerg, Denmark.
- It is anticipated that the majority of crew transfers (via crew transfer vessel) will be from Aberdeen Harbour (noting that some crew transfers during WTG installation may be via helicopter).

Details of the facilities available at the key ports (Aberdeen and Peterhead) are given below, based on the information given in Admiralty Sailing Directions for the North Sea (West) (UKHO 2016).

5.2.1 Peterhead

Peterhead (57° 30.00' north (N), 001° 47.00 west (W)) lies 23 nautical miles (nm) north north east (NNE) of Aberdeen. Peterhead is major supply base for the offshore oil and gas industry. It is also considered the most important fishing port in the UK for white and pelagic species of fish. The port can also handle tankers, general cargo vessels and cruise ships.

A Vessel Traffic Service (VTS) with radar surveillance is available for the advice of shipping. Vessels should contact the VTS one hour prior to arrival and should also make contact when two nautical miles from the breakwater. Pilotage is compulsory in the following cases:

- Vessels exceeding 3,500 Gross Tonnes;
- Vessels carrying hazardous cargoes or dangerous goods in bulk, or quantities in excess of 100 tonnes;
- Vessels carrying more than one tonne of International Maritime Organization (IMO) Class 1 explosives;

- All vessels considered by the Harbour Master (or appointed deputies) to be defective, damaged or handicapped to such an extent that a pilot is required; or
- All vessels, in the event that, in the opinion of the Harbour Master (or appointed deputies) there is an obstruction in Peterhead Bay Harbour.

Pilot boarding occurs within two nautical miles south east (SE) of the breakwater entrance, except in the case of adverse weather, when boarding will occur inside the breakwaters.

5.2.2 Aberdeen

Aberdeen (57° 08.73' N, 002° 00.25' W) is considered the most important base for the offshore oil and gas industry in NW Europe.

A VTS is in operation for control of shipping within the Aberdeen Port limits. Vessels must request permission to enter the VTS area when three nautical miles from the Fairway Light Buoy. Vessels must also report 24 hours prior to arrival and again one hour prior to arrival at the Fairway Light Buoy.

Pilotage is compulsory for all vessels within the Aberdeen Pilotage District, except in the following cases:

- Vessels under 60 metres (m) in length;
- Vessels between 60 and 75 m in length, which are fitted with an operational bow thruster unit; or
- Vessels moving within the harbour from berth to berth with permission of the Harbour Master.

Pilotage is compulsory for all vessels in the following cases:

- Vessels manoeuvring with the assistance of tugs; and
- When deemed necessary by the Harbour Master.

Pilot boarding occurs in the vicinity of the Fairway Light Buoy which is moored one nautical mile NE of the harbour entrance.

5.2.3 Alternative Port Facilities

It is anticipated that in the event of adverse weather, Peterhead may be used as an alternative port to Aberdeen for crew transfer (noting that the majority of crew transfer vessel visits to the Development are expected to be from Aberdeen).

Although there are no further designated alterative port facilities during the construction phase for the EOWDC, there is potential that adverse weather or mechanical issues could mean that a vessel may deviate or be required to use a different port at short notice. Given this is likely to be an isolated visit there are not anticipated to be any implications on traffic management and reporting as part of the VMP.

As per *Section 10*, any changes to planned vessel movements will be recorded as part of the vessels log.

5.3 Operational Ports

During the Operational Phase general operations will require regular crew transfer from Aberdeen. Where certain major maintenance work arises, mobilisation may need to be from other ports depending on the type/size of the required vessels, however such activity is likely to be irregular. There are no proposed port alternatives during the operational phase at the time of writing.

6 MANAGEMENT AND COORDINATION OF VESSELS

6.1 Introduction

Condition 24 of the S.36 Consent requires that this VMP include details related to the management and coordination of vessels, specifically:

d) How vessel management will be coordinated, particularly during construction but also during operation;

6.2 Construction Phase

Matters relating to marine coordination and management of construction vessels are set out, for approval, in the NSP.

In summary, during construction, the following measures, as relevant to this VMP, will be in place:

- A control room will be established in Aberdeen from where construction activities will be managed by a Marine Coordinator (MC);
- Permission for construction vessels to enter the buoyed construction area and safety zones will be managed by the MC, for instance by using a Permit to Work system;
- The MC will establish protocols for approaching and leaving the buoyed construction area as well as management systems to record the work being undertaken and the vessels and personnel undertaking the work;
- Movements of vessels around the buoyed construction area will be monitored from the MC;
- The MC and any associated team based in the AOWFL Control Room (Aberdeen Harbour) will obtain and provide localised weather information for vessels working on the Development Area and Offshore Export Cable Corridor (OECC) to plan the construction activities. The Centre will also maintain a copy of the Emergency Response and Cooperation Plan and will be the main point of contact in the event of emergency incidents; and
- The MC will ensure the safety of the buoyed construction area using mitigations defined within the NSP.

All marine operations and vessel movements will be planned giving due regard to the requirements of the both the VMP and the NSP.

Given the small Development Area (buoyed construction area), specific entry and exit points to the construction areas are not considered necessary. However, as standard practice construction vessels associated with installation shall enter as dictated by the MC but will be mostly likely to enter from the east of the Development Area to mitigate impacts associated with:

- Shallow water to the west;
- Black Dog Firing Range located to the west / south west;

- Aberdeen harbour prefers anchorage area to the south; and
- The presence of other receptors (human, mammal and ornithological) within the shallow near shore area.

Vessels associated with the OECs installation have limited options for entry into that area and shall therefore be coordinated on a daily basis by the MC.

The restrictions noted above are illustrated in Figure 3.

