Project Title	Seagreen Wind Energy Ltd
Document Reference Number	LF000009-CST-OF-PLN-0006

Vessel Management Plan

Section 36 Condition 15 and the Offshore Transmission Asset Marine Licence Condition 3.2.2.8

For the approval of Scottish Ministers

Rev	Date	Reason for Issue	Originator	Checker	ECoW	Approver
07	04/04/2022	Approved for Use	pp. N. Brockie	[Redacted]		

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Consent Plan Overview

Purpose of the Vessel Management Plan

This Vessel Management Plan (VMP) is submitted by Seagreen Wind Energy Limited (SWEL) on behalf of Seagreen Alpha Wind Energy Limited (SAWEL) (hereinafter referred to as Seagreen) to address the specific requirements of Condition 15 of the Section 36 (S36) Consents granted by the Scottish Ministers to SAWEL under section 36 of the Electricity Act 1989 (in respect of the Alpha Offshore Wind Farm) and to Seagreen Bravo Wind Energy Limited (SBWEL) (in respect of the Bravo Offshore Wind Farm) on 10 October 2014 both as varied by the Scottish Ministers by decision letter issued pursuant to an application under section 36C of the Electricity Act 1989 on 28 August 2018 and, in respect of the consent applicable to the Bravo Offshore Wind Farm, as assigned to SAWEL on 22 November 2019.

The VMP is also submitted further to of Condition 3.2.2.8 of the Offshore Transmission Asset (OTA) Marine Licence granted by the Scottish Ministers under the Marine (Scotland) Act 2010 and the Marine and Coastal Access Act 2009 on 10 October 2014, as varied on 6 March 2019 (reference 04678/19/)) (the OTA Marine Licence), as well as Condition 3.1.1 of the Alternative Landfall Cable Marine Licence granted by the Scottish Ministers under the Marine (Scotland) Act 2010 on 21 November 2019 and varied on 24 February 2020 (reference 07050/20/0) and 17 August 2021 (reference MS-00009445).

In addition, the VMP also addresses aspects of vessel management that are noted in Conditions 3.1.2 and 3.2.3.3. of the OTA Marine Licence and Conditions 3.1.3 and 3.1.4 of the Alternative Landfall Cable Marine Licence.

Seagreen Alpha and Seagreen Bravo Offshore Wind Farms (OWFs) and the OTA are collectively referred to as the 'Seagreen Project'.

Scope of the VMP

This VMP covers, in line with the requirements of condition 15 of the S36, OTA Marine Licence Condition 3.2.2.8, industry standards and good practice, the following:

- The numbers, types and specifications of the vessels required;
- Working practices that will be implemented so as to minimise the use of ducted propellers
- How vessel management will be coordinated, particularly during construction but also during operation including military firing activities within the Danger Area D604; and
- Locations of the working port(s), how often vessels will be required to transits between port(s) and the Site and indicative vessel transit corridors proposed to be used during construction and operation of the Seagreen Project.

Structure of the VMP

The VMP is structured as follows:

Section 1 & 2	Provides an overview of the Project and the consent requirements that underpin the content of this VMP. It also sets out the purpose, objectives and scope of the VMP and sets out the process for making updates and amendments.
Section 3	Provides details of the working ports that are intended to be used
Section 4	Provides a description of how vessels will be monitored and coordinated.
Section 5	Provides details of the types and specifications of vessels for the Seagreen Project
Section 6	Provides a description of the indicative corridor routes to be used
Section 7	Provides guidance on reporting in compliance with this VMP
Section 8	Provides guidance on use of ducted propellers
Section 9	Demonstrates compliance with the original application and commitments made.
Section 10	Lists the references made within this VMP
Appendices	Appendix A – Abbreviations and Definitions
	Appendix B – Change Management Process
	Appendix C – Compliance with ES Parameters
	Appendix D – Summary Mitigation Measures
	Appendix E – Firth of Forth Guidance Note on Fisheries for Seagreen Construction Vessels

Plan Audience

This VMP will be submitted for approval to the Scottish Ministers/Licensing Authority in consultation with other stakeholders in relation to monitoring compliance with the specific requirements of the relevant consent conditions.

Compliance with this VMP will be monitored by: Seagreen's appointed Contractors; Seagreen's Ecological Clerk of Works (ECOW); and the Marine Scotland Licensing and Operations Team (MS-LOT).

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

- Seagreen's head office;
- Seagreen's construction office and marine coordination centre; and
- At the premises of any Contractor (as appropriate), including the Seagreen ECOW, appointed by Seagreen.
- Aboard any vessel engaged in the Wind Farm/OTA.

1. Introduction

1.1 Consents and Licences

Seagreen Wind Energy Limited (hereafter referred to as 'Seagreen') was awarded Section 36 Consents (S36 Consents) under the Electricity Act 1989 by Scottish Ministers in October 2014 for Seagreen Alpha and Seagreen Bravo Offshore Wind Farms (OWFs). The S36 consents were varied by the Scottish Ministers pursuant to an application under s36C of the Electricity Act 1989 on 28 August 2018 and the S36 Consent applicable to the Bravo Offshore Wind Farm was assigned to SAWEL on 22 November 2019. Marine Licences for Seagreen Alpha and Bravo OWF and the Offshore Transmission Asset (OTA) (together the 'Marine Licences') were also awarded by the Scottish Ministers in October 2014 under the Marine (Scotland) Act 2010 and the Marine and Coastal Access Act 2009.

Together the wind farms Seagreen Alpha and Seagreen Bravo and the OTA collectively comprise 'the Seagreen Project'. In 2018, following application by Seagreen, the Alpha Marine Licence and Bravo Marine Licence were varied by Scottish Ministers. Subsequently, in 2019, the OTA Marine Licence was also varied by Scottish Ministers. In November 2019, a further Marine Licence was granted to Seagreen to permit an alternative landfall cable installation method (Alternative Cable Installation at Landfall Marine Licence) and this was subsequently varied in February 2020 and August 2021. In 2019, the Bravo Marine Licence was transferred from the name of Seagreen Bravo Wind Energy Limited (SBWEL) into the name of Seagreen Alpha Wind Energy Limited (SAWEL).

1.2 Project Description

The Seagreen Project is located in the North Sea, in the outer Firth of Forth and Firth of Tay region and comprises the OWFs (the Wind Turbine Generators (WTGs), their foundations, and associated array cabling), together with associated infrastructure of the OTA (Offshore Substation Platform (OSP), their foundations and the offshore export cable), to facilitate the export of renewable energy to the national electricity transmission grid. The location of the Seagreen Project is shown in Figure 1.1.

The Seagreen Project will consist of the following key components:

- 150 WTGs comprising;
  - 114 WTGs installed on three-legged steel jackets, each installed on suction bucket caissons;
  - 36 WTGs installed on up to four-legged steel jackets, each installed on pin pile foundations;
- Two OSPs, each installed on up to 12 pin pile foundations;
- A network of inter-array subsea cables as detailed below, inter array cables will be buried where possible and where burial is not possible cable protection will be provided.
  - Circa 300km of inter-array cables to connect strings of WTGs on suction bucket caissons together and to connect these WTGs to the OSPs
  - Circa 55km of inter array cables to connect strings of WTGs on piled foundations together and to connect these WTG to the OSPs; and
  - Circa 3km of interconnector cable to connect the two OSPs
- Three subsea export cables, totalling circa 190km in length, to transmit electricity from the OSP to the landfall at Carnoustie and connecting to the onshore export cables for transmission to the

onshore substation and connection to the National Grid network. Export cables will be buried where possible and where burial is not possible cable protection will be provided.

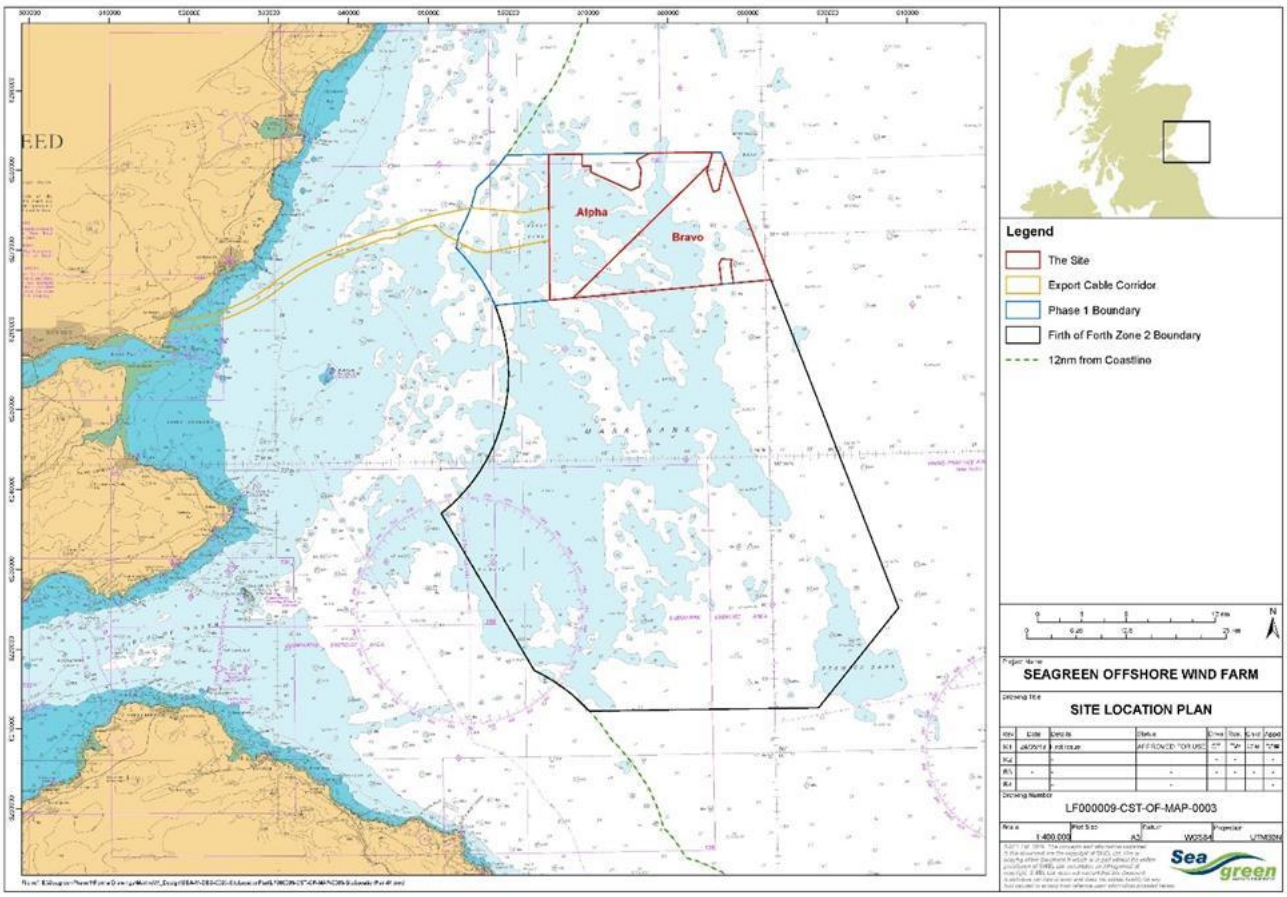


Figure 1.1 - Project Location

1.3 Consent and Licence Requirements

This VMP has been prepared to discharge condition 15 of the S36 Consents, and 3.2.2.8 of the Offshore Transmission Assets (OTA) Marine Licence as set out in Table 1.1.

Table 1.1 - Consent Conditions to be discharged by this VMP

Consent Document	Condition Reference	Condition Text	Reference to relevant Section of this VMP
Section 36	Condition 15	The Company must, no later than 6 months prior to the Commencement of the Development, submit a Vessel Management Plan (VMP), in writing, to the Scottish Ministers for their written approval. Such approval may only be granted following consultation by the Scottish Ministers with the Joint Nature Conservation Committee (JNCC), Scottish Nature Heritage (SNH), Whale and Dolphin Conservation (WDC) and any such other advisors or organisations as may be required at the discretion of the Scottish Ministers. The Development must, at all times, be constructed and operated in accordance with the approved VMP (as updated and amended from time to time by the Company). Any updates or amendments made to the VMP by the Company must be submitted, in writing, by the Company to the Scottish Ministers for their written approval. The VMP must include, but not be limited to, the following details:	Rev 01 of the VMP was submitted to the Scottish Ministers as required. The consultation as required was undertaken and subsequent revisions of the VMP reflect comments received where appropriate.
		a) The number, types and specification of vessels required.	Section 5.1
		b) Working practices to minimise the use of ducted propellers.	Section 8
		c) How vessel management will be co-ordinated, particularly during construction but also during operation.	Section 4
		d) Location of working port(s), how often vessels will be required to transit between port(s), and the Site and indicative vessel transit corridors proposed to be used during the construction and operation of the Development.	Sections 3 (ports) and 6 (transit corridors)

Consent Document	Condition Reference	Condition Text	Reference to relevant Section of this VMP
		The confirmed individual vessel details must be notified to the Scottish Ministers in writing no later than 14 days prior to the Commencement of the Development, and thereafter, any changes to the details supplied must be notified to the Scottish Ministers, as soon as practicable, prior to any such change being implemented in the construction or operation of the Development.	Section 7.1
		The VMP must, so far as is reasonably practicable, be consistent with the Construction Method Statement (CMS), the Environmental Management Plan (EMP), the Environmental Monitoring Programme (PEMP), the Navigational Safety Plan (NSP), and the Lighting and Marking Plan (LMP).	Section 1.4
Marine Licence – OTA	Condition 3.2.2.8	The Licensee must, no later than 6 months prior to the Commencement of the Works, submit a VMP, in writing, to the Licensing Authority for their written approval. Such approval may only be granted following consultation by the Licensing Authority with the Ministry of Defence (MOD), the JNCC, SNH, WDC and any such other advisors or organisations as may be required at the discretion of the Licensing Authority. The VMP must include, but not be limited to, the following details:	Rev 01 of the VMP was submitted to the Scottish Ministers as required. The consultation as required was undertaken and subsequent revisions of the VMP reflect comments received where appropriate.
		a) The number, types, and specifications of vessels required.	Section 5.1
		b) Working practices to minimise the use of ducted propellers.	Section 8
		c) How vessel management will be co-ordinated, particularly during construction but also during operation including military firing activities within the Danger Area D604.	Section 4
		d) Location of working port(s), how often vessels will be required to transit between port(s) and the Site and indicative vessel transit corridors proposed to be used.	Sections 3 (ports) and 6 (transit corridors)

In addition to the specific consent requirements for the development of a VMP, as set out in Table 1.1, this VMP also includes information to discharge a number of other consent conditions which are linked to the requirements of the vessel management. These are set out in Table 1.2.

Table 1.2 - Other Consent Conditions for which information is provided in this VMP

Consent Document	Condition Reference	Condition Text	Reference to relevant Section of this VMP
OTA Marine Licence – Alpha and Bravo	Condition 3.1.2	The Licensee must provide, as soon as reasonably practicable, in advance of their engagement in any Licensable Marine Activity, the name and function of any vessel, vehicle, agent, contractor or sub-contractor appointed to engage in the Works. Where applicable the notification must include the master's name, vessel type, vessel International Maritime Organization (IMO) number and vessel owner or operating company.	Section 7.1
		Any changes to the supplied details must be notified to the Licensing Authority, in writing, prior to any vessel, vehicle, agent, contractors or sub-contractors engaging in the Licensable Marine Activity.	Section 7.1
		Only those vessels, vehicles, agents, contractors or sub-contractors notified to the Licensing Authority are permitted to carry out any part of the Works.	Section 7.1
		The Licensee must satisfy themselves that any masters of vessels or vehicle operators, agents, contractors or sub-contractors are aware of the extent of the Works for which this licence has been granted, the activity which is licenced and the terms of the conditions attached to this licence. All masters of vessels or vehicle operators, agents, contractors and sub-contractors permitted to engage in the Works must abide by the conditions set out in this licence.	Sections 2
		The Licensee must give a copy of this licence, and any subsequent variation made to this licence in accordance with Section 30 of the 2010 Act and section 72 of the 2009 Act, ensuring it is read and understood, to the masters of any vessels, vehicle operators, agents, contractors or sub-contractors permitted to engage in the Works.	Section 2

Consent Document	Condition Reference	Condition Text	Reference to relevant Section of this VMP
OTA Marine Licence – Alpha and Bravo	Condition 3.2.3.3	The Licensee must create, complete and submit to the Licensing Authority on the first working day of the month, a detailed transportation audit sheet for each month during the period when Construction of the Works is undertaken, for all aspects of the Construction of the Works. The transportation audit sheet must include information on the loading facility, vessels, equipment, shipment routes, schedules and all materials to be deposited in that month. Where, following the submission of a transportation audit sheet to the Licensing Authority, any alteration is made to the component parts of the transportation audit sheet, the Licensee must notify the Licensing Authority of the alteration in the following month's transportation audit sheet.	Section 7.2.1
		If the Licensee becomes aware of any substances or objects on the transportation audit sheet that are missing, or an accidental deposit occurs, the licensee must contact the Licensing Authority as soon as practicable after becoming aware, for advice on the appropriate remedial action. Should the Licensing Authority deem it necessary, the Licensee must undertake a side scan sonar survey in grid lines (within operational and safety constraints) across the area of the Works, to include cable routes and vessel access routes from local service port(s) to the Site to locate the substance or objects. If the Licensing Authority is of the view that any accidental deposits associated with the Construction of the Works are present, then the deposits must be removed at the Licensee as soon as is practicable and at the Licensee's expense.	Section 7.2.1
OTA Marine Licence – Alpha and Bravo	Condition 3.2.3.4	The Licensee must, in addition to the transportation audit sheets required to be submitted to the Licensing Authority under condition 3.2.3.3, following the Commencement of the Works, submit audit reports, in writing, to the Licensing Authority, stating the nature and quantity of all substances and objects deposited below MHWS under the authority of this licence. Such audit reports must be submitted in writing, to the Licensing Authority by the Licensee at 6 monthly intervals, with the first such report being required to be submitted on a date no later than 6 months following the Commencement of the Works. Where appropriate, nil returns must be provided.	Section 7.2.1

Consent Document	Condition Reference	Condition Text	Reference to relevant Section of this VMP
Alternative Cable Installation at Landfall Marine Licence	Condition 3.1.3	The Licensee must provide, as soon as reasonably practicable in advance of their engagement in the Works authorised under the licence, the name and function of any vessel, vehicle, agent, contractor or sub-contractor appointed to engage in the Works to the Licensing Authority. Where applicable the notification must include the vessel type, vessel IMO number and vessel owner or operating company.	Section 7.1
		The Licensee must ensure that any changes to the supplied details must be notified to the Licensing Authority, in writing, 14 days prior to any vessel, vehicle, agent, contractor or subcontractor engaging in the Works.	Section 7.1
		The Licensee must ensure that only those vessels, vehicles, operators, agents, contractors or sub-contractors notified to the Licensing Authority are permitted to carry out any part of the Works.	Section 7.1
		The name and address of any agents, contractors or sub-contractors appointed to carry out any part, or all, of the Works must be notified to the Licensing Authority prior to their engagement in the Works.	Section 7.1
		The Licensee must satisfy themselves that any masters of vessels or vehicle operators, agents, contractors or sub-contractors are aware of the extent of the Works for which the licence has been granted, the activity which is licensed and the terms of the conditions attached to the licence. All masters of vessels or vehicle operators, agents, contractors and sub-contractors permitted to engage in the Works must abide by the conditions set out in the licence.	Sections 2
		The Licensee must give a copy of the licence, and any subsequent variations made to the licence in accordance with section 30 of the 2010 Act, to the masters of any vessels, vehicle operators, agents, contractors or sub-contractors permitted to engage in the Works and must ensure that the licence and any such variations are read and understood by those persons.	Section 2

Consent Document	Condition Reference	Condition Text	Reference to relevant Section of this VMP
Alternative Landfall Cable Marine Licence	Condition 3.1.4	Should the Licensee or any of its agents, contractors or sub-contractors, by any reason of force majeure deposit anywhere in the marine environment any substance or object, then the Licensee must notify the Licensing Authority of the full details of the circumstances of the deposit within 48 hours of the incident occurring (failing which as soon as reasonably practicable after that period of 48 hours has elapsed). Force majeure may be deemed to apply when, due to stress of weather or any other cause, the master of a vessel or vehicle operator determines that it is necessary to deposit the substance or object other than at the Site because the safety of human life or, as the case may be, the vessel, vehicle or marine structure is threatened. Under Annex II, Article 7 of the Convention for the Protection of the Marine Environment of the North-east Atlantic, the Licensing Authority is obliged to immediately report force majeure incidents to the Convention Commission.	Section 7.2.1

1.4 Linkages with other consent plans and Consent Conditions

The VMP will so far as is reasonably practicable, be consistent with a number of other consent plans and consent conditions. These are set out in Table 1.3 with details of the linkages presented and cross referenced as appropriate.

It should be noted that information is not repeated across consent plans, rather, where pertinent information is available in linked consent plans, the relevant consent plans are referred to. The plans are not required for approval of the VMP but are provided for ease of reference.

Table 1.3 - Linkages with other consent plans

Reference *[Consent Plan]*	Linkage with the VMP	Cross-reference in this VMP
NSP (required by S36 Condition 17 and OTA Marine Licence Condition 3.2.2.9)	Sets out measures that Seagreen will implement to ensure safe navigation to and from the Seagreen Project.	Section 4.2 (Construction Phase) and 4.3 (Operational Phase)
PEMP (required by S36 Condition 26 and OTA Marine Licence Condition 3.2.1.1)	Sets out measures by which Seagreen will monitor the potential environmental impacts of the OWFs.	Section 8

Reference *[Consent Plan]*	Linkage with the VMP	Cross-reference in this VMP
	Seagreen environmental management, mitigation and monitoring commitments have taken account of the results and any recommendations of pre-construction monitoring and will continue to be refined depending on the results of the ongoing programme of construction and monitoring described in the Seagreen PEMP.	
CMS (required by S36 Condition 10 and OTA Marine Licence Condition 3.2.2.4)	Sets out the construction procedures and good working practices for installing the Seagreen Project.	Section 4.2 (Construction Phase) and 4.3 (Operational Phase)
EMP (required by S36 Condition 14 and OTA Marine Licence Condition 3.2.1.2)	Sets out the over-arching framework for on-site environmental management and the roles, responsibilities and chain of command for the Company personnel, any subcontractor or sub-contractor.	Section 8
LMP (required by S36 Condition 19 and OTA Marine Licence Condition 3.2.2.14)	Sets out the lighting and marking for the development at every stage of the Seagreen Project.	Section 4.2

1.5 Updates and Amendments

Should any updates to the VMP become necessary, the change management process for any updates required to the VMP, including resubmission of consent plans for approval, is outlined in Appendix B.

2. Scope and Objectives of the VMP

This VMP has been prepared to address the specific requirements of the relevant conditions attached to the S36 Consents and Marine Licences (collectively referred to as 'the consents') issued to Seagreen Wind Energy Limited (Seagreen) and applies to all construction required to be undertaken before the Final Commissioning of the Works.

This VMP covers, in line with the requirements of condition 15 of the S36, Condition 3.2.2.8 of the OTA Marine Licence, industry standards and good practice, the following:

- The numbers, types and specifications of the vessels required;
- Working practices that will be implemented so as to minimise the use of ducted propellers;

- How vessel management will be coordinated, particularly during construction but also during operation including military firing activities within the Danger Area D604; and
- Locations of the working port(s), how often vessels will be required to transits between port(s) and the Site and indicative vessel transit corridors proposed to be used during construction and operation of the Seagreen Project.

All Seagreen personnel, Contractors (including their Sub-Contractors) and vessels involved in the Seagreen Project must comply with the VMP.

3. Location of Base Ports

3.1 Introduction

A number of ports are currently being considered to support various elements of the construction phase and the O&M phase. A summary of the key working ports being considered are listed for both the construction phase and O&M phase in Sections 3.2 and 3.3 respectively, noting that this list cannot be confirmed as exhaustive at the time of writing.

3.2 Construction Ports

3.2.1 Montrose Port

Montrose Port (56° 42'.19 North (N), 002° 26'.25 West (W)) lies approximately 18 nautical miles (nm) W NW from the Seagreen Project on the East (E) Coast of Scotland. Montrose Port is a support and service hub for the North Sea energy and shipping industries. Montrose Port also has 1000 metres (m) of quayside, berths to a depth of 8m, 130,000 square metres (m^2) of open storage and 42,000m^2 warehousing.

There is no Vessel Traffic Scheme (VTS) in operation at Montrose Port at time of writing. Montrose Harbour Authority state pilotage is compulsory in the following cases:

- Merchant vessels of 25m Length Overall and above (LOA);
- Vessels entering or leaving with the assistance of tugs; and
- All vessels carrying dangerous substances as defined by the Dangerous Substances in Harbour Areas Regulation 1987.

Pilot boarding occurs from a pilot launch eight cables East North East (ENE) of Scurdie Ness Light. Pilots may be requested through Montrose Port Control. While waiting for a pilot, vessels are advised to wait East of the 15m depth contour, marked by the light buoy (port hand).

A harbour tug is also available, given adequate advance notice to the ship's agent. Two pilot boats are available and may assist berthing and turning if required.

3.2.2 Able Seaton Harbour

Able Seaton Harbour is a harbour within the Teesport Port (54°34'.70N, 001°03'.00W) that lies 117nm South from the Seagreen Project. Able Seaton Port has a large dry dock and is capable of handling all types of offshore construction vessels.

A VTS is in operation at Teesport with full radar surveillance that covers the Ports of Teesport and Hartlepool, Tees and Hartlepool Bays and seaward to about three to four miles from South Gare Light. Vessels carrying dangerous cargoes must notify the Tees VTS at least 24 hours in advance and all vessels over 20m in length should contact the VTS at least six hours prior to Estimated Time of Arrival (ETA), departure or moving berth. Pilotage is compulsory in the following cases:

- Vessels over 95m LOA;
- Vessels exceeding 4000 gross tonnage;

- Vessels exceeding 4000 deadweight tonnage;
- Vessels over 20m LOA carrying dangerous goods in bulk;
- Vessels requiring the service of a tug; and
- Vessels greater than 80m LOA navigating in the River Tees between no. 23 Light Buoy and the inner limit of Tees and Hartlepool Port Authority, one cable below Tees Barrage.

Pilots board vessels 1.5nm East of the Heugh (54°41'.80N, 001°08'.00W)

3.2.3 Port of Nigg

The Port of Nigg is located in the Cromarty Firth and provides a range of quayside loading facilities with extensive laydown areas and large construction and assembly yards. The sheltered, deep water access permits navigable access at all states of the wind and tide and to be operational 365 days a year.

Port of Nigg/Nigg Energy Park will be used as the construction marshalling port for foundations.

3.2.4 Vlissingen Port

Vlissingen Port (51°27'.00N, 003°34'.60E) lies on the North side of the Westershelde (Netherlands) 354nm south south east (SSE) from the Seagreen Project. Vlissingen Port offers open access to the North Sea and the port has a maximum draught allowance of 16.5m therefore making it accessible to some of the largest ships.

It should be noted, that at present Vlissingen Port is included in the VMP but is currently only envisaged to be utilised in the event of unforeseen delays at UK construction ports.

3.3 Operational and Maintenance Port

Ports to be used during the O&M phase of the Seagreen Project will depend on maintenance requirements, and as such cannot be confirmed at this stage. However, Montrose (see Section 3.2.1) will remain the Marine Coordination Centre (MCC) base and has been confirmed as the location for the O&M base.

4. Management and Coordination of Vessels

4.1 Introduction

The following sections detail the how vessels will be monitored and coordinated during the construction and the O&M phases.

4.2 Construction Phase

During construction the following measures will be in place:

- The MCC at Montrose will be established from where the construction activities will be monitored;
- Permission for construction vessels to enter the site and safety zones will be monitored by the MCC, for example using a Permit to Work system;

- The MCC may provide information to vessels seeking anchorage, however anchoring is at the discretion of the vessel master and should follow standard marine practice (details of anchorage areas are provided in the NSP (LF000009-CST-OF-PLN-007));
- The MCC will constantly monitor vessels and personnel via communication with vessels and Automatic Identification System (AIS) for any potential vessel access conflicts. The MCC will also detect and monitor unauthorised vessels;
- The MCC will obtain and provide localised weather information for vessels associated with the Seagreen Project, to assist in planning the work to be undertaken;
- The MCC will be the central contact point for contractors in case of an emergency. They will also maintain a copy of the Emergency Response Co-operation Plan (ERCoP);
- Vessels will be lit and marked, as required (see LMP for full details), and will comply with legislation appropriate for their class and area of operation; and
- Notice to Mariners (NtMs) will be issued after being reviewed and approved by Seagreen.

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

4.3 Operational and Maintenance Phase

During operation, similar provisions for vessel coordination will be established with marine coordination continuing from the MCC throughout the operational phase.

4.4 Danger Area D604

Condition 3.2.2.8 of the OTA Marine License requires Seagreen ensure vessel activities are suitably monitored during construction and operations in relation to Danger Area D604 associated with the Barry Buddon firing range. Various military practise activities are undertaken at Barry Buddon, including live firing, para dropping, demolition, and unmanned aircraft systems. The export cable corridor for the project overlaps with the Sea Danger Area. However, overlap with cable laying activities is restricted to a small area to the north of the Sea Danger Area. The corridor also overlaps with the northern section of the Civil Aviation Authority (CAA) Air Danger Area (D604).

Detail on how interaction will be monitored during the construction phase are provided in the Barry Buddon Offshore Communications Protocol, an Appendix to the Construction Programme (LF000009-CST-OF-PRG-0002). The Communication Protocol provides an effective communications framework between Seagreen and the MOD, to ensure the safety of all vessels and personnel working within the vicinity of the Danger Area and to ensure that disruption to military firing activities within the Danger Area and Seagreen cable installation is minimised as much as possible.

Prior to final commissioning of the Project, the Protocol will be updated and agreed with the MOD, to ensure it is appropriate for use throughout the operational stage of the Seagreen Project.

5. Numbers, Types and Specifications of Vessels

5.1 Introduction

Condition 15 (a) of the Section 36 and Condition 3.2.2.8 of the OTA Marine Licence require that this VMP include details related to the vessels that will be used for the Seagreen Project, specifically:

the number, types and specifications of vessels required.

This section describes the anticipated key vessel types (and relevant specifications) that will be employed during the construction (Section 5.2) and operational phase (Section 5.3) of the Seagreen Project. The main installation vessels described will be supported by smaller vessels including Crew Transfer Vessels (CTVs), barges and tugs.

It should be noted that the lists of vessels presented below can only, at this stage, be indicative. The actual vessels used may vary depending on market availability; however, they will be similar in specification to those that are presented below. In particular, references made to specific vessels are included for the purposes of providing an indication as to vessel specifications for the purposes of this VMP.

The requirement under Condition 3.1.2 of the OWF Marine Licences and Condition 3.1.2 of the OTA Marine Licence to notify the Licensing Authority of the final vessel list as soon as reasonably practicable prior to the commencement of construction works is noted in this regard (Table 1.1), and as per Section 7.1 such a list will be provided.

All vessels used for the construction and O&M phases of the Seagreen Project will be marked in accordance with International Regulations for Preventing Collisions at Sea (COLREGS) and fitted with an AIS transponder.

5.2 Overview of Main Construction Vessels

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

- Transport and Installation of Foundations;
- Inter-Array, interconnector and Export Cable Installation;
- WTG Installation;
- Commissioning Phase; and
- Guard duties.

5.2.1 Transport and Installation of Foundations

Table 5.1 provides indicative specifications for the key vessel types that are anticipated to be required during the transport and installation of the foundations.

It is noted that the transport barge will be supported by a number of tugs, the relevant details of which will be provided in advance of construction as per Section 7.

Table 5.1: Specifications of Vessels associated with the Transport and Installation of Foundations

Spec	Heavy Transport Vessel (HTV)	Transport Barge	Heavy Lift Vessel (HLV)
Name	Hua Yang Long [1]	AMT Challenger	Saipem 7000
Maritime Mobile Service Identity (MMSI)	414225000	N/A	309461000
IMO Number	9743710	N/A	8501567
Length Overall	128.0m	122m	175m
Breadth	43m	37m	87m
Design or Maximum Draft	8.3m	5m	25.5m

5.2.2 Export Cable, Inter-Array and Interconnector Cable Installation Vessels

The export cables for the Seagreen Project are anticipated to be installed by the *CLV Aurora,* specifications as given in Table 5.2. The Nexans Skaggerak may be used to install one of the three export cables, her dimensions shall be similar to Nexans Aurora. The CLV for the inter-array cable connection will be Seaway Phoenix.

The rock placement fall-pipe vessel will be the vessel Bravenes, specification as given in Table 5.2.

It is noted that smaller vessels associated with surveys, Pre-Lay Grapnel Runs, and landfall cable burial spread will also be required. The relevant details of such vessels will be provided in advance of construction as per Section 7.

[1] As per Section 5.4.1 multiple HTVs will be used - the Hua Yang Long is indicative of these vessels.

Table 5.2: Example Specifications of Key Vessels associated with Cable Installation

Spec	Export Cable Lay Vessel (CLV)	Inter-Array Cable Lay Vessel (CLV)	Installation Support Vessel (ISV)	Rock Placement Vessel
Vessel Name	Nexans Aurora	Seaway Phoenix	Siem Stingray	Bravenes
MMSI	257682000	235084529	258783000	2448606916
IMO Number	9862059	9250529	9676292	9756200
Length Overall	156m	130m	120m8	154m
Breadth	31m	28m	27m	28m
Design or Maximum Draft	6m	7m	5.8mm	5.6m

5.2.3 WTG Installation Vessels

The WTG and foundation installation are anticipated to be completed by the Jack-Up Vessel (JUV) *Wind Orca*. Specifications of this vessel are given in Table 5.3. The *Wind Orca* will be supported by the Service Operations Vessel (SOV) *Acta Centaurus* a number of Crew Transfer Vessels (CTVs). The SOV specifications are given in Section 5.2.4.

Table 5.3: Specifications of the Wind Orca

Vessel Name	Wind Orca
MMSI	219029786
IMO Number	96013264
Length Overall	161m
Breadth	49m
Design or Maximum Draft	5.6m

5.2.4 Commissioning Phase

The commissioning of the WTGs will be completed by an SOV. The SOV to be used is *Acta Centaurus,* specifications are provided in Table 5.4. It is noted that the SOV may also support WTG installation activities as per Section 5.2.3.

Table 5.4: Specifications of the SOV to be utilised for the commissioning of WTGs

Vessel Name	Acta Centaurus
MMSI	244341000
IMO Number	9850355
Length Overall	93.4m
Breadth	18m
Design or Maximum Draft	5.6m

5.2.5 Guard Vessels

It is anticipated that, where identified as necessary via risk assessment, guard vessel(s) will be used during certain key construction activities. Guard Vessel help ensure the safety of other marine users and the construction activity by warning other vessels (including fishing vessels) that may be approaching the Wind Farm of any navigational hazards (partially completed structures, construction works etc.).

Any guard vessels used are likely to be locally sourced and will be suitably certified and of suitable specifications for the role required (which may differ per construction activity). It should be noted that Seagreen intend to follow the guidelines for fishing vessel crew training and certification as published by the MCA in MGN 411 (M+F) {Training and Certification Requirements for the Crew of Fishing Vessels and their Applicability to Small Commercial Vessels and Large Yachts} with regard to training requirements for guard vessel crews.

5.3 Operational Phase

Precise vessel requirements for the operational phase cannot be defined as of the time of writing. Various planned maintenance activities will be undertaken, which may include:

- Turbine annual servicing;
- Seabed surveys around the cable corridors and WTG and OSP jacket foundations;
- Statutory inspections on the WTGs and OSP;
- Marine growth inspections on the WTGs and OSP jacket foundations;
- Above water visual inspections on the WTGs and OSP jacket foundations;
- WTG jacket foundation davit crane maintenance;
- Inspection of the low voltage equipment on the WTG jacket foundations; and
- Inspections of the OSP components (transformer and switchgear).

The following vessels will be involved in the O&M phase of the Seagreen Project, noting that this is not necessarily a comprehensive list:

- An SOV will be used as an accommodation vessel, housing approximately up to 40 technical staff and 10 crew and mainly used for WTG maintenance;
- Up to two daughter crafts to transfer maintenance personnel to the WTG at the boat landing level; and
- Up to four CTVs to support Balance of Plant maintenance as and when required. This will involve making daily transfers to and from the O&M base, at Montrose, and the Seagreen Project.

Where identified as necessary via risk assessment, guard vessels may also be used during certain maintenance operations.

It is noted that the frequency at which unplanned maintenance will occur cannot be defined and will depend on the ongoing status of components associated with the Seagreen Project, the nature of any damage / decay, and the urgency required for any given maintenance operation. Seagreen will promulgate details of maintenance operations on an ongoing basis via the usual means (e.g., NtM, Kingfisher Bulletins etc).

5.4 Numbers and Movements of Vessels

5.4.1 Construction Vessels

The number of vessels within the site at any one time will vary over the course of the construction period, with peaks in vessel activity reflecting the timing of major installation works.

For each key vessel type predicted to be entering the site, Table 5.5 below 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 site 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.

Throughout construction vessel activities will be monitored by the MCC at Montrose. The role of the MCC in the monitoring and co-ordination of vessels during the construction phase of the project is outlined fully in Section 4.2 above. The primary role of the MCC is to coordinate project vessel movements inside the construction area. However, the MCC will also monitor and advise any vessels using transit routes and shelter areas prior to entering the construction area. However, under maritime law, vessel masters remain responsible for vessel movements along transit routes and within shelter areas.

At marshalling ports utilised by the project, contractors will manage vessel sail away times in line with the project installation schedule. In addition, contractors will scrutinise forecast weather conditions in order to minimise the likelihood of vessels utilising shelter areas prior to entering the work site.

It is noted that Table 5.5 provides details for key vessels identified as necessary to date. Smaller vessels (e.g. guard vessels, survey vessels) will also be required. Details will be provided in advance of construction as per Section 7.

Table 5.5: Indicative Construction Vessel Numbers, Key Construction Activities and Return Journeys

Vessel Type	Anticipated Total Number	Vessel Specifications	Key Construction Activities	Approximate Number of Return Journeys to Site
Transportation				
HTV	5	Table 5.1	Foundation Transport	n/a (vessel will transit between fabrication location and marshalling port).
Transport Barge (with associated tugs)	5		Foundation Transport	Circa 1 return journey every 4-5 days
HLV	1		Foundation Installation	Circa 1 return journey every 4 weeks
Export Cable, Inter-Array and Interconnector Cable Installation Vessels				
CLV	1	Table 5.2	Cable installation	Circa 1 return every 4 weeks (IAC) 3 return trips (export cables)
ISV	1		Cable Installation Support	Circa 1 return every 4 weeks (IAC) 3 return trips (export cables)
Rock Placement Vessel	1		Rock placement	3 return trips
WTG Installation Vessels				
CTV	2	Section 5.2.3	Weekly transfer of crew	Anticipated transits on a daily basis
JUV	1	Table 5.3	Transportation and installation of the WTGs and foundations	Circa 23 return trips to Able Seaton over the course of installation period
SOV	1	Table 5.4	Support of WTG installation activities	Single return trip to commissioning harbour once a month while in use
Commissioning				

Vessel Type	Anticipated Total Number	Vessel Specifications	Key Construction Activities	Approximate Number of Return Journeys to Site
SOV	1	Table 5.4	Support	Single return trip to commissioning harbour once a month while in use

5.4.2 Operation and Maintenance Vessels

Throughout the O&M phase it is anticipated that major maintenance shall be required in addition to the planned regular maintenance. Major maintenance requirements shall vary from year to year and therefore it is not currently possible to provide a comprehensive schedule for such activity, however the following is anticipated:

- The SOV is expected to remain on site year-round, returning to port every 28 days for crew change, restock etc; and
- During spring and summer months, CTVs may make daily transfers between Montrose and the site, depending on operational requirements.

Relevant details with regards to maintenance will be promulgated as required via the standard means (e.g., NtM, Kingfisher bulletin).

6. Indicative Transit Routes

The key port locations for marshalling and assembly of project infrastructure have been confirmed as Montrose (Seagreen MCC and operations base), Nigg in the Moray Firth (WTG jackets/foundations) and Able Seton on Wearside (WTGs). Indicative transit routes to site from key construction and operation ports have been defined, as shown in Figure 6.1. These defined routes will be used by Seagreen Project vessels, where practical, to ensure the risk to safe navigation is minimised. Impacts on third party commercial, recreational or fishing traffic within the surrounding sea area will be mitigated via compliance with COLREGs (IMO, 1972) and effective promulgation of information via the MCC. These routes will also notify local users of areas where they are likely to encounter vessels associated with the Project.

It should be noted that these indicative routes are not intended to be prescriptive for the purposes of navigation and will not be followed precisely by every vessel. All vessels shall passage plan as required under SOLAS (IMO, 1974).

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

- Compliance with COLREGS (IMO, 1972) or SOLAS (IMO, 1974);
- Prevailing weather, tidal or sea state conditions;
- Navigational hazards as indicated on charts, or notified through Notice to Mariners, or other such sources;
- Due to the vessel originating from or being bound for a destination that is not indicated by the transit routes;
- Instructions from the MCC or other responsible person in charge of coordinating and managing construction vessel traffic; and
- Such other reasons as the Master of the vessel may deem relevant for the purposes of ensuring the safety of his vessel or another vessel.

Seagreen consulted with commercial fisheries stakeholders in December 2020 and January 2021 on the proposed transit routes and shelter areas. Further discussions took place during May to July 2021 to refine these prior to the start of offshore works. The agreed transit routes were modified following further discussions with commercial fisheries stakeholders between November 2021 and February 2022, after the initial period of offshore works. The transit routes and shelter areas as modified are as shown in Figure 6.1. These have been communicated to the contractor vessel managers to transmit to all vessels undertaking works.

Contractor vessels will be advised of the importance of adhering to the Code of Good Practice defined for contractor vessels (See FMMS Section 3.7 Ref LF000009-CST-OF-PLN-011). The MCC will monitor construction vessel locations and will advise vessels on use of transit routes and shelter areas. Seagreen will seek to avoid or minimise potential disruption of fishing activity resulting from their use. Wherever possible Seagreen has sought to use routes habitually used by shipping traffic in the area.

A significant static gear fishery operates in the waters off the Angus coast and a route from Montrose out to the site has been identified that seeks to minimise any interference. Figure 6.1 also shows a corridor

where fishermen will provide gear locations to the MCC. This information will be communicated to the contractors with advice that the gear should be avoided wherever it is safe and practicable to do so. Further, Figure 6.1 has been updated to show preferred sections of the site boundary for vessel entry to the site to avoid areas known to be targeted by static gear fishermen. This information has been provided to key contractors and vessel entry and exit from the site will be monitoring by the MCC.

Seagreen also recognises that static fishing gear may be located anywhere in the proposed areas and there is no expectation from Seagreen that the identified shelter areas will be cleared of static fishing gear. Seagreen contracted vessels will always maintain a lookout for, and avoid, appropriately marked fishing gear. In this context, appropriately marked fishing gear is considered to be gear marked in compliance with the relevant requirements: The Marking of Creels (Scotland) Order 2020, and the Marine Management Organisation guidance on other requirements for marking of fishing gear, retrieval and notification of lost gear (https://www.gov.uk/guidance/marking-of-fishing-gear-retrieval-and-notification-of-lost-gear). It was confirmed during consultation that the operation of the transit routes and the holding areas would be kept under review as wind farm construction works progress.

The indicative transit corridors for the major construction vessels between the site and other relevant ports are presented in Figure 6.1. Delivery of components may also be made between various ports (see Section 5.4.1) but these routes are not shown on Figure 6.1, however Masters transiting between these ports should passage plan and comply with COLREGS (IMO, 1972) as standard practice. Given that the Project vessels are only likely to be of concern to local users, specific routeing is only shown for the area in the vicinity of the site.

6.1 Shelter and Holding Areas

Two areas have been identified to provide shelter for vessels during adverse weather conditions, or to operate as holding areas for vessels awaiting authorisation to enter the project site area. These have been discussed and agreed during consultation with local fisheries representatives, as discussed above, and are marked on Figure 6.1. Use of the offshore holding area north of the wind farm site is expected to be restricted by weather conditions. During construction, use of these areas will primarily be when the suction caisson jackets are arriving at the site on towed barges from the marshalling and assembly site at Nigg in the Moray Firth. The arrival of structures on site is dependent on the fabrication and delivery programme but is anticipated to be up to a maximum of three barges per week for 12 months, commencing September 2021. Transits will be planned to avoid periods of adverse weather which may otherwise necessitate use of shelter areas.

It is expected that the shelter/holding area off Montrose will be used preferentially due to its shorter distance from the site and its position en-route from Nigg. Vessels may also use the Firth of Forth for shelter or holding off site during adverse weather when other shelter area options are not suitable. In this case they will be within the area that is monitored and supervised by the Forth Ports Vessel Traffic Service. Vessels will only remain within this area until conditions allow return to the site or the other identified shelter areas. A transit route into the Firth of Forth has been discussed and agreed with commercial fisheries representatives (Figure 6.1).

Guidance regarding fisheries activities has been issued to contractors for provision to vessels that may seek shelter in the Firth of Forth (Document ref LF000009-MIP-TI-VES-NOT-0001, see Appendix E). This area is a focus of demersal trawling activity. The purpose of the guidance is to provide awareness and understanding of fishing activities for vessel masters, in particular for sheltering tugs with barges in tow, to promote positive cooperation and to minimise interactions or disruption of fishing activity. Vessel masters are required to read and understand this guidance prior to entering the Firth of Forth for shelter.

The wind turbine installation jack-up vessel will arrive on site from the south and will be less constrained by weather and sea conditions than the barges arriving from the north.

During the O&M phase, the shelter areas may be used periodically, principally during major maintenance campaigns. Vessel movements will be planned around forecasted adverse weather to reduce the need to use the shelter areas.

Use of shelter/holding areas at all project phases will be determined by weather, sea state, the project programme and maritime safety considerations and will at all times be monitored by the MCC.

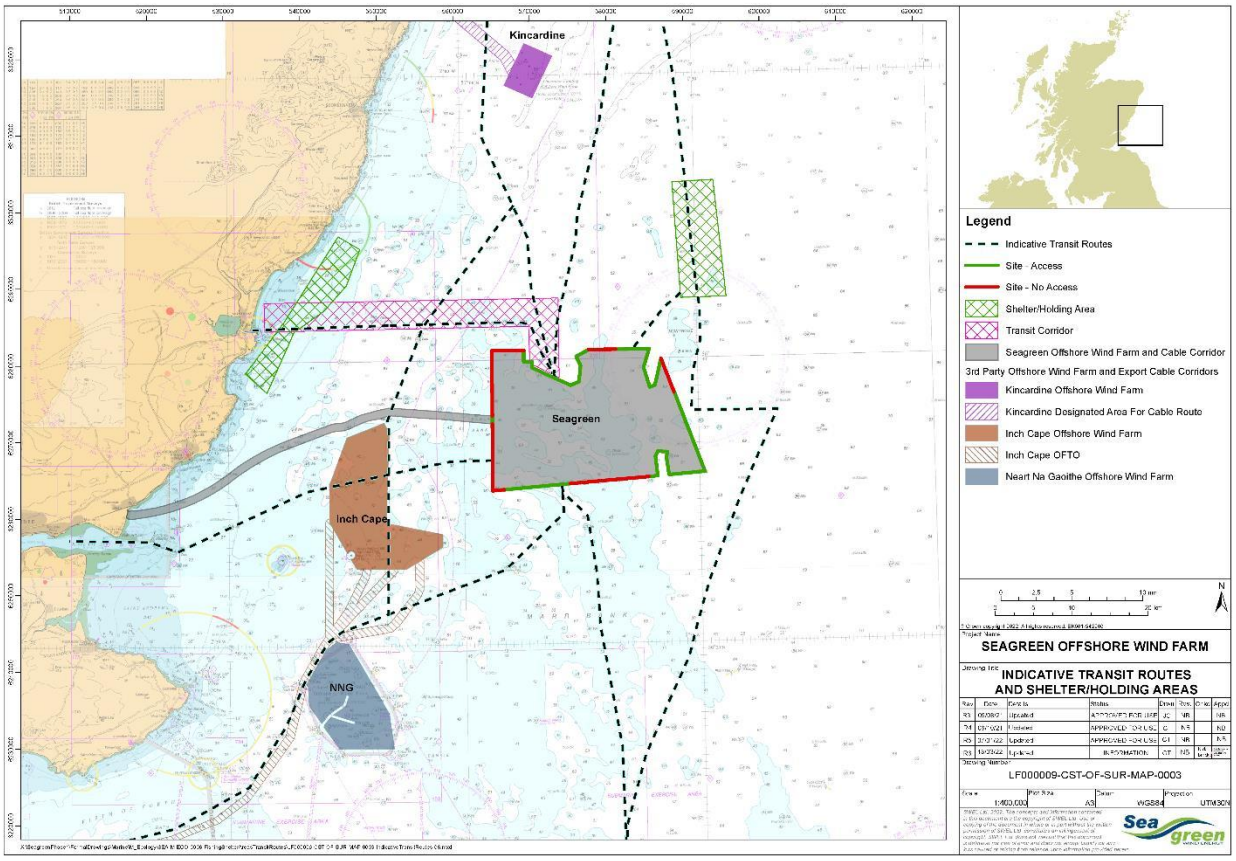


Figure 6.1: Indicative Vessel Routing Corridors

6.2 Environmental Considerations

The S36 Consent Condition 15 states that the VMP is required '*To mitigate disturbance or impact to marine mammals and birds.*'

The Site is within foraging range of several internationally important seabird breeding colonies and the wider area of the outer Firth of Forth and Firth of Tay region is known to be important for seabirds throughout the year. Seabirds 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, no significant ornithological effects are predicted to result from vessel activity associated with construction. Use of regular vessel transit routes will act to restrict the spatial distribution of such disturbance and minimise, as far as possible, the effects arising.

A number of sensitive marine mammal species are also likely to be encountered within the Site and in the wider area at any time of year, with increased probability during summer months. However, as set out in the ES, no significant effects were reported on marine mammal species as a result of increased vessel activity during construction. As with seabirds, the use of regular vessel transit routes will act to restrict the spatial distribution of such disturbance and minimise, as far as possible, the potential for disturbance of marine mammals.

Vessels will also take due regard of any additional available information as to areas which may impact upon displacement and disturbance in relation to ornithology and marine mammals and guidance where necessary will be provided to relevant vessels at mobilisation. Vessels will observe and follow the Scottish Marine Wildlife Watching Code (SNH/NatureScot, 2017). Details of environmental monitoring and management are provided in the PEMP (REF: LF000009-CST-OF-PRG-0003) and EMP (REF: LF000009-CST-OF-PRG-0003).

7. Reporting in Compliance with the VMP

Reporting requirements detailed in this section are not explicitly discharged via the VMP, however they are included for information purposes.

7.1 Reporting Prior to Construction

Seagreen will ensure that the details of all vessels to be engaged in the construction process are notified to the Licensing Authority, as soon as reasonably practicable, prior to commencement of any Licensed Marine Activity. Any changes to those vessel details will be notified, as soon as reasonably practicable, prior to any changes being implemented. It is proposed that this information is provided on the Project website, with the Weekly Notices of Operations and Notices to Mariners.

Only vessels notified to the Licensing Authority will be utilised.

The name and address of any agents, contractors or sub-contractors appointed to carry out any part of the Works will also be notified to the Licensing Authority, prior to their engagement in the Works.

7.2 Reporting during the Construction Phase

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

As per marine requirements most notably under SOLAS (IMO, 1974), vessels will maintain logs of activities and movements. Under this VMP, vessels will also be required to provide this information to the MCC on a regular basis. 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 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).

AIS data will be recorded by the MCC, noting that it is a requirement that all Seagreen Project vessels carry AIS transmitters as per the NSP (Ref: LF000009-CST-OF-PLN-0007). Seagreen 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.

7.2.1 Transportation Audit Sheet (TAS) and Transportation Audit Report (TAR)

As discussed with MS-LOT in February 2020, Seagreen will provide a transportation audit report (TAR) to MS-LOT every six months during the construction phase, and on Completion of Works, a final TAR will be provided within one month. If a Transportation Audit Sheet (TAS) is found to be required by MS-LOT, this will be limited to monthly predictions only, with the TAR providing final details of installed amounts.

Any missing substances or objects that are missing will be reported to the Licensing Authority via the agreed dropped object reporting structure (detailed within the Offshore CEMP (LF000009-PLN-0014). This will involve the use of onboard manifests which is common practice for vessels and offshore structure material management. These manifests describe materials transferred and stored onboard and manifest checks will help identify if material is dropped overboard.

Should the Licensing Authority deem it necessary then Seagreen must undertake a side scan sonar surveying grid lines (within operational and safety constraints) across the area of the works, to include the cable routes and the vessel access routes from local service port(s) to the site, to locate any substances or objects. If the Licensing Authority is of the view that any accidental deposits associated with the construction of the works are present, then the deposits must be removed as soon as reasonably practicable at Seagreen's expense.

If any deposit is made anywhere within the marine environment as a result of force majeure then Seagreen will notify Scottish Ministers within 48 hours, or failing this as soon as reasonably practicable, after that period of 48 hours has elapsed.

7.3 Reporting during the Operations and Maintenance Phase

At present there is no intention to undertake regular reporting in relation to this VMP during the O&M phase although records of O&M vessel movements and activity will be maintained remotely.

8. Working Guidance on Ducted Propellers

It is understood that the requirements listed in S36 Consents Condition 15 and the OTA Marine Licence Condition 3.2.2.8 are derived from prevailing advice issued by the Statutory Nature Conservation Bodies (SNCBs) (JNCC, 2012) at the time of S36 Consents and OTA Marine Licence application and determination. This identified concerns regarding the risk of corkscrew injuries to seals. Such injuries were initially attributed to some ducted propeller systems such as Kort nozzle or some types of Azimuth thrusters, commonly used by ducted propeller vessels.

Since the application, new evidence relating to corkscrew injuries to seals has emerged alongside new advice from the SNCBs (JNCC, 2015). The most recent advice states:

'*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*.'

Due to this new scientific evidence and the revised SNCB advice, the risk of propeller collision impacts associated with the risk of ducted propellers by constriction vessels is considered to be low risk. In line with this recent guidance issued since consent was awarded, Seagreen does not propose any additional specific mitigation or monitoring measures in respect of the use of ducted propeller vessels.

9. Compliance with the ES

The relevant conditions of the S36 Consents and the Marine Licences require that the Seagreen Project be constructed in accordance with the methods assessed in the Application. Appendices C and D set out information from the Environmental Statement (ES) and original application with regard to:

- Compliance with the parameters assessed in the ES; and
- Construction related mitigation and management.

9.1 Compliance with Parameters Assessed in the ES

The ES for the Seagreen project described the range of methods that could be applied during the construction of the Development. This was presented as a 'Rochdale Envelope' incorporating a variety of options in relation to the development design and the approach to installation. Since the grant of the consents for the Seagreen Project, the design of the Project and the approach to installation has been substantially refined, as set out within this VMP and in other relevant consent plans. To demonstrate compliance, with those methods assessed within the ES, Appendix C provides a tabulated comparison of project construction parameters as presented in the ES with this VMP.

9.2 Delivery of Construction-related Mitigation Proposed in the ES

The ES for the Seagreen Project detailed a number of mitigation commitments specific to construction and installation activities. Appendix D presents the commitments made by Seagreen in the ES to mitigation measures relative to construction methods and processes set out in this VMP. The table provides details of the commitments and a cross-reference to where each commitment is implemented.

A complete register of the mitigation, management and monitoring commitments made in the ES, required by consent conditions is set out in the commitment's registers included as part of the Project Offshore Construction Environmental Management Plan (CEMP).

10. References

Table 10.1 sets out those documents for the Seagreen project in relation to either Consent Plans or other reference documents. It is followed by a list of other reference documents.

Table 10.1 - Seagreen Document References

Seagreen Document Number	Title
LF000009-CST-OF-PRG-0002	Construction Programme
LF000009-CST-OF-PLN-0010	Lighting and Marking Plan
LF000009-CST-OF-PLN-0007	Navigational Safety Plan
LF000009-CST-OF-PRG-0003	Project Environmental Monitoring Programme
LF000009-CST-OF-PLN-0009	Offshore Transmission Asset Cable Plan
LF000009-CST-OF-MST-0002	Offshore Transmission Asset Construction Method Statement
LF000009-CST-OF-MST-0001	Offshore Wind Farm Construction Method Statement
LF000009-HSE-MA-PRO-0008	Incident Reporting
LF000009-CST-OF-PLN-0014	Construction Environmental Management Plan

IALA (2013), *IALA Recommendation O-139 – The Marking of Man-Made Structures.* Saint Germaine en Laye, France: IALA.

IMO (1974). *International Convention for the Safety of Life at Sea (SOLAS)*, IMO: London

IMO (1972). *Convention on the International Regulations for Preventing Collisions at Sea.* London: IMO.

JNCC (2012), *Guidance for Staff Advising on the Potential Risk of Seal Corkscrew Injuries.* Peterborough: JNCC

JNCC (2015), Interim Advice on Risk of Seal Corkscrew Injuries. Staff Briefing Note. Peterborough: JNCC

MCA (2008), *MGN 371 (OREIs) – Guidance on UK Navigational Practice, Safety and Emergency Response.* Southampton: MCA.

MCA (2016), *MGN 543 – OREIs - Guidance on UK Navigational Practice, Safety and Emergency Response Issues.* Southampton: MCA

SNH/NatureScot (2017). *The Scottish Marine Wildlife Watching Code – Part 1.* Inverness: SNH

SCOS (2010*), Scientific advice on matters related to the management of seal populations: 2010. Sea Mammal Research Unit, St Andrews, Scotland.*

Thompson, D., Bexton, S., Brownlow, A., Wood, D., Patterson, T., Pye, K., Lonergan, M. and Milne, R. (2010*), Report on recent seal mortalities in UK waters caused by extensive lacerations.* SMRU, St. Andrews, Scotland.

The Electricity (Offshore Generating Stations) (Safety Zones) (Application Procedures and Control of Access) Regulations (2007), Available online: http://www.legislation.gov.uk/uksi/2007/1948/contents/made [accessed 10/03/2020].

Onoufriou, J., Thompson, D., & Brownlow, A. (2014), *Testing the hypothetical link between shipping and unexplained seal deaths*. Report to Marine Scotland, no. MMS/001/11 USD2, University of St. Andrews.

Appendix A - VMP List of Abbreviations and Definitions

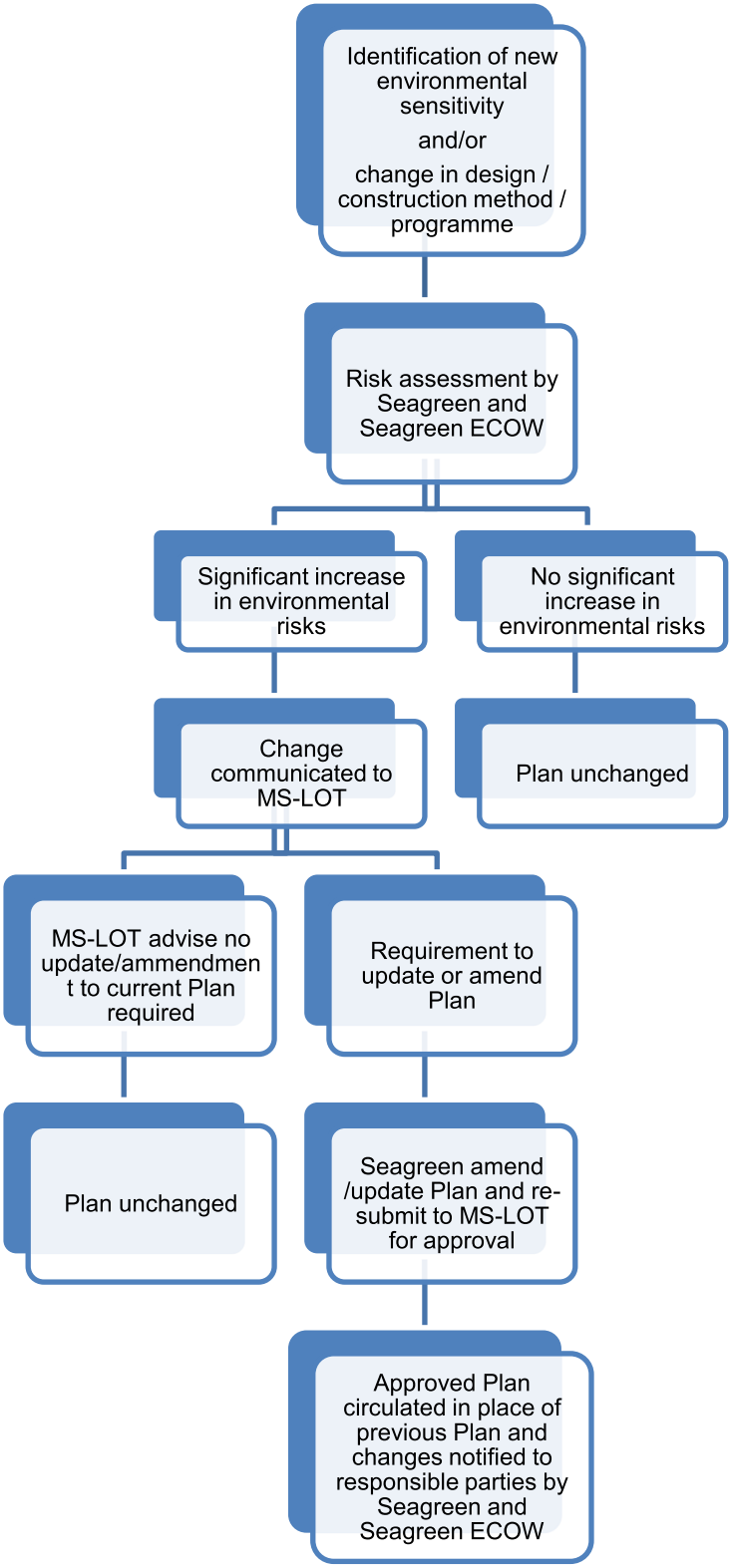
Term	Description
(the) consents	Collective term used to describe the Section 36 consents and Marine Licences issued to SAWEL, SBWEL and SWEL
AIS	Automatic Identification System
Alpha Marine Licence	Marine licence granted by the Scottish Ministers under the Marine (Scotland) Act 2010 and the Marine and Coastal Access Act 2009 in respect of Seagreen Alpha Wind Farm on 10 October 2014 as amended by the revised marine licence granted by the Scottish Ministers on 28 August 2018 (reference 04676/18/0) and as further amended by the revised marine licence granted by the Scottish Ministers on 12 December 2019 (reference 04676/19/0).
Audit	Inspection to confirm, compliance and identify and correct non-conformances
Bravo Marine Licence	Marine licence granted by the Scottish Ministers under the Marine (Scotland) Act 2010 and the Marine and Coastal Access Act 2009 in respect of Seagreen Bravo Wind Farm on 10 October 2014 as amended by the revised marine licence granted by the Scottish Ministers on 28 August 2018 (reference 04677/18/0) and as further amended by the revised and transferred marine licence granted by the Scottish Minsters on 12 December 2019 (reference 04677/19/0)
CEMP	Offshore Construction Environmental Management Plan
CLV	Cable Lay Vessel
CMS	Construction Method Statement as required under Seagreen Alpha and Seagreen Bravo OWFs Section 36 Condition 10
COLREGS	International Regulations for the Prevention of Collisions at Sea
Commitments register	A register that sets out all commitments to manage and mitigate potential environmental impacts made by SWEL
Contractor	A contractor as appointed by SWEL
CoP	Construction Programme as required under Seagreen Alpha and Seagreen Bravo OWFs Section 36 Condition 9
CTV	Crew Transfer Vessel
E	East
ECoW	Ecological Clerk of Works as required under Alpha and Bravo Section 36 Condition 29.
EMP	Environmental Management Plan as required under Seagreen Alpha and Seagreen Bravo OWFs Section 36 Condition 14 (see CEMP above)
ERCoP	Emergency Response Co-operation Plan
ES	Environmental Statement
ETA	Estimated Time of Arrival

Term	Description
HLV	Heavy Lift Vessel
HTV	Heavy Transport Vessel
IMO	International Maritime Organization
ISV	Installation Support Vessel
JNCC	Joint Nature Conservation Committee
JUV	Jack-Up Vessel
Km	Kilometre
Licensee	Seagreen Wind Energy Ltd (Seagreen), a company with number 06873902 and having its registered office at No1 Forbury Place, 43 Forbury Road, Reading, United Kingdom RG1 3JH, on behalf of SAWEL in respect of the OWF and on behalf of SAWEL and SBWEL in respect of the OTA.
LMP	Lighting and Marking Plan, required under Condition 19 of the S36 consent
LOA	Length Overall
m	Metres
m^2	Square metres
Marine Licence	The three marine licences for the Seagreen Project, comprising the Alpha Marine Licence, the Bravo Marine Licence, the OTA Marine Licence as granted by the Scottish Ministers under the Marine (Scotland) Act 2010 and the Marine and Coastal Access Act 2009 on 10 October 2014, and as subsequently varied, in the case of the Seagreen Alpha Offshore Wind Farm Marine Licence and the Seagreen Bravo Offshore Wind Farm Marine Licence, on 29 August 2018, 6 March 2019 and subsequently on 12 December 2019 and in respect of the OTA Marine Licence as varied under the Marine (Scotland) Act 2010 on 6 March 2019
MCA	Maritime and Coastguard Agency
MCC	Marine Coordination Centre
MGN	Marine Guidance Note
MMSI	Maritime Mobile Service Identity
MOD	Ministry of Defence
MS-LOT	Marine Scotland Licensing and Operations Team
N	North
nm	Nautical Miles
NSP	Navigational Safety Plan, as required for approval under Condition 17 of the S36 consent
NtMs	Notice to Mariners

Term	Description
NRA	Navigational Risk Assessment
O&M	Operations and Management
Offshore CEMP	Construction Environmental Management Plan as required under Seagreen Alpha and Seagreen Bravo OWFs Section 36 Condition 14
OfTW	Offshore Transmission Works
OMP	Operations Management Plan
OSP	Offshore Substation Platform means an alternating current Offshore substation platform which is a standalone modular unit that utilises the same substructure and foundation design as a wind turbine generator
OTA	Offshore Transmission Asset, comprising the OSPs and the transmission cable required to connect the Wind Farm Assets to the Onshore Transmission Works (OnTW) from the OSPs to the MHWS at the landfall at Carnoustie
OWF	the Wind Farm Assets
PEMP	OWFs Environmental Monitoring Programme as required under Seagreen Alpha and Seagreen Bravo OWFs S36 Condition 26
PLGR	Pre-Lay Grapnel Run
S	South
S36 Consents	Consent under section 36 of the Electricity Act 1989 granted by the Scottish Ministers on 10 October 2014 in respect of the Seagreen Alpha and Seagreen Bravo offshore wind farms, both as varied by the Scottish Ministers by decision letter issued pursuant to an application under section 36C of the Electricity Act 1989 on 28 August 2018 and, in respect of the Seagreen Bravo S36 Consent, as assigned, with the consent of the Scottish Ministers from SBWEL to SAWEL by assignation dated 22 November 2019 and intimated to the Scottish Ministers by intimation dated 27 November 2019.
SAWEL	Seagreen Alpha Wind Energy Limited, a company with registered number 07185533 and having its registered office at No1 Forbury Place, 43 Forbury Road, Reading, United Kingdom RG1 3JH
SBWEL	Seagreen Bravo Wind Energy Limited, a company with registered number 07185543 and having its registered office at No1 Forbury Place, 43 Forbury Road, Reading, United Kingdom RG1 3JH
Seagreen	Seagreen Wind Energy Limited (SWEL), the parent company of Seagreen Alpha Wind Energy Ltd (SAWEL) and Seagreen Bravo Wind Energy Ltd (SBWEL), (company number 06873902) and having its registered office at No.1 Forbury Place, 43 Forbury Road, Reading, United Kingdom, RG1 3JH

Term	Description
Site	The area outlined in red in Figure 1.1 attached to the S36 consent Annex 1 and the area outlined in red and the area outlined in black in the figure contained in Part 4 of the Marine Licence*
SNCBs	Statutory Nature Conservation Bodies
SNH	Scottish Natural Heritage
SOLAS	Safety of Life at Sea
SOV	Service Operations Vessel
TBC	To Be Confirmed
VHF	Very High Frequency
VMP	Vessel Management Plan, required under Condition 15 of the S36 consent
VTS	Vessel Traffic Scheme
W	West
WDC	Whale and Dolphin Conservation
Wind Farm Assets	Collective term to describe the WTGS, jacket structures, foundations and associated inter array cabling
WTG	Wind turbine generator

Appendix B – The VMP Change Management Procedure



Appendix C – Compliance with ES parameters and processes

Construction parameter/process	ES	VMP
Key Parameters		
Number of WTGs	Up to 150	150
Number of Auxiliary Platforms	Up to five[2]	Up to two OSPs
Metrological Masts	Up to six (30m diameter)	None
Rotor Diameter	Max 167 m	Max 164m
Minimum WTG Spacing	(5 x rotor diameter) (610m – 835m)[3]	1,002m
Blade Clearance	Minimum (26.1 – 42.7m)[4]above LAT	37m-41m
Construction and Operational Processes		
Construction vessel levels and sizes	Up to four construction vessels per site, each greater than 80m in length, servicing the construction stage at any given time.	See Section 5.2.
Pre-construction geophysical survey	Two geophysical survey vessels	See Section 5.2.2.
Cable Pre-Lay Grapnel Run (PLGR)	One vessel with PLGR device	See Section 5.2.2.
Plough Trails	One cable installation vessel	See Section 5.2.2.
WTG and ancillary infrastructure substructures / foundations	One Heavy Lift Vessel (HLV) and one foundation transport vessel	See Section 5.2.2.

[2] Number modelled within the Navigational Risk Assessment (NRA) (Anatec, 2012)

[3] Note this figure was revised within the S36 Consents to 1,000m.

[4] Note this figure was revised within the S36 Consents to 29.8m (with a maximum blade tip clearance of 42.7m) above LAT.

Construction parameter/process	ES	VMP
Scour Protection	One vessel either a construction barge or a dedicated rock placement vessel	The need for scour protection is currently still to be confirmed. Vessels will be confirmed in due course.
Cable Mattress / Rock Placement	One vessel either a construction barge or a dedicated rock placement vessel	See Section 5.2.2.
WTG Installation	One HLV or jack-up barge	See Section 5.2.3.
Ancillary Structures (OSPs, and meteorological masts)	One HLV or jack-up barge and one substation installation vessel	See Section 5.2.3.
Cable lay	One cable lay barge / vessel	See Section 5.2.2.

Appendix D – Summary of mitigation commitments

Source	Reference (ES Chapter and Paragraph)	Details of commitment	Implementation
ES	Section 5 (Project Description), paragraph 5.127	Seagreen will continue to monitor the outcome of investigations into the deaths of seals and the use of certain vessel propulsion designs when developing construction vessel use strategies	Section 8
ES	Section 5 (Project Description) paragraph 5.213	A Marine Co-ordination Centre(s) for the OWFs will have AIS, video surveillance and radar coverage which will identify vessels with AIS facilities entering into the safety zone during O&M activities. Any vessel identified or observed to stray in to the safety zone will be contacted by a designated member of the crew of the O&M vessels or guard vessels or from the Marine Control via multi-channel VHF radio, including digital selective calling, and warned that they have encroached the safety zone. Vessels which ignore this warning and are considered to be causing a potential danger will be further requested and then the details of the vessel reported to the MCA enforcement unit.	See Section 4, noting full details are provided in NSP (Ref: LF000009-CST-OF-PLN-0007).
ES	Section 13 (Marine Mammals), paragraphs 13.329, 13.457, and 13.476	The construction phase will use mostly large (>100 m) vessels which are likely travel at slow speeds of around 10 knots or less and only small workboats and crew transfer vessels (~25 m) may operate at greater speed.	Section 5
ES	Section 16 (Seascape, landscape and visual amenity), paragraph 16.216	Within the export cable corridor, the construction activities close to residential receptors would be restricted to daylight or normal working hours. If there is night-time lighting less than approximately 2km to the shore, best practice measures would be applied to ensure the lighting is not directed towards the shore (e.g. using boats between the works and shore only).	Seagreen will follow best practice measures with regard to night-time lighting, to ensure visual intrusion on residential receptors is minimised.

Source	Reference (ES Chapter and Paragraph)	Details of commitment	Implementation
ES	Section 22 (Mitigation and Monitoring). Paragraph 22.15	Ornithology - Guidance, regarding the displacement to birds as a result of boat traffic, will be provided as part of a code of conduct to vessel operators on avoiding 'rafts' of birds and feeding aggregates by vessels accessing / servicing Project Alpha and Project Bravo.	Section 6
ES	Section 22 (Mitigation and Monitoring), paragraph 22.32	Consideration will be given to limiting light spill (by directional lighting, directed downwards) from construction vessels involved in cable laying and related activities at night within 2km of the shore, to avoid visual intrusion at residential locations.	Seagreen will follow best practice measures with regard to night-time lighting, to ensure visual intrusion on residential receptors is minimised.

Appendix E – Firth of Forth Guidance Note on Fisheries for Seagreen Construction Vessels

LF000009-MIP-TI-VES-NOT-001

This note is for any Seagreen construction vessels (tugs, HLV, Cable lay, support) choosing to utilise the Firth of Forth during periods of poor weather when use of the agreed shelter areas is not possible. The below bullet points are provided as guidance to ensure positive cooperation with the local mobile fishing vessels (FVs) who operate in the area.

These local FVs are primarily demersal trawlers, operating single or twin demersal seabed trawls with otter boards and centre clump weights. During fishing a trawl net or nets on the seabed can be up to 300 metres astern of the FV. When fishing, the FVs normally tow at speeds of 2-3 kts. They generally tow in an unpredictable manner, changing course to avoid seabed debris, boulder fields or wreckage. When fishing, the avoidance of known seabed hazards, and following a previous good catch track, is an FVs main focus and priority.

At all times Seagreen construction vessels should abide by COLREGs. However, it should be recognised that an FV engaged in mobile fishing is directly attached to fishing gear being towed along the seabed. During fishing, the FV does not have the capability to make sharp and immediate alterations of course or changes in speed. These such alterations would result on gear damage, or entanglement on the seabed.

1. Local working Channels

- Maintain listening watch on Channel 16.
- FV working channels are VHF Ch.1 and Ch.8. to be used if no response is received on VHF CH16

2. Clear Communications

- Be professional and courteous at all times and ensure all communications between yourself and the FV are clear, with no ambiguity.
- Ensure the FV understands your intentions and that you are aware of the FV's intentions
- Make sure all vessel day signals are clear and accurate at all times.
- Keep a log of all correspondence with a FV (FV name, date, time and summary of call). If the intentions of the FV are unclear, keep well clear.

3. Safe Distance

- FVs engaged in trawling can have gear up to 300m astern of the vessel, therefore a safe distance of 0.5nm is suggested to allow safe passing or turning of FVs.
- If you are the overtaking vessel, increase speed as required to get ahead and clear as quickly as possible.
- To assist local FVs and ensure areas they may want to fish are kept clear as much as possible, it would be appreciated if you maintain headway whenever possible.

4. Awareness

- FVs fishing patterns will change to overnight activity from April through the summer.
  FVs numbers will increase with visiting nomadic vessels as the summer fishing starts.