

Project Title	Seagreen Wind Energy Ltd
Document Reference Number	LF000009-CST-OF-PRG-0002

Construction Programme (CoP)

Section 36 Consent Condition 9

Offshore Transmission Asset (OTA) Marine Licence Condition 3.2.2.3

Landfall Alternative Cable Installation Marine Licence Condition 3.1.1

For the approval of Scottish Ministers

This document contains proprietary information belonging to Seagreen Wind Energy Ltd /or affiliated companies and shall be used only for the purpose for which it was supplied. It shall not be copied, reproduced, disclosed or otherwise used, nor shall such information be furnished in whole or in part to third parties, except in accordance with the terms of any agreement under which it was supplied or with the prior consent of Seagreen Wind Energy Ltd and shall be returned upon request. © Copyright of Seagreen Wind Energy Ltd 2023

Rev	Date	Reason for Issue	Originator	ECoW	Checker/Approver
12	20/10/2023	Approved for Use	[Redacted]		

Table of Contents

1.	Introduction	6
1.1	Consents and Licences	6
1.2	Project Description	6
1.3	Consent and Licence Requirements.....	7
1.4	Change Management Process	10
2.	Scope and Objectives of the CoP	10
3.	Construction Programme Overview	11
3.1	Introduction	11
3.2	Key Milestone Dates	12
4.	Wind Farm Construction Programme.....	15
4.1	Introduction	15
4.2	Commencement of the Wind Farm Construction	15
4.3	Pre-Campaign Surveying and Subtidal Seabed Preparation	15
4.4	Mobilisation of Plant, Delivery of Materials, use of Onshore Laydown Areas, and Timing and Sequencing of Construction Work	15
4.5	Final Commissioning of the Wind Farm	17
5.	Offshore Transmission Asset Construction Programme.....	18
5.1	Introduction	18
5.2	Commencement of OTA	18
5.3	Pre-Campaign Surveys and Subtidal Seabed Preparation	18
5.4	Mobilisation of Plant, Delivery of Materials, use of Onshore Laydown Areas, and Timing and Sequencing of Construction Works	18
5.5	Final Commissioning of the OTA	20
6.	Contingency Planning	21
7.	Compliance with the Environmental Statement (ES) ES Addendum.....	22
8.	References	24
	Appendix A – CoP List of Abbreviations and Definitions	25
	Appendix B – The CoP Change Management Procedure	28
	Appendix C – Construction Programme	29
	Appendix D – MOD Barry Buddon Firing Range Communications Protocol	31

Purpose of the Plan

This Construction Programme (CoP) is submitted to address the specific requirements of the relevant conditions attached to

(1) 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 letters issued pursuant to applications under section 36C of the Electricity Act 1989 on 28 August 2018, 10 October 2022 and 20 December 2022 and, in respect of the consent applicable to the Bravo Offshore Wind Farm, as assigned to SAWEL on 22 November 2019; and

(2) 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 amended by the revised marine licences granted by the Scottish Ministers on 6 March 2019 (reference 04678/19/0) and 10 October 2022 (reference MS-0010078) in respect of the Seagreen Offshore Transmission Assets (OTA) associated with the Seagreen Alpha and Seagreen Bravo Wind Farms (OWFs) (the OTA Marine Licence); and

(3) the Marine Licence granted by the Scottish Ministers under the Marine (Scotland) Act 2010 on 21 November 2019 (as subsequently varied) providing an alternative landfall installation methodology for the OTA.

Seagreen Alpha and Seagreen Bravo OWFs and the OTA are collectively referred to as the 'Seagreen Project'. This CoP has been prepared to discharge consent conditions for the Seagreen Project simultaneously.

The overall aim of the CoP is to set out the intended construction programme for the Seagreen Project.

All Seagreen Contractors (including their Sub-Contractors) involved in the Seagreen Project are required to comply with this CoP through conditions of contract.