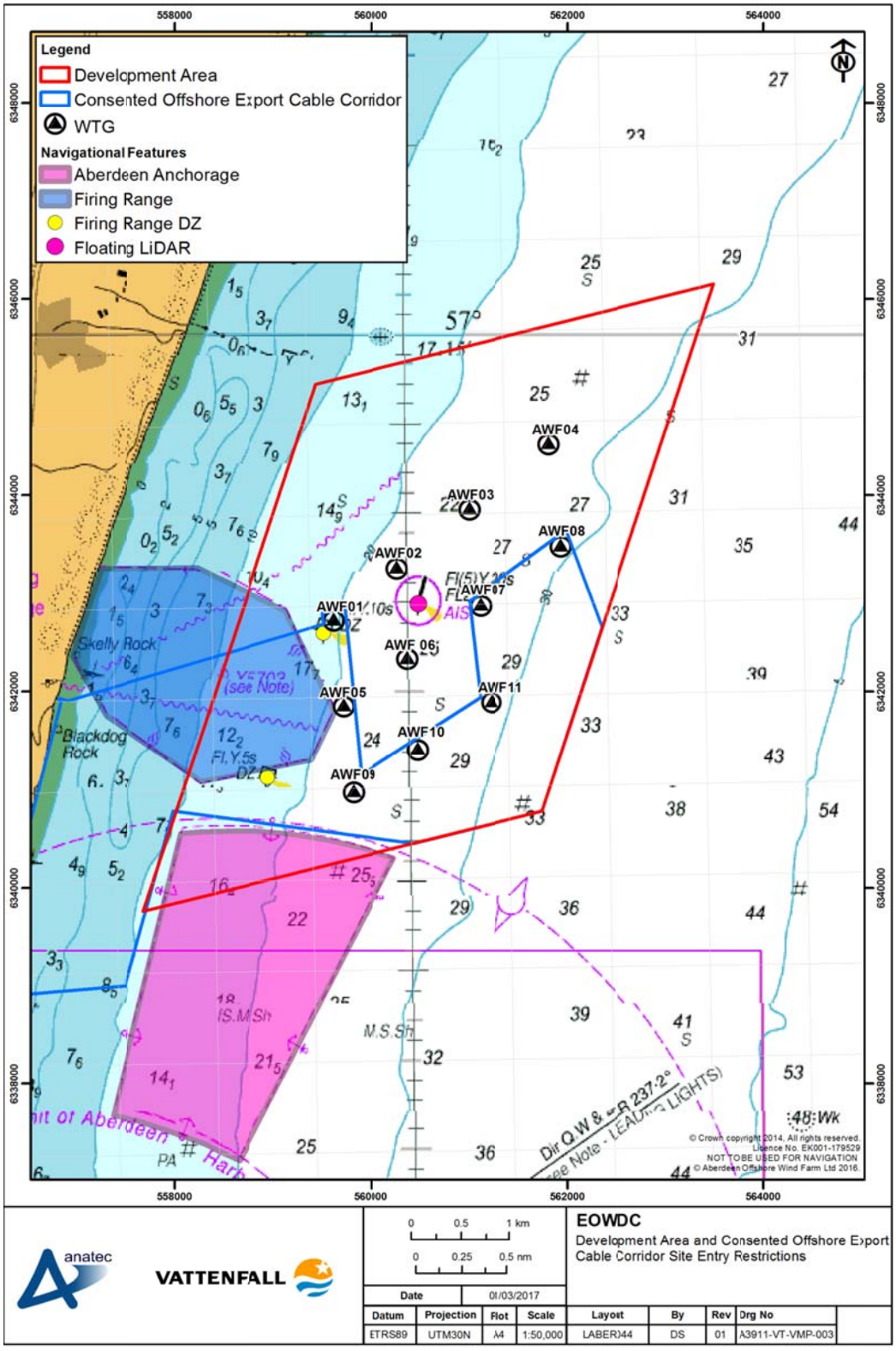
6.3 Operational and Maintenance Phase

Provisions for vessel coordination (when required) during operations will be established and defined prior to the completion of construction. A coordination system will be in place to control any development activities during the operational phase.

6.4 Distribution of this VMP

This VMP will be distributed to all AOWFL associated vessels working on the development. The MC will be responsible for distributing a copy of the VMP in advance and as part of vessel inductions including any updated versions as per *Section 3*. Distribution of the plan will also include ensuring that the contractor is aware of the consent conditions relevant to the VMP.

Figure 3 – Development Area and Consented Offshore Export Cable Corridor Site Entry Restrictions



7 TYPES AND SPECIFICATIONS OF VESSELS

7.1 Introduction

Condition 24 of the S.36 Consent requires that this VMP include details related to the vessels that will be used during the construction and operation of the Development, specifically:

a) Individual vessel details;

This section describes the anticipated vessel types (and relevant specifications) that will be employed during the construction (*Section 7.2*) and operational phases (*Section 7.3*) of the Development.

It should be noted that the vessels presented below are indicative only. The actual vessels used may vary depending on market availability, however they will be similar in specification to those presented below. The requirement under Condition 3.1.2 of the Marine Licence to notify the Licensing Authority of the final vessel list prior to the commencement of construction works is noted in this regard (see Table 2).

7.2 Overview of Main Construction Vessels

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

- Foundation and jacket installation;
- Inter-array and Export Cables installation;
- WTG installation;
- Commissioning Phase; and
- Guard Vessels.

7.2.1 Foundation and Jacket Installation

The following vessel types are anticipated to be used during the installation of the WTG foundations:

- Foundation installation vessel;
- Offshore construction vessel (s);
- Anchor handling tug;
- Seagoing tugs – assisting foundation transport from the Tyne (Wallsend) to Peterhead;
- Barges – foundation transport from the Tyne to Peterhead;
- Scour protection installation vessel; and
- Crew transfer vessel (s).

Indicative specifications of the vessels associated with the installation of the foundations and jackets are presented in Tables 4 to 10 below.

Table 4 – Foundation Installation Vessel

Vessel Name/ Maritime Mobile Service Identity (MMSI)	Asian Hercules III /Sheerleg
Length Overall	106.42 metres (m)
Breadth	52.00 m
Design or Maximum Draft	10.00 m
Propulsion/Thrusters	Thrusters – diesel engine driven generators, totalling 4,364 kilo watts (kW)
Dynamic Positioning	8 point mooring system

Table 5 – Offshore Construction Vessel

Vessel Name/MMSI	Constructor	Smit – Kamara
Length Overall	76 m	70.90 m
Breadth	18 m	16 m
Design or Maximum Draft	6.1 m	4.8 m
Propulsion/Thrusters	2 forward thrusters	Bow and Stern thrusters
Dynamic Positioning	DP (AA)/Class II	DPS 2

Table 6 – Anchor Handling Tug

Vessel Name/MMSI	Union Lynx
Length Overall	73.50 m
Breadth	16.40 m
Design or Maximum Draft	6.9 m
Propulsion/Thrusters	Bow and stern thruster
Dynamic Positioning	DP II

Table 7 – Seagoing Tug

Vessel Name/MMSI	Union Boxer	Union Fighter
Length Overall	40.65 m	40.65 m
Breadth	12.70 m	12.70 m
Design or Maximum Draft	6.30 m	6.30 m
Propulsion/Thrusters	Bow thruster	Bow thruster
Dynamic Positioning	N/A	N/A

Table 8 – Barges

Vessel Name/MMSI	Smitbarge 2
Length Overall	91.720 m
Breadth	
Design or Maximum Draft	6.163 m
Propulsion/Thrusters	NA
Dynamic Positioning	NA

Table 9 – Scour Protection Installation Vessel

Vessel Name/MMSI	Rockpiper
Length Overall	158.60 m
Breadth	36 m
Design or Maximum Draft	9.40 m
Propulsion/Thrusters	Azimuth and Bow Thrusters
Dynamic Positioning	DP-2

Table 10 – Crew Transfer Vessel

Vessel Name/MMSI	Offshore Provider
Length Overall	15.4
Breadth	6.1
Design or Maximum Draft	0.9
Propulsion/Thrusters	2 x Scania
Dynamic Positioning	N/A

7.2.2 Inter-Array and Export Cable Installation Vessels

During the installation of the subsea cable network, it is anticipated that the following vessel types will be used:

- In Survey/Unexploded Ordnance (UXO) Survey Vessel;
- Horizontal Directional Drilling (HDD) Assistance Barge (optional);
- HDD Assisting Vessel (optional);
- Duct extension backhoe dredger;
- Duct extension support vessels;
- Duct extension assisting vessel (s);
- Duct extension survey vessel;
- Pre lay grapnel run vessel;
- Cable lay vessel;
- Anchor handling tug (s); and
- Crew transfer vessel.

Indicative specifications of the vessels associated with the installation of the Inter-array and OECs are presented in Tables 11 to 21 below.

Table 11 – In / UXO Survey Vessel

Vessel Name/MMSI	Volans/235067662
Length Overall	14.7m
Breadth	6.2m
Design or Maximum Draft	1.2m
Propulsion/Thrusters	2 thrusters
Dynamic Positioning	N/A

Table 12 – HDD Assistance Barge

Vessel Name/MMSI	Fetsy L
Length Overall	60
Breadth	20
Design or Maximum Draft	1.97
Propulsion/Thrusters	N/A
Positioning	8 point mooring system

Table 13 – HDD Assisting Vessel

Vessel Name/MMSI	Nova K
Length Overall	32
Breadth	11.1
Design or Maximum Draft	2.3
Propulsion/Thrusters	Twin screw, 5-blade fixed pitch props ø1650 mm
Dynamic Positioning	N/A

Table 14 – Duct Extension Backhoe Dredger

Vessel Name/MMSI	Manu-Pekka/212701000
Length Overall	47.9 m
Breadth	15m
Design or Maximum Draft	3 m
Propulsion/Thrusters	NA
Dynamic Positioning	3 spuds /Tilting spud

Table 15 – Duct Extension Support Vessel

Vessel Name/MMSI	Kim K/244923000
Length Overall	21.6 m
Breadth	9 m
Design or Maximum Draft	2 m
Propulsion/Thrusters	Twin Screw, 4-blade fixed pitch props Ø 1350mm
Dynamic Positioning	N/A

Table 16 – Duct Extension Assisting Vessel

Vessel Name/MMSI	Voe Earl/235090599	Union Diamond/205349000
Length Overall	24.07 m	35.8 m
Breadth	12.97 m	11.00 m
Design or Maximum Draft	4.0 m	4.80 m
Propulsion/Thrusters	2 x 2850 bkW/ 2 x fixed pitch prop, 2 x 257kW bowthruster	2 x ASD propeller, 2 x 1850 kW/ schottel Stt 100 CP, 200 kW
Dynamic Positioning	NA	NA

Table 17 – Duct Extension Survey Vessel

Vessel Name/MMSI	Geo solution
Length Overall	15 m
Breadth	4.05 m
Design or Maximum Draft	0.95 m
Propulsion/Thrusters	2 Thrusters
Dynamic Positioning	NA

Table 18 – Pre-Lay Grapnel Vessel

Vessel Name/MMSI	Dutch Power
Length Overall	31.1
Breadth	9.5
Design or Maximum Draft	2.6
Propulsion/Thrusters	2 x Mitsubishi S16R-MPTK
Dynamic Positioning	NA

Table 19 – Cable Lay Vessel

Vessel Name/MMSI	Ndurance / NDeavour
Length Overall	99 m
Breadth	30
Design or Maximum Draft	4.8 m
Propulsion/Thrusters	Azimuth and Bow Thrusters
Dynamic Positioning	Yes – DP2

Table 20 – Anchor Handling Tug

Vessel Name/MMSI	Nova K	Dutch Power
Length Overall	32.0	31.1
Breadth	11.1	9.5
Design or Maximum Draft	2.3	2.6
Propulsion/Thrusters	Twin screw, 5-blade fixed pitch props ø1650 mm	2 x Mitsubishi S16R-MPTK
Dynamic Positioning	NA	NA

Table 21 – Crew Transfer Vessel

Vessel Name/MMSI	Offshore Provider
Length Overall	15.4
Breadth	6.1
Design or Maximum Draft	0.9
Propulsion/Thrusters	2x Scania
Dynamic Positioning	NA

7.2.3 WTG Installation Vessels

During the installation of the WTGs, it is anticipated that the following vessel type will be used:

Table 22 – WTG Installation Vessel

Vessel Name/MMSI	Pacific Orca
Length Overall	160.90 m
Breadth	49.00 m
Design or Maximum Draft	6.00 m
Propulsion/Thrusters	Azimuth stern, bow retractable and bow tunnel thrusters
Dynamic Positioning	DP2

7.2.4 Commissioning Phase

During the commissioning phase, it is anticipated that the following vessel type will be used:

Table 23 – Commissioning Phase Vessel (Crew Transfer Vessel)

Vessel Name/MMSI	Damen 2610
Length Overall	30 m
Breadth	10.5 m
Design or Maximum Draft	2.5 m
Propulsion/Thrusters	Propellers and thrusters
Dynamic Positioning	N/A

7.2.5 Guard Vessels

It is anticipated that guard vessels will be used to monitor the safety zones and the buoyed construction area during certain stages of the construction phase. These vessels are likely to be locally sourced and will be of a relevant class to work within the Development.

7.3 Operational Phase

Precise details of the vessels to be used during the Operational Phase are not currently available.

During maintenance work, crew transfer will be from Aberdeen via a single 22 m passenger (PAX) crew transfer vessel.

Major maintenance to the OECs or Inter-array cables may require large vessels similar to the cable lay vessel shown summarised in *Table 19*. Similarly, major maintenance work to the WTGs may require the use of jack-up or heavy lift vessels. In such cases, vessels may need to be mobilised from various ports, not necessarily from Aberdeen.

Guard vessels may be used during major maintenance in the operational phase, however this will be decided on a case-by-case basis.

8 NUMBERS AND MOVEMENTS OF VESSELS

8.1 Introduction

Condition 24 of the S.36 Consent requires that this VMP includes details related to numbers and movements of vessels, specifically:

e) *Location (s) of working ports,* ***how often vessels will be required to transit between port (s) and the site****, and the routes used.*

Based on the current understanding of the construction/operation vessel requirements and market availability the following section outlines the numbers of vessels estimated to be on site at any one time.

Note that, in line with condition 3.1.2 of the Marine Licence (see Table 2), the full list of vessels will be notified to the Licensing Authority as soon as is reasonably practicable in advance of the engagement of any Licensed Marine Activity.

8.2 Construction Vessels

The number of vessels within the Development Area and OECC at any one time will vary over the course of the Development, with peaks in vessel activity corresponding to the timings of the major construction works.

For each vessel type predicted to be entering the Development Area, Table 24 presents the indicative number of vessels involved in construction, the main construction activities they will be involved in, and the anticipated number of return journeys they will make (where this information is available). One return journey equates to the vessel transiting to the Development Area once, and then returning to port. It should be noted that the number of transits given is a best estimate based on the available information at the time of writing, and that the actual numbers may differ during the construction phase.

It is noted that in addition to the vessels listed in Table 24, dedicated guard vessels may be employed during certain stages of construction.

Table 24 – Indicative Construction Vessel Numbers, Key Construction Activities, and Return Journeys

Vessel Type	Anticipated Total Number	Key Construction Activities	Approximate Number of Return Journeys to Port
Foundation and Jacket Installation			
Foundation Installation Vessel	1	Foundation Installation	12
Offshore Construction Vessel	1	Pump retrieval Grouting installation	12
Anchor Handling Tug	1	Supporting vessel for foundation installation vessel	12

Seagoing Tug	2	Foundation Transport (towing vessel)	3
Barge	2	Foundation Transport	3
Scour Protection Installation Vessel	1	Scour installation	2
Crew Transfer Vessel	1	Crew Transfer	20
Inter-Array and Export Cable Installation			
In Survey/UXO Survey Vessel	1	Seabed Survey	45
HDD Assistance Barge	1	Assistance with installing Polyethylene pipe into bore hole	2 to 6
HDD Assistance Vessel	2	Placing barge anchors, general duct assistance	2 to 6
Duct Extension Support Vessel	2	Towing the High-Density Polyethylene (HDPE) Pipe	4 to 8
Duct Extension Backhoe Dredger	1	Digging the trench	4 to 8
Duct Extension Assisting Vessel	1	Installation of ballast wires to the PE pipe and assisting with the installation of the pipe	3 to 6
Duct Extension Survey Vessel	1	Survey works for the HDPE pipe	30 to 35
Pre lay Grapnel Vessel	1	Pre lay grapnel run	3 to 6
Cable Lay Vessel	1	Installation vessel for the export and infield cables	2 to 4
Anchor Handling Tug	2	Placing anchors of the Cable Lay Vessel	4 to 8
Crew Transfer Vessel	1	Crew transfer between Aberdeen and the EOWDC	230 to 240
Wind Turbine Installation Vessels			
WTG Installation Vessel	1	Installing the WTGs	3 to 4
Commissioning Taking Over Phase			
Support Vessel	3	Personnel transfer to mechanically / electrically complete, commission and test the WTGs.	60

8.3 Operation and Maintenance Vessels

During the operations phase there will be a 22 m 12 PAX Crew Transfer Vessel based at Aberdeen Harbour to provide crew transfer to the Development up to 360 days per year. It is noted that other vessels may be required for certain maintenance activities (see *Section 7.3*).

The anticipated activities to be undertaken as part of the operation and maintenance include those shown in Table 25.

Table 25 – Operation and Maintenance Vessel Visits

Maintenance Activity	Company Responsible	Vessels Required	Annual Vessel Visits to Site
Routine and Reactive Maintenance	AOWFL/MHI Vestas	22 m 12 PAX Crew Transfer Vessel	Up to 360 a year, assuming one per day
Inspections of Wind Turbines	AOWFL/MHI Vestas	22 m 12 PAX Crew Transfer Vessel	Up to 360 a year, assuming one per day
Inspections of Foundations	AOWFL	22 m 12 PAX Crew Transfer Vessel	Up to 360 a year, assuming one per day
High Voltage Switching	Electricity Distribution Services (EDS) High Voltage (HV)	N/A	N/A
Senior Authorised Persons Services	EDS HV	N/A	N/A
Facilities Maintenance and Security	TBC	N/A	N/A

It should be noted that guard vessels may also be utilised during periods of major maintenance during the operational phase, however this will be decided on a case by case basis.

9 INDICATIVE TRANSIT ROUTE CORRIDORS

9.1 Introduction

Condition 24 of the S.36 Consent requires that this VMP includes details related to vessel transit routes, specifically:

> *e) Location (s) of working ports, how often vessels will be required to transit between port (s) and the site, and the **routes used**.*

Although it is noted that indicative transit corridor routes are required for the purposes of mitigating impacts on marine mammal and ornithological receptors the requirements for site vessels to comply with the International Regulations for the Prevention of Collisions as Sea (COLREGS 1972) shall remain the key navigational priority.

9.2 Vessel Routeing

The indicative transit routes for the major construction vessels between the Development and other relevant ports of origin are presented in Figure 4. A zoomed in plot of the routes relative to the buoyed construction area is then presented in Figure 5. The routes are then summarised in Table 26.

The indicative transit routes shown are not intended for the purposes of navigation, and all vessels shall passage plan as per the International Regulations for the Safety of Life at Sea (SOLAS 1974).

Figure 6 shows indicative transit routes for the operational and maintenance phase, which will in the majority transit from Aberdeen. Other routes will be passage planned and risk assessed as required.

Table 26 – Indicative Transit Route Summary

Route Number	Origin Points	Main Purpose
1	Esbjerg- Development Area	Transport of Wind Turbine Generators (WTG)s to the Development Area via WTG installation vessel
2	Hartlepool - Development Area	Transport of cables to the Development Area via cable lay vessel
3	Wallsend (Tyne Estuary) - Peterhead	Transport of foundations to feeder port (Peterhead)
4	Peterhead - Development Area	Transport of foundations from feeder port (Peterhead) to site
5	Aberdeen - Development Area	Crew transfer to Development Area

It should be noted that these indicative vessel transit routes are not intended to be prescriptive for the purposes of navigation and will not be followed precisely by every vessel.

Vessels may deviate from these indicative routes for a variety of reasons and at the discretion of the vessel's master (as detailed in their passage plan), for example due to:

- Compliance with COLREGS 1972 or SOLAS 1974;
- Prevailing weather, tidal or sea state conditions;
- Due to the vessel originating from or being bound for a destination not indicated by the transit routes or not as part of the Development activity shown on Figure 3;
- Instructions (non-navigational) from the Marine Coordination Centre or other responsible persons in charge of co-ordinating and managing construction vessel traffic; and

Such other reason as the master of a vessel may deem relevant for the purposes of ensuring the safety of his vessel or another vessel.

Figure 4 – Indicative Transit Corridors

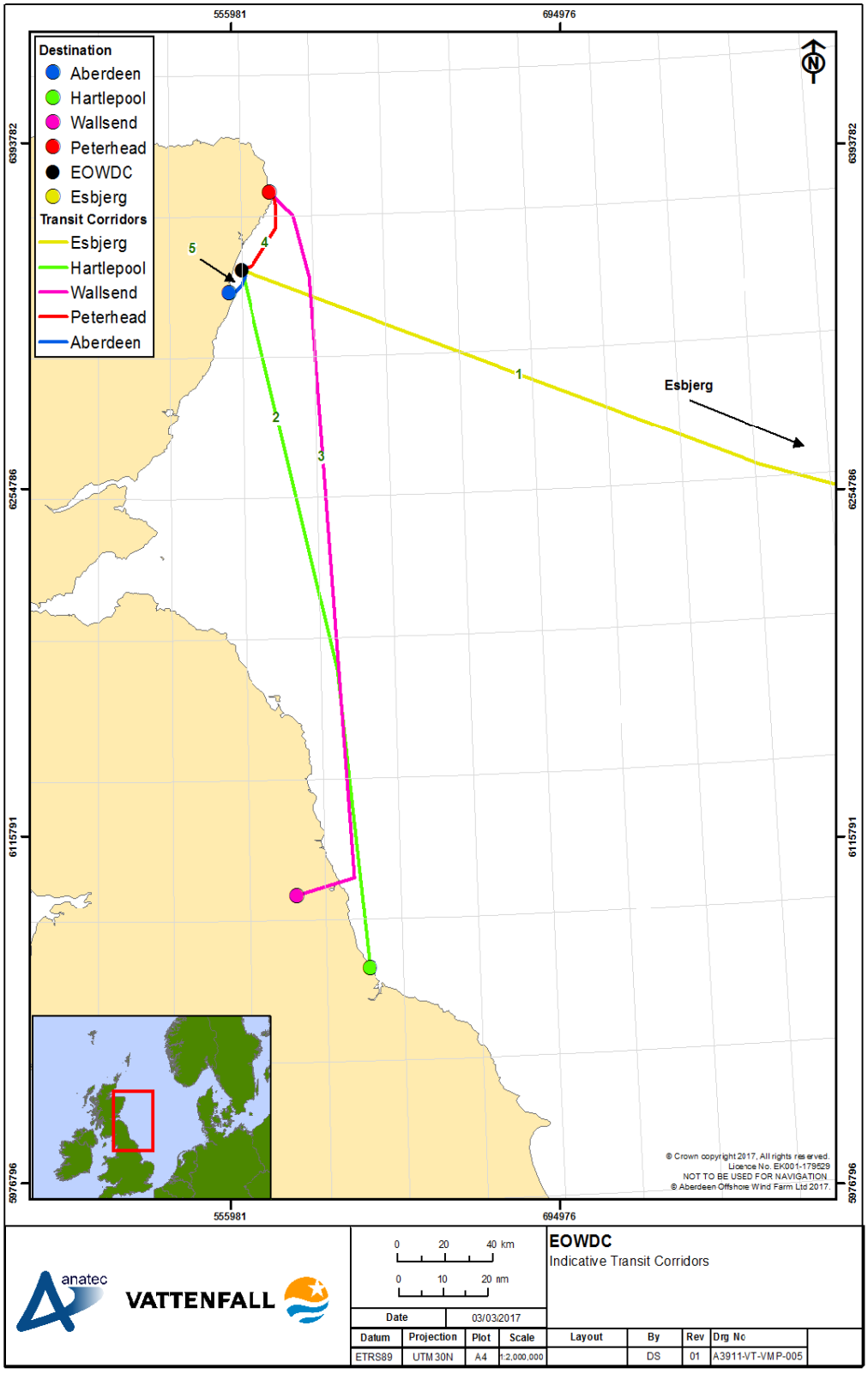


Figure 5 – Indicative Transit Corridors – Detailed View

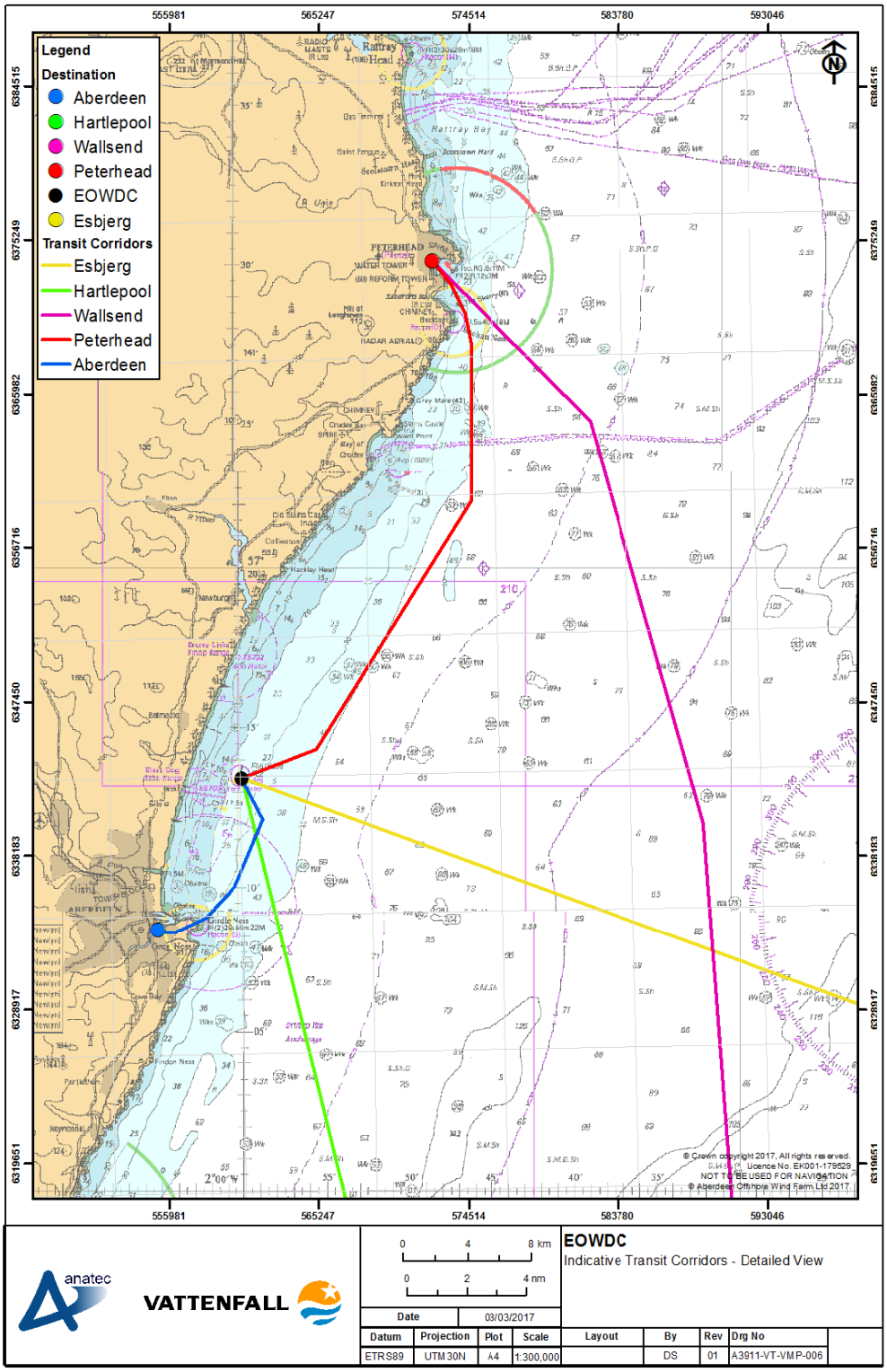
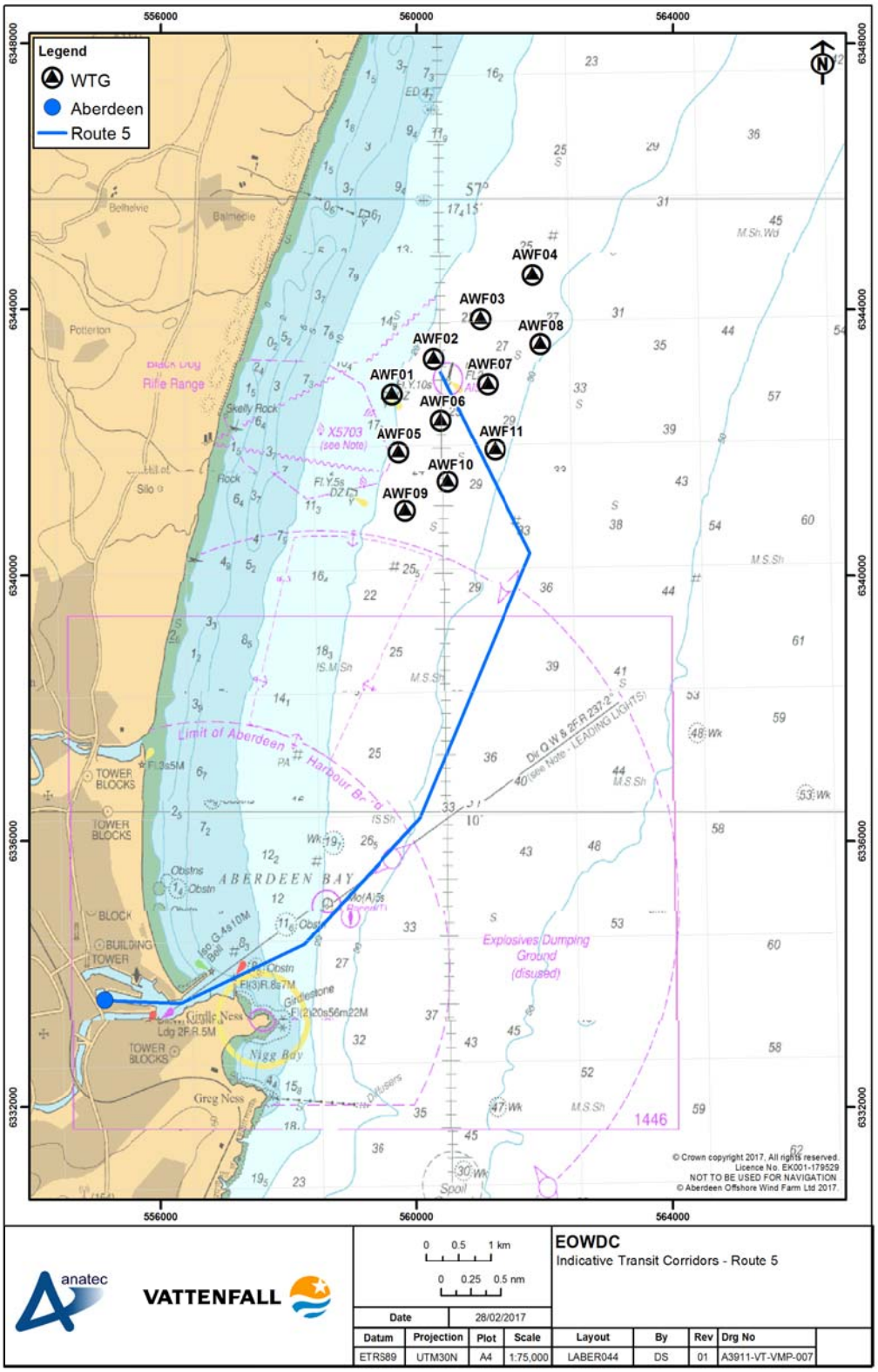


Figure 6 – Transit Corridors Operations and Maintenance Phase – Detailed View



10 REPORTING IN COMPLIANCE WITH THE VESSEL MANAGEMENT PLAN

10.1 Reporting Prior to Construction

AOWFL will ensure that the details of all vessels to be engaged in the construction process are notified to the Licensing Authority as soon as is reasonably practicable prior to commencement of any Licensed Marine Activity. Any changes to those vessel details (during either the construction or operational phases) will be notified prior to any change being implemented.

10.2 Reporting during Construction Phase

During the construction phase compliance with the requirements of this VMP will be the responsibility of relevant contractors including vessel operators.

As per marine requirements vessels will maintain daily logs of vessel activities and movements, under this VMP vessels will also be required to provide this information to AOWFL MC on a regular basis[3].

The VMP includes vessel route information to enable interactions between vessels and marine mammals/ornithological receptors to be minimised. Although deviations from specified routes should be noted (transit routes as per *Section 9*), it is also recognised that the vessels primary responsibility is to maintaining navigational safety and compliance with the COLREGS 1972.

The information provided will include, as a minimum:

- Daily course information; including times at recognised way points and entry to construction area;
- Vessel name, Call Sign and Maritime Mobile Service Identity (MMSI);
- Construction activity being undertaken;
- Vessel start location (e.g. anchorage or port of origin);
- Vessel destination (e.g. port, anchorage or site of WTGs etc.);
- Prevailing weather and sea conditions; and
- Information on significant deviations from VMP indicative transit routes (for example due to navigational hazards encountered, weather conditions etc.).

Automatic Identification System (AIS) data will be recorded by the Development MC. It is a requirement that all Development vessels carry AIS transmitters. AOWFL will review the AIS data on a regular basis as a further check on compliance with indicative transit routes. Any significant deviations from the indicative transit routes will be checked against the individual vessel logs recorded.

[3] Daily logs will be submitted to the MC within 24 hours of completion of that day.

10.3 The Role of the Ecological Clerk of Works

Section 3.2.1.4 of the Marine Licence requires that a suitably qualified and experienced Ecological Clerk of Works (ECoW) or liaison officer(s) is, or are appointed prior to the Commencement of the Works, to oversee communications between the Licensee, contractors, stakeholders, conservation groups, and other users of the sea during the period in which licensed activities authorised under this license are undertaken.

Specifically, this includes the requirement to provide advice to AOWFL with regard to, and to monitor compliance with, the VMP. There is also a requirement under Condition 3.2.2.6 of the Marine Licence for the ECoW to provide regular reports to the Licensing Authority as to the Licensee's compliance with the Development plans and programmes, including this VMP.

10.4 Reporting during Operation and Maintenance Phase

At present there is no intention to undertake regular reporting in relation to this VMP during the operational stage although records of operations and maintenance vessel movements and activity will be maintained remotely. As noted above any change to vessel details involved in the operation and maintenance of the EOWDC will be notified to the Licensing Authority (including for example vessels proposed for unplanned or exceptional maintenance activities).

11 ENVIRONMENTAL SENSITIVITIES RELEVANT TO VESSEL MANAGEMENT

11.1 Introduction

Condition 24 of the S.36 Consent states that the VMP is needed '*To minimise the disturbance to marine mammals and birds*'.

This section summarises the marine mammal and bird sensitivities relevant to vessel traffic associated with construction and operation of the EOWDC. *Section 12* describes the potential effects of the vessel traffic on these receptors as described in the ES and SEIS.

11.2 Marine Mammals

11.2.1 Overview

The ES and SEIS (Marine Mammals Baseline Addendum, Genesis 2012) utilised information from research surveys carried out along the north east Grampian coastline and the wider North Sea area, as well as several years of land based and boat surveys covering the wider Aberdeen Bay area, in order to describe the marine mammal environmental baseline. Aberdeen Bay is an important area for marine mammals, with up to 18 species having been recorded from sighting or stranding records in Aberdeen Bay and the surrounding area; including 12 odontocete species, three mysticete species and three pinniped species. Of these, bottlenose dolphins, harbour porpoises, white-beaked dolphins, minke whales, Risso's dolphins, harbour seals and grey seals occur regularly in the Aberdeen Bay area, with other species only being recorded occasionally or rarely.

The review of the distribution of each marine mammal species indicates that although several marine mammals have the potential to be in the area, for the majority of these species the Aberdeen Bay area is only a marginal part of their habitat. Most species, with the exception of bottlenose dolphins, have a wide range and regularly occur throughout the northern and central North Sea, both along the coast and in offshore areas.

11.2.2 Commonly sighted species in the Aberdeen Bay area

The more commonly sighted species in the Aberdeen Bay area are the harbour porpoise, bottlenose dolphin and grey and common seal.

Harbour porpoise are the most common species of cetacean in the North Sea and have a wide range and distribution in both coastal and offshore areas. They have been found to regularly occur in the Aberdeen area throughout the year, with peak occurrence during August and September.

Bottlenose dolphins in the Aberdeen area are part of the resident population from the Moray Firth Special Area of Conservation (SAC), which have a range extending from the Moray Firth to the Firth of Forth. They have been observed off Aberdeen throughout the year, although there appears to be an increase in observations between November and May.

During the EOWDC surveys, it was noted that the area near the entrance to Aberdeen Harbour was commonly occupied by bottlenose dolphins, which may be linked to salmon migration up the nearby River Don. From the available information it is apparent that the Aberdeen area is important for bottlenose dolphins, however, it is unclear how reliant they are on the area near the entrance to Aberdeen Harbour compared to other areas along the North-east coast of Scotland.

With respect to **grey and harbour seals**, both species are frequently sighted throughout the year in Aberdeen Bay, especially at the entrances to the rivers Dee and the Don. Harbour seals increase in numbers at the estuaries of the Rivers Dee and Don in the winter and early spring. They use haul-out sites at the Donmouth, at the mouth of the Ythan estuary and at Catterline. Grey seals use haul-out sites at the Donmouth, at the mouth of the Ythan River, outside Peterhead harbour, Cruden Bay, Boddom and at Catterline. The most well established grey seal colony in the area is at Catterline, where up to five pups may be born each year. Designated coastal SACs for harbour seals are present along the east coast of mainland Scotland, these are situated in the Dornoch Firth and Morrich Moore in the Moray Firth and Firth of Tay and Eden estuary. 18 Designated SAC's for grey seals along the east coast of Scotland include the Isle of May at the entrance of the Firth of Forth, and it can be expected that individual seals from these colonies may be passing through the Aberdeen Bay area.

11.3 Ornithology

The ES and SEIS described the ornithological environmental baseline, which identified the key ornithological species identified during the two years of boat-based surveys that were undertaken between 2007 - 2008 and 2010 – 2011; vantage point surveys undertaken from six locations between 2005 and 2008; and bird detection radar surveys on three occasions (October 2005, April 2006, and April 2010). A total of 79 species of birds were recorded during these ornithological surveys.

The following sections provide an overview of the key ornithological receptors found within the Aberdeen Bay area.

11.3.1 Wildfowl and Divers

The most frequently recorded wildfowl were common eider and common scoter, both of which were recorded in relatively large numbers particularly during the winter and summer months. Peak counts of common eider from boat-based surveys were obtained during the winter months with up to 556 birds being recorded in the survey area. For common scoter the peak recorded was 1,157 birds counts during the spring and summer months in the survey area. Evidence from existing published information on the birds present in the wider area indicated that up to approximately 3,000 of each species may occur in Aberdeen Bay during the summer months. Other species of potential concern included pink-footed goose and barnacle goose, both of which were recorded flying through the survey area during the spring and autumn.

The red-throated diver was the only species of diver frequently recorded during the surveys. They were recorded throughout the survey area in water depths of less than 20 m. Peak numbers occurred during the winter and spring with up to 25 birds recorded within the survey area during May.

11.3.2 Seabirds

A total of 20 species of seabird were recorded during the surveys undertaken in Aberdeen Bay. The key species recorded are as follows:

- **Fulmars:** were widespread throughout the survey area during most of the year. Highest densities were recorded during September and December.
- **Gannets:** were recorded throughout the survey area and throughout the year with peak numbers during August and September.
- **Cormorant and shags:** were recorded regularly during site specific surveys predominantly within two kilometres of the coast.
- **Skuas**: both great Skua and Arctic Skua were recorded in low numbers in the survey area between April and November with the majority of sightings during the autumn.
- **Gulls**: kittiwakes were the most frequently recorded gull in the survey area. Birds were present throughout the year but peak numbers occurred in June and July when over 2,000 kittiwakes were in the whole of the surveyed areas. Other species of Gull recorded included black-headed, common, lesser black-backed, herring and great black-backed.
- **Terns**: four species of Tern were recorded during surveys. The most frequently recorded species was Sandwich tern with peak numbers between May and August with up to 43 birds recorded. There were fewer records of little, common and Arctic terns with the majority of sightings within two kilometres of the coast.
- **Auks**: puffins, guillemots and razorbills were frequently recorded throughout the surveyed area. Peak numbers occurred during the summer and early autumn when up to 80 birds/km^2 and an estimated abundance of approximately 4,000 birds present to the north of the survey area.

11.3.3 Other species

A total of other 43 species of bird were recorded in low numbers from all the surveys undertaken.

11.3.4 Sites Designated for Ornithological Receptors

Although the EOWDC does not lie within a designated area, there are a number of Special Protection Areas (SPAs) along the east coast of Scotland that have the potential to be impacted the EOWDC. The ES and SEIS considered the impacts on qualifying species from SPAs 74 km to the north between Troup, Pennan and Lion's Head and the Forth Islands SPA approximately 134 km to the south. The Habitats Regulations Assessment concluded that the construction and operation of the EOWDC would not cause, on its own or in-combination, an adverse effect on the integrity of the relevant European Sites.

Since the production of the ES and SEIS, a marine extension to the Ythan Estuary, Sands of Forvie and Meikle Loch SPA for foraging breeding terns has been proposed. The potential effects of vessel activity on the qualifying species of these designated sites (and proposed designated sites) have been considered in *Section 12* of this document.

11.4 Proximity of Indicative Transport Routes to Key Environmental Sensitivities

The following section considers the indicative vessel routes as detailed in *Section 9* in the context of the environmental sensitivities summarised in *Sections 11.2* and *11.3*. Consideration of the potential effects of vessel activity on environmental sensitivities is presented in *Section 12*.

11.4.1 Marine Mammals

Coastal areas favoured by the bottlenose dolphin population will be generally avoided by large construction vessels transporting WTGs, foundations and cables (using indicative route numbers 1, 2 and 3). However, smaller crew transfer vessels undertaking more frequent journeys between Aberdeen and Peterhead may pass close to areas of importance for bottlenose dolphin at the entrance to Aberdeen Harbour and Peterhead Harbour (indicative route numbers 4 and 5).

Large construction vessels may pass close to areas of importance for harbour and grey seal (indicative route numbers 4 and 5), including coastal areas in the proximity to haul out sites near, and in between, Aberdeen and Peterhead (including Donmouth, Ythan River and Cruden Bay). Large construction vessels will be generally slow moving construction vessels making relatively few and infrequent trips and following the routes used regularly by the other commercial shipping traffic from these ports.

Harbour porpoise, given their distribution throughout the Moray Firth, may be subject to some level of disturbance where they encounter vessels. Use of regular vessel transit routes which follow, where possible, established shipping routes will act to restrict the spatial distribution of such disturbance and minimise as far as possible the effects arising. Marine mammals are more likely to tolerate increases in vessel traffic along these existing routes since they will be accustomed to high levels of shipping noise in these areas.

In summary, comparison of the indicative vessel routes with the summary of environmental sensitivities demonstrates that many of the vessel movements will not impinge on those areas of greatest sensitivity for the key marine mammal species – bottlenose dolphin, harbour seal, grey seal and harbour porpoise.

The effects on marine mammal species as a result of increased vessel activity through disturbance or increased risk of vessel strikes are in agreement with the conclusions reported in the ES and SEIS. The ES and SEIS determined that effects resulting from increased vessel activity would be of minor significance to the marine mammal populations associated with the Aberdeen Bay area.

11.4.2 Ornithology

As noted in *Section 11.3,* the ornithological species present in the waters around the EOWDC will be subject to some level of disturbance where they encounter vessels using the indicative vessel transit routes. However, as set out in the ES and SEIS, no significant ornithological effects are predicted to result from vessel activity associated with construction or operation. Vessel movements will be minimised and existing shipping routes will be used for regular vessel transit routes as far as is practicable, as per the suggested mitigation in the ES, to reduce the environmental effect of displacement by construction vessels.

12 POTENTIAL EFFECTS OF INCREASED VESSEL ACTIVITY ON ENVIRONMENTAL SENSITIVITIES

12.1 Introduction

The ES and SEIS identified a number of potential impacts arising from vessel traffic associated with construction and operation of the Development:

- Displacement away from the area by presence of construction and/or operational maintenance vessels for both marine mammals and birds (including due to noise associated with vessels); and
- the potential for physical injury or mortality (otherwise known as collision risk) due to contact with vessels in the area.

The ES and SEIS concluded that impacts detailed above would be of negligible to minor significance for marine mammal and bird populations and not significant in the context of the Environmental Impact Assessment regulations.

Section 13 specifically considers the use of ducted propellers, including potential impacts and proposed working practices.

12.2 Marine Mammals

In relation to disturbance caused by the presence of construction and/or operational maintenance vessels, the ES and SEIS assessment considered the broader context of the existing baseline level of vessel activity. Noise resulting from the construction or operational vessels will represent a small increase compared to the already high level of vessel activity in the Aberdeen Bay area. The ES and SEIS concluded that cetaceans are considered likely to tolerate the current levels of noise resulting from vessel activity. When considered in the broader context of the existing level of vessel activity in the area it can be concluded that cetaceans are likely to have habituated to the current levels of activity such that the additional vessel movements associated with the construction and operation of the EOWDC would represent a negligible increase to the already high level of vessel activity in the area.

Similarly, some haul-outs for harbour and grey seal are within close proximity to working ports (such as the grey seals haul out site outside Peterhead harbour) and therefore animals moving to and from these colonies, and foraging inshore, are doing so in the presence of high levels of vessel traffic originating from existing ports. The continued presence of marine mammals in areas of high vessel activity provides support to the conclusions set out in the ES and SEIS that baseline vessel activity is high in the area and that marine mammals are likely to be habituated to this level of activity.

Increased shipping levels could be considered to increase the risk of collisions with marine mammals. There will be a relatively small increase in vessel movements when considered in the broader context of the existing level of vessel activity in the Aberdeen Bay area from oil industry support vessels, shipping, fisheries and recreation. It can be concluded that

cetaceans are likely to have habituated to the current levels of activity such that the additional vessel movements associated with the construction and operation of the EOWDC would represent a negligible increase to the already high level of vessel activity in the area.

Any potential impacts are mitigated through the use of regular transit routes and the implementation of a Marine Mammal Protection Plan (MMPP) which will be included within the OEMP. The use of regular vessel transit routes will follow, where possible, established shipping routes and this will act to restrict the spatial distribution of such disturbance and minimise as far as possible the effects arising. Marine mammals are more likely to tolerate increases in vessel traffic along these existing routes since they will be accustomed to high levels of shipping noise in these areas.

12.3 Ornithology

As set out in the ES and SEIS, no significant ornithological effects are predicted to result from vessel activity associated with construction or operation. The assessment was based on the projected levels of vessel traffic and a review of available literature on seabird sensitivity to disturbance. While the predicted sensitivity of seabirds to offshore wind farms (including effects during construction) has since been updated (Furness *et al*. 2013), the update does not alter the conclusions of the original assessment: no significant ornithological effects are predicted to result from vessel activity associated with construction or operation.

The potential disturbance for the most sensitive species (seaduck and divers) as well as for other seabirds, will be minimised by the use of regular vessel transit routes which will follow, where possible established shipping routes. This will act to restrict the spatial distribution of any potential disturbance.

13 WORKING PRACTICES RELATED TO DUCTED PROPELLOR USE

13.1 Introduction

Condition 24 of the S.36 Consent requires that this VMP includes details related to the use of ducted propellers, specifically:

c) Whether ducted propellers will be in operation;

It is understood that this requirement of the condition derived from prevailing advice issued by the Statutory Nature Conservation Bodies (SNCBs) (Joint Nature Conservation Committee (JNCC), 2012) at the time of consent application and determination, which identified concern regarding the risk of corkscrew injuries to seals, initially attributed to some ducted propeller systems such as Kort nozzles or some types of Azimuth thrusters, commonly used by Ducted Propeller vessels.

Since the original EOWDC application, new evidence relating to corkscrew injuries to seals has emerged alongside new advice from the SNCBs (JNCC, 2015). The following section reviews the updated evidence and guidance in relation to this issue and in the context of any need for further mitigation relating to the use of DP vessels.

13.2 Updated Understanding of Ducted Propeller Impacts

Since the submission of the original EOWDC Application there has been ongoing research into the issue of corkscrew injuries in seals which has confirmed that the characteristic wounds can be caused by a seal being drawn through ducted propeller system (Thompson *et al.*, 2010, Bexton *et al.*, 2012; Onoufriou & Thompson, 2014). To date, the observed strandings of seals with spiral lacerations appear to be restricted to juvenile grey seal and female harbour seal with seasonal differences evident between the species: grey seal newly weaned pups in the winter and common seal adults or pregnant females in the summer (Brownlow, 2013).

In experimental studies (Onoufriou & Thompson, 2014) it has been shown that using a combination of propeller and seal sizes, smaller seals were more likely to show the characteristic spiral lacerations; while larger seal models often became stuck in the ducted propeller system. The results of these trials and observed stranded seals suggested that there were still a number of uncertainties as to the frequency of occurrence, and mechanisms for this type of injury.

However, more recent known research (Thompson *et al.*, 2015; van Neer *et al.*, 2015) now suggests that there is very strong evidence that predatory behaviour by grey seals, rather than ducted propeller injuries, is likely to be the main cause of corkscrew seal deaths. Although this evidence does not completely eliminate ship propellers, it is now considered to be unlikely that they are a key factor. The SNCBs have provided interim advice (JNCC,

2015) on this issue, as an update to their earlier (April 2012) advice, in order to clarify the recommendations on this issue for regulators and industry.

The most recent SNCB advice states that '*it is considered very likely that the use of vessels with ducted propellers may not pose any increased risk to seals over and above normal shipping activities and therefore mitigation measures and monitoring may not be necessary in this regard, although all possible care should be taken in the vicinity of major seal breeding and haul-out sites to avoid collisions*'.

This advice provides a new perspective on the preceding SNCB Guidance (2012) on the potential risk of seal corkscrew injuries, which made recommendations for mitigation.

In the light of the distances between seal haul-outs and the proposed vessel routes, the new scientific evidence and the revised SNCB advice, the risk of propeller collision impacts associated with the use of ducted propellers during construction is considered to be low risk. In line with the latest guidance, AOWFL does not, therefore, propose any additional specific mitigation or monitoring measures in respect of the use of vessels with ducted propellers. Vessel operators will be made aware of the marine mammal and bird sensitivities in the area via this plan to enable them to operate their vessels in a way that minimises disturbance or collision risk. The following measures will be considered when navigating in the area:

- Consideration of existing shipping lanes in passage planning;
- Avoiding sudden changes in speed or direction in transit to and from the site as far as possible and unless required for health and safety reasons or other emergency purposes;
- Keeping a good look forward (this particularly applies to the smaller vessels);
- Not intentionally pursuing marine mammals or birds; and
- Not instigating contact with marine mammals or birds.

14 COMPLIANCE WITH THE APPLICATION, ES, AND SEIS

14.1 Introduction

In addition to the conditions presented in Table 1, Condition 7 of the S36 Consent states:

> *"The Development must be constructed and operated in accordance with the terms of the Application and the accompanying Environmental Statement and the Supplementary Environmental Information Statement, except in so far as amended by the terms of the Section 36 consent and any direction made by the Scottish Ministers."*

Section 14.2 below sets out the baseline assumptions made within the ES and SEIS that are relevant to vessel management.

Section 14.3 restates AOWFL's commitment to delivering the mitigation relevant to vessel management, as stated in the ES and SEIS.

14.2 Compliance with the ES/SEIS

The ES and SEIS assessments described the assumptions made in relation to vessel requirements in terms of numbers, and types of vessels.

The marine mammal assessment stated that:

"The exact vessels requirements have yet to be finalised for each of the development scenarios. It is expected that the required vessels for the wind turbines are a jack-up installation vessel and a feeder barge to transport the wind turbine components to the jack-up vessel. The gravity based structure is considered the worst case foundation structure, as this may require a marginally greater number of vessels (tugs) to float the structure to the location and 2-4 transfer vessels to be used daily in the construction period. Other vessels that will be used in the construction period will include a cable lay vessel and potentially a dive support vessel for rock placement."

"During the construction period it is expected that some construction vessels will be undergoing daily movements to and from Aberdeen Harbour, however, at this stage in the project the locations where construction materials will be stored has not yet been finalised as such it is not possible to specify precise details regarding movements of all construction vessels."

At this stage, a better understanding of the vessel requirements means a more complete list of vessel types that will be used during the construction phase is given in *Section 7*. As described in *Section 8*, daily movements between Aberdeen/Peterhead and the Development are expected during certain stages of construction, largely in relation to crew transfer.

The Ornithological assessment assumed that multiple vessels may be present at the Development at any one time during the construction phase, however this activity was likely to be localised (e.g., around one WTG). This assumption is in line with the vessel information set out in *Sections 7* and *8*, with there being one main construction vessel per stage of construction supported by additional smaller vessels depending on the stage.

During the operational phase, the baseline assessment assumed that there was unlikely to be more than one vessel present on-site at any one time. As described in *Section 8.3,* it is currently expected that only a single crew transfer vessel will be required during normal operations, however it is noted that additional vessels may be required under certain circumstances (e.g., for major maintenance).

14.3 Delivery of Mitigation Proposed in the ES/SEIS

The ES and associated SEIS detailed a number of mitigation commitments relevant to vessel management. *Appendix A* sets out each commitment, and states where it has been addressed within this VMP.

15 REFERENCES

AOWFL (2011) European Offshore Wind Deployment Centre Environmental Statement

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APPENDIX A – COMPLIANCE WITH ES/SEIS MITIGATION MEASURES

Table A1 presents the commitments made by AOWFL in the ES and associated SEIS to mitigation measures relative to vessel management.

Table A1 – ES/SEIS Mitigation Measures relevant to Vessel Management

Source and Reference	Details of Commitment	Implementation
ES, Ornithology	Vessel movements associated with the Development will be minimised	The Marine Coordinator will be responsible for coordinating vessel movements during the construction and operational phase of the EOWDC, as set out in *Section 6*. This includes monitoring activity to ensure unnecessary vessel movements are avoided.
ES, Ornithology	Existing shipping routes will be used by vessels associated with the Development as far as is practicable	The recommended routes[4] for use by construction vessels shown in *Section 9* have been based on existing shipping routes as far as is practicable.
ES, Marine Mammals	An Marine Mammal Protection Plan (MMPP) will be created to specify procedures to be put in place to minimise the risk of causing adverse impacts to marine mammals.	A MMPP will be included in the Offshore Environmental Management Plan (OEMP)
SEIS, Ornithological Baseline and Impact Assessment Addendum	A VMP will be created to ensure vessel movements associated with the Development are appropriately managed.	This VMP sets out the management plans to be followed by vessels associated with AOWFL during the construction and operational phases of the EOWDC.

[4] It is noted that indicative transit corridor routes are required for the purposes of mitigating impacts on marine mammal and ornithological receptors, however the requirements for site vessels to comply with the International Regulations for the Prevention of Collisions as Sea (COLREGS 1972) shall remain the key navigational priority.