Construction Programme Overview

Structure of the Plan

The CoP is structured as follows:

Section 1	Provides an overview of the Seagreen Project and the consent requirements that underpin the content of this CoP. It also sets out the process for making updates and amendments
Section 2	Sets out the scope and objectives of the CoP
Section 3	Provides an overview of the Construction Programme and Key Milestone Dates
Sections 4 & 5	Provide the delivery and construction schedule for the Wind Farms and the OTA, respectively
Section 6	Provides contingency considerations for the Wind Farms and the OTA
Section 7	Demonstrates compliance with the original application and commitments made
Appendix A	Lists the Abbreviations and Definitions used in the CoP
Appendix B	Sets out the CoP Change Management Procedure
Appendix C	Sets out the Construction Programme as a summary timeline
Appendix D	Sets out the Communications Protocol developed between Seagreen and MOD Barry Buddon Firing Range

Scope of the Plan

This CoP covers, in line with the requirements of the consents conditions, and in line with industry standards and good practice, the following in relation to the Seagreen Project:

- The proposed date for commencement of construction;
- The proposed timings of mobilisation of plant and delivery of materials including onshore laydown areas;
- The proposed timings and sequencing of construction work for all elements of the Seagreen Project;
- Contingency planning for poor weather or other delays;
- The scheduled date for final commissioning of the Seagreen Project; and
- A communications protocol developed between Seagreen and MOD Barry Buddon Firing Range

Plan Audience

This CoP 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 CoP will be monitored by Seagreen's Ecological Clerk of Works (ECoW), Seagreen's appointed Contractors and the Marine Scotland Licensing and Operations Team (MS-LOT).

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

- Seagreen's head office;
- Seagreen's construction office and marine coordination centre;
- at the premises of any Contractor, including the Seagreen ECoW, acting on behalf of Seagreen; and
- aboard any vessel engaged in the Wind Farm/OTA construction phase.

1. Introduction

1.1 Consents and Licences

Seagreen Wind Energy Limited (SWEL, hereafter referred to as 'Seagreen') was awarded Section 36 Consents (S36 Consents) under the Electricity Act 1989 by the 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 applications under s36C of the Electricity Act 1989 on 28 August 2018, 10 October 2022 and 20 December 2022, 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 OWFs 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. The Alpha Marine Licence, Bravo Marine Licence and OTA Marine Licence were all subsequently varied in 2022 following applications by Seagreen.

In addition, an additional ML was granted in 2019, and subsequently varied, providing an alternative landfall cable installation method. On 12 December 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, associated array cabling and WTG to OSP cables), together with associated infrastructure of the OTA (Offshore Substation Platforms (OSPs), 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;
 - 114 WTGs installed on three-legged steel jackets, each installed on suction bucket caissons;
 - 36 WTGs - foundation type to be determined;
- 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 355km of inter-array cables to connect strings of WTGs together and to connect the WTGs to the OSPs
 - 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.

Installation of the WTGs will be phased, with Stage 1 covering installation of the 114 WTGs on suction bucket caisson jacket foundations with associated array cabling, and Stage 2 covering installation of the remaining 36 WTGs, foundations and associated array cabling. Installation of the OSPs will also be phased with one OSP (foundations and topsides) installed in Stage 1, and the second OSP (foundations and topsides) installed in Stage 2.

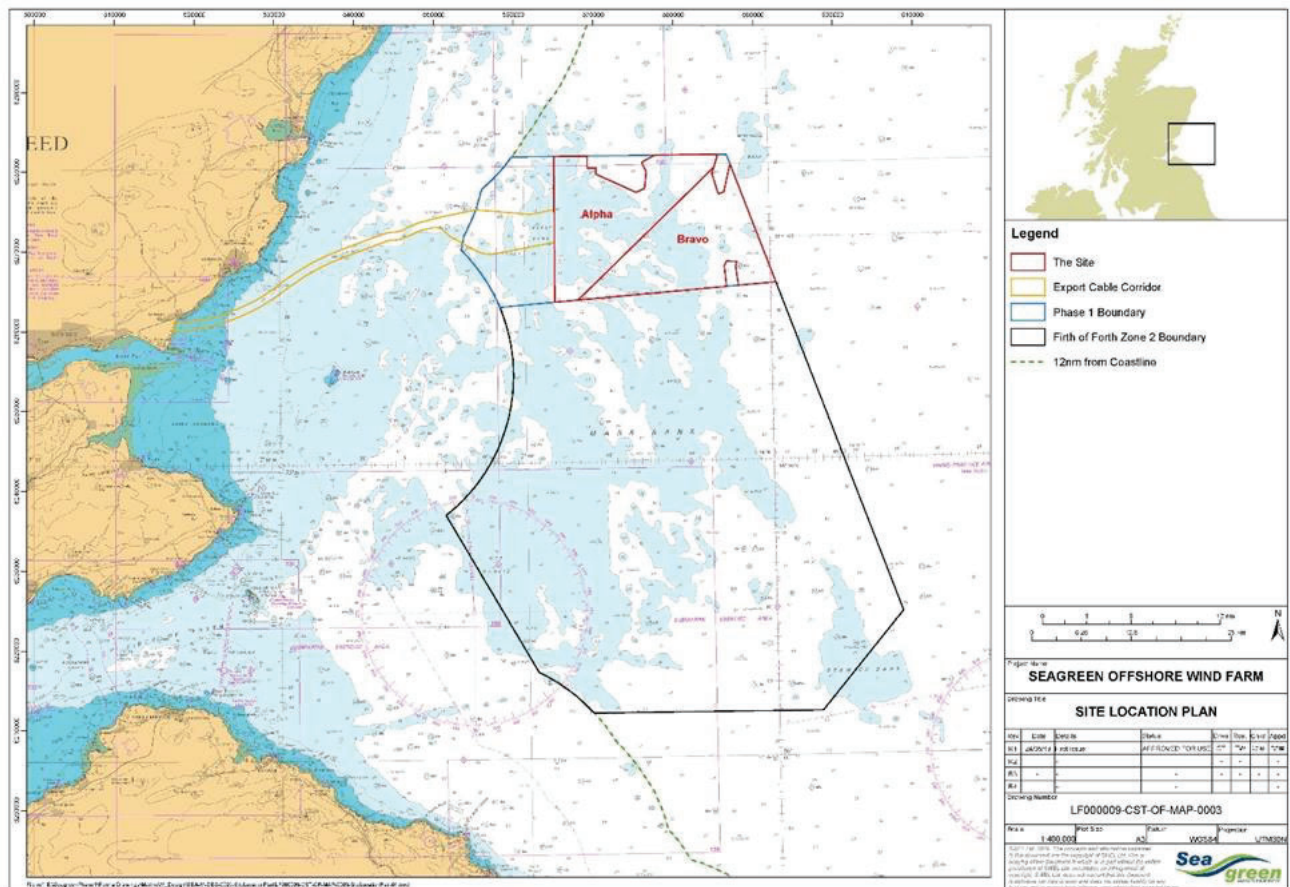


Figure 1.1 – Seagreen Project Location

1.3 Consent and Licence Requirements

This CoP has been prepared to discharge condition 9 of the S36 Consents, condition 3.2.2.3 of the OTA Marine Licence and condition 3.1.1 of the Landfall Alternative Cable Installation Marine Licence, as set out in Table 1.1.

Table 1.1: Consent Conditions to be discharged by this CoP

Consent Document	Condition Reference	Condition Text	Reference to the relevant Section of the CoP
Section 36	Condition 9	The Company must, no later than 6 months prior to the Commencement of the [Wind Farms], submit a Construction Programme (“CoP”), in writing, to the Scottish Ministers for their written approval.	Revision 11 of the CoP was approved by Scottish Ministers on 24 July 2023. This document sets out the revised CoP for approval by the Scottish Ministers
		Such approval may only be granted following consultation by the Scottish Ministers with the JNCC, SNH, SEPA, MCA, NLB, RSPB Scotland, the Planning Authority and any such other advisors or organisations as may be required at the discretion of the Scottish Ministers.	Consultation with all required parties was undertaken prior to the approval of Rev 11. Additional consultation required in relation to Rev 12 will be at the discretion of Scottish Ministers.
		The [Wind Farms] must, at all times, be constructed in accordance with the approved CoP (as updated and amended from time to time by the Company).	Section 1.4 and 2
		Any updates or amendments made to the CoP by the Company must be submitted, in writing, by the Company to the Scottish Ministers for their written approval.	Section 1.4
		The CoP must set out: a) The proposed date for Commencement of [the Wind Farms]; b) The proposed timings for mobilisation of plant and delivery of materials, including details of onshore lay-down areas; c) The proposed timings and sequencing of construction work for all elements of the [Wind Farm] infrastructure; d) Contingency planning for poor weather or other unforeseen delays; and e) The scheduled date for Final Commissioning of the [Wind Farms].	Sections 3, 4 and 6
OTA Marine Licence	3.2.2.3	The Licensee must, no later than 6 months prior to the Commencement of the [OTA], submit a CoP, in writing, to the Licensing Authority for their written approval.	Revision 11 of the CoP was approved by Scottish Ministers on 24 July 2023. This document sets out the revised CoP.

Consent Document	Condition Reference	Condition Text	Reference to the relevant Section of the CoP
		Such approval may only be granted following consultation by the Licensing Authority with the MOD, the JNCC, SNH, SEPA, MCA, NLB, Angus Council, Carnoustie Golf Links Management Committee (“CGLMC”) and any such other advisors or organisations as may be required at the discretion of the Licensing Authority.	Consultation with all required parties was undertaken prior to the approval of Rev 11. Additional consultation required in relation to Rev 12 will be at the discretion of Scottish Ministers.
		The CoP must be in accordance with the Application.	Section 7
		The CoP must set out: a) The proposed date for Commencement of the [OTA]; b) The proposed timings for mobilisation of plant and delivery of materials, including details of onshore lay-down areas; c) The proposed timings and sequencing of construction work for all elements of the [OTA] infrastructure; d) Contingency planning for poor weather or other unforeseen delays; e) The scheduled date for Final Commissioning of the [OTA]; and f) A communications protocol must be developed between the applicant and MOD Barry Buddon Firing Range.	Sections 3, 5 and 6 Appendix D: MOD Barry Buddon Firing Range Communications Protocol sets out the Communications Protocol (part f) which has been agreed with the MOD
Alternative Landfall Marine Licence	3.1.1	The Licensee must ensure that, where the Works authorised by the licence are carried on as an alternative to nearshore cable laying operations under marine licence number 04678/14/0 ¹ , that the works authorised by the licence are appropriately covered in the plans submitted under marine licence number 04678/14/0. Such plans include the CoP, as required by condition 3.2.2.3 of marine licence number 04678/14/0.	Section 5

¹ Varied as Marine Licence ref. MS-00010078

1.4 Change Management Process

Should any updates to this CoP become necessary, the change management process for any updates required to the CoP including resubmission of consent plans for approval, is outlined in Appendix B – The CoP Change Management Procedure.

2. Scope and Objectives of the CoP

This CoP 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 as required to be undertaken before the Final Commissioning of the Works.

The overall aims and objectives of the CoP are to set out the proposed timings and programming of construction of the Seagreen Project (as defined in Section 1.1). The CoP includes:

- a) The proposed date for commencement of construction;
- b) The proposed details of mobilisation of plant and delivery of materials;
- c) The proposed timings and sequencing of construction of all elements of the OWFs and OTA;
- d) Contingency planning for poor weather or other delays; and
- e) The proposed date for final commissioning of the development.

All Seagreen personnel and Seagreen's Contractors (including their Sub-Contractors) involved in the Seagreen Project must comply with the CoP.

3. Construction Programme Overview

3.1 Introduction

This section of the CoP provides a brief overview of the Seagreen Project (as consented under the S36 Consents and Marine Licences) and presents the key milestone dates for:

- the commencement and duration of works;
- the key construction activities; and
- the commissioning of the wind farm.

Sections 4 and 5 provide specific details of the construction programme for the OWFs and OTA, respectively. Section 0 details contingency planning for the OWFs and OTA. The full construction programme is provided in Appendix C – Construction Programme.

Construction commenced in 2020. Delivery of the project is phased with construction taking place in two stages: Stage 1 and Stage 2.

Stage 1 of the OWF covers the installation of the 114 WTGs on suction bucket caisson jacket foundations with associated inter array cabling and Stage 2 covers installation of the remaining 36 WTGs, foundations (type to be determined) and associated inter array cabling.

Installation of the OTA will also be phased with Stage 1 covering export cable installation at landfall, and installation of the first OSP (foundations and topsides), and subtidal export cables; and Stage 2 covering installation of the second OSP (foundations and topsides) and OSP interconnection cable. Stage 2 OTA works will coincide with Stage 2 OWF construction works.

There will be a gap in construction between the end of WTG installation in Stage 1 and the start of construction works in Stage 2. During this gap, WTGs on suction buckets will be commissioned and begin generating, following installation of the first OSP. The construction programme for Stage 2 is currently under review in light of recent project developments and the key milestone dates are yet to be confirmed. Once confirmed, programme dates will be provided in a future update to this CoP (as required by condition 34 of the Section 36 consents).

It is currently anticipated that within Stage 1 and Stage 2 the offshore construction works will be carried out year-round and around the clock (i.e. 24 hours working, 7 days a week).

3.2 Key Milestone Dates

Table 3.1 below presents to key construction milestone dates for the Seagreen Project (see also Appendix C).

Table 3.1 Summary of key milestone dates

Milestone	Anticipated Programme
Seagreen Project	
Commencement of Seagreen project construction (triggered by commencement of licensable works at landfall)	December 2020
Seagreen OWF (Licensable activities under S36 consent and OWF Marine Licence)	
Mobilisation of plant and delivery of materials to onshore laydown areas (where required)	To match installation timings as set out below
Timing and sequencing of construction work <i>Stage 1</i>	<p>Pre-Campaign Surveys and Subtidal Seabed Preparation (subject to a separate marine licence)</p> <ul style="list-style-type: none"> April 2021 – May 2023 (completed) <p>Site Establishment (subject to separate marine licence exemption) now complete</p> <p>Pre-Lay Grapnel Run</p> <ul style="list-style-type: none"> November 2021 – June 2023 (completed) <p>WTG Jacket Suction Bucket Substructures installation:</p> <ul style="list-style-type: none"> October 2021 – April 2023 (completed) <p>Inter-array Cables installation:</p> <ul style="list-style-type: none"> November 2021 – October 2024 (Cable laying and burial complete – rock protection installation ongoing) <p>WTG installation</p> <ul style="list-style-type: none"> November 2021 – June 2023 (completed)
Commissioning of Wind Farm ² (Stage 1)	October 2023
Completion of all construction works (Stage 1)	October 2024

² In accordance with definition in section 4.5

Milestone	Anticipated Programme
Timing and sequencing of construction work <i>Stage 2</i>	Foundations: <ul style="list-style-type: none"> • TBC Inter-array Cables installation (including Pre-Lay Grapnel Run): <ul style="list-style-type: none"> • TBC WTG installation <ul style="list-style-type: none"> • TBC
Final Commissioning of Wind Farm	TBC
OTA (Transmission Asset Marine Licence / Alternative Cable Installation Marine Licence)	
Mobilisation of plant and delivery of materials	To match installation timings as set out below
Timing and sequencing of construction work <i>Stage 1</i>	Pre-Campaign Surveys and Subtidal Seabed Preparation (subject to a separate marine licence) now complete Landfall Installation from -2.5 m LAT water depth to Mean High Water Springs <ul style="list-style-type: none"> • December 2020 – December 2024 (Landfall main construction works complete - burial of cable ducts outstanding) Pre-Lay Grapnel Run <ul style="list-style-type: none"> • Completed October 2021 (All export cable routes) OSP Jacket Foundation Substructure installation <ul style="list-style-type: none"> • Completed December 2021 OSP Topside installation <ul style="list-style-type: none"> • Completed March 2022 Subtidal Export Cable installation <ul style="list-style-type: none"> • Completed November 2022 (all export cables)
Commissioning of OTA ³ (Stage 1)	October 2023
Timing and sequencing of construction work <i>Stage 2</i>	OSP Interconnector Cable installation <ul style="list-style-type: none"> • TBC

³ In accordance with definition in section 5.5

Milestone	Anticipated Programme
	OSP Jacket Foundation Substructure installation <ul style="list-style-type: none"><li data-bbox="762 479 855 510">• TBC OSP Topside installation <ul style="list-style-type: none"><li data-bbox="762 584 855 616">• TBC
Final Commissioning of OTA	TBC

4. Wind Farm Construction Programme

4.1 Introduction

The Seagreen Project construction programme is set out in Appendix C. The following sections 4.2 to 4.5 provide details in relation to the Seagreen Project programme as required by the consent condition.

Construction of the OWFs will occur in two stages. Stage 1 will cover installation of 114 WTGs on suction bucket caisson foundations, and installation of the first OSP. Stage 2 will cover installation of up to 36 further WTGs (foundation type to be determined), and installation of the second OSP. WTGs on suction buckets have been commissioned and are generating following installation of the Stage 1 OSP.

4.2 Commencement of the Wind Farm Construction

The S36 Consents define the commencement of construction of the Wind Farm as:

“the date on which Construction begins on the site of the [Wind Farm] in accordance with this consent.”

Seagreen secured licences for the deployment of construction buoys to demarcate the wind farm site area separately and therefore commencement of construction for the OWF was defined as the installation of the wind turbine foundations in October 2021. This approach was set out and agreed with MS-LOT on 06 October 2020.

4.3 Pre-Campaign Surveying and Subtidal Seabed Preparation

Seabed preparation activities are required in advance of foundation installation activities and inter-array cable installation activities, further information is provided in the OWF CMS (LF000009-CST-OF-MST-0001).

Pre-campaign surveys and seabed preparation activities will take place between April 2021 and May 2023. These activities are covered by separate Marine Licences, as required.

Further seabed preparation activities may be required in advance of Stage 2 construction; however, this is still to be confirmed and may be subject to a separate Marine Licence depending on the extent to which these activities involve licensable marine activities.

4.4 Mobilisation of Plant, Delivery of Materials, use of Onshore Laydown Areas, and Timing and Sequencing of Construction Work

The key components of the OWFs are:

- WTG substructures;
- Inter-array cabling; and
- Wind turbine generators.

Delivery of main components (as set out above) will be directly to the OWF site from the location of fabrication and is by sea transport. Exceptions to this are:

- Jacket suction bucket substructures - will be assembled onshore at the Jacket Assembly Port (JAP) in Nigg, prior to being transported offshore; and

- WTGs - will be delivered to an assembly port (Able Seaton or Nigg) prior to being assembled and transported offshore.

The following section details the proposed mobilisation of plant, delivery of materials, and timings and sequencing of construction work for all elements of the OWFs (see Appendix C).

4.4.1 Stage 1 WTG Jacket Suction Bucket Substructures Manufacture, Supply and Installation

Suction bucket caisson and jacket fabrication commenced in August 2020. The transition piece will be attached to the jacket in the fabrication yard prior to transport to the JAP. The jacket and suction bucket caissons were transported to the JAP between June 2021 and August 2022.

The assembled WTG jacket suction bucket substructures are stored at the fabrication location and transported directly to site via transport vessels as required during the installation process.

WTG jacket suction bucket substructures will be installed during Stage 1 as per the timings set out Table 3.1. Installation methods are set out in the OWF CMS (LF000009-CST-OF-MST-0001) (see Table 1.2)

4.4.2 Stage 2 WTG Foundations Manufacture, Supply and Installation

The foundation type for the Stage 2 WTGs is yet to be determined. Once confirmed, dates for the manufacture, supply and installation of shall be provided in a future update to this CoP.

4.4.3 Inter-array Cables Manufacture, Supply and Installation

Delivery of cables will be phased to match installation requirements and therefore will be delivered to site over the period October 2021 to June 2023 (for Stage 1). The cables are transported from the manufacturing facility to the Port of Blyth from where they are loaded onto the cable-lay vessel for transport to site.

Prior to installation of the inter-array cables, a pre-lay grapnel run (PLGR) will be undertaken to clear the cable route of any remaining obstructions.

PLGR and installation of the inter-array cables is scheduled to take place as per the timings set out in Table 3.1.

WTGs will be connected to the inter-array cables during the Stage 1 and Stage 2 WTG installation windows, as per timings set out in Table 3.1.

4.4.4 WTG Manufacture, Supply and Installation

Stage 1 WTG delivery from the manufacturing facilities to the onshore laydown areas took place from July 2021 until July 2022. Onshore pre-assembly and pre-commissioning of WTGs took place at the onshore laydown areas. The delivery schedule of WTGs to the laydown areas is approximately six months ahead of the installation of the WTGs. Stage 2 WTG delivery will follow a similar programme.

Installation and commissioning of the WTGs is scheduled as per the timings set out in Table 3.1.

4.5 Final Commissioning of the Wind Farm

Annex 3 of the S36 Consents defines the Final Commissioning stage of the Seagreen Alpha and Seagreen Bravo OWFs as:

“the date on which all wind turbine generators forming the [Wind Farm] have supplied electricity on a commercial basis to the National Grid, or such earlier date as the Scottish Ministers deem the [Wind Farm] to be complete.”

WTGs on suction buckets (Stage 1) will have been commissioned and be generating prior to installation of the 36 remaining WTGs and the second OSP in Stage 2. The date of commissioning for the Stage 2 WTGs – and the anticipated date of Final Commissioning of the Seagreen Project - are yet to be determined and will be confirmed in a future update to this CoP.

5. Offshore Transmission Asset Construction Programme

5.1 Introduction

The Seagreen Project construction programme is set out in Appendix C. The following sections 5.2 to 5.5 provide details in relation to the OTA as required by the consent condition.

5.2 Commencement of OTA

The Commencement of the OTA as defined by the Marine Licence is:

“the date on which the first vessel arrives on the Site to begin carrying on the Licensable Marine Activity in connection with the construction of the [OfTW], as described in Part 2 of this licence.”

The first licensable works at landfall took place in December 2020. It is noted that vessels were not involved in these activities, however, for the purposes of this document, the Commencement of the OTA is considered to be December 2020.

5.3 Pre-Campaign Surveys and Subtidal Seabed Preparation

Seabed preparation activities were required in advance of Stage 1 OSP foundation installation activities and export cable installation activities (further information is provided in the OTA CMS (LF000009-CST-OF-MST-002)).

Pre-campaign surveys and seabed preparation activities for the export cable corridors were undertaken between June 2020 and August 2020. Stage 1 OSP seabed preparation activities were completed in 2021.

Further seabed preparation activities may be required in advance of Stage 2 construction; however, this is still to be confirmed and would be subject to a separate Marine Licence depending on the extent to which these activities involve licensable marine activities.

5.4 Mobilisation of Plant, Delivery of Materials, use of Onshore Laydown Areas, and Timing and Sequencing of Construction Works

The key components of the offshore OTA are:

- Three subtidal export cables;
- Two OSPs; and
- OSP interconnector cable.

This CoP also includes export cable installation activities from MHWS at the landfall to a depth of -2.5m LAT under the Alternative Cable Installation Marine Licence, as described below. From -2.5m LAT, works will continue offshore under the OTA Marine Licence (MS-00010078).

The arrival of the plant required to install the offshore OTA components will be timed to coincide with the timing of installation activities, as set out in Table 3.1 above.

All elements of the offshore OTA infrastructure will be delivered directly to site from the location of fabrication as required; no onshore laydown areas will therefore be required for the completion of the offshore OTA installation process.

The following section details the proposed mobilisation of plant, delivery of materials, and timings and sequencing of construction work for all elements of the OTAs (see Appendix C – Construction Programme). Further details of installation methods can be found in the OTA CMS (LF000009-CST-OF-MST-002).

5.4.1 Landfall Installation from -2.5 m LAT Water Depth up to MHWS

Export cable installation activities at landfall will consist of open cut trenching under the Alternative Cable Installation Marine Licence. Further information is included in the OTA CMS (LF000009-CST-OF-MST-002).

Landfall installation will occur as per the timings set out in Table 3.1.

5.4.2 OSP Jacket Foundation Substructure Manufacture, Supply and Installation

Fabrication of OSP jacket foundation substructures commenced in June 2020. They will be delivered to site for immediate installation.

The first OSP jacket foundation substructure was assembled and installed at site as per timings set out in Table 3.1. Assembly and installation dates for the second OSP jacket foundation substructure are yet to be determined and will be confirmed in a future update to this CoP.

The jackets will be lifted from the supply vessel, positioned and lowered to the seabed. The piles will then be lifted and inserted into pile sleeves attached to the foot of each jacket leg and driven into the seabed.

5.4.3 OSP Topside Manufacture, Supply and Installation

Fabrication of OSP topsides commenced in April 2020. They will be delivered to site for immediate installation.

The first OSP topside was installed in Stage 1 in March 2022, and the second OSP topside will be installed in Stage 2 at a date to be confirmed.

5.4.4 OSP Interconnector Cable Manufacture, Supply and Installation

Delivery of the OSP interconnector cable will match installation requirements as set out in Table 3.1. The cable is expected to be transported directly to site from the manufacturing facility.

The cable route will firstly be cleared of any remaining obstructions by undertaking a pre-lay grapnel run (PLGR) followed by a pre-lay survey.

The OSP interconnector cable will then be installed as per timings set out in Table 3.1. The cable will be trenched and buried, with cable protection installed if necessary.

5.4.5 Subtidal Export Cable Manufacture, Supply and Installation

Subtidal export cable delivery was phased to match installation requirements and the cables were delivered directly to the project site from the manufacturing facility.

Prior to subtidal export cable installation, a pre-lay grapnel run was undertaken for each circuit as per the timings set out in Table 3.1

Subtidal export cables were installed in three separate circuits for Stage 1 as per the timings set out in Table 3.1.

5.5 Final Commissioning of the OTA

The OTA Marine Licence (Section 1.1(n)) defines the Final Commissioning of the OTA as:

“the date on which all the [OTA] have been used to supply electricity on a commercial basis to the National Grid, or such earlier date as the Licensing Authority deem the [OTA] to be fully commissioned.”

The proposed date for the Final Commissioning of the OTA (the date that electricity from all WTGs will be exported via the OTA to the grid on a commercial basis) is yet to be determined and will be confirmed in a future update to this CoP.

6. Contingency Planning

Given the nature and scale of the construction project, the potential exists for unforeseen delays, including from periods of unsuitable weather and equipment failure which are out with SWEL's control.

SWEL has undertaken weather analysis and assessed programme risks; the construction programme set out in Appendix C has been designed with contingencies included. The programme includes, on average, a 30% contingency allowance.

7. Compliance with the Environmental Statement (ES) ES Addendum

The relevant conditions of the S36 Consents and the Marine Licences require that the Seagreen Project be constructed in accordance with the ES, ES Addendum and Environmental Report (with reference to the alternative cable installation Marine Licence). These documents did not set out any commitments with regards to the construction programme, however they did set out an indicative construction programme. This indicative programme:

- Set out the anticipated maximum duration of construction of the Seagreen Project and key elements of construction activity;
- Assumed that construction activities will not take the full duration shown against each activity; and
- Assumed that installation of substructures and foundations would not take longer than three years in total, with work undertaken between April and September each year and total construction duration of 18 months within this three-year period.

Table 7.1 presents the indicative 4- year construction programme set out within the ES. The original table included in the ES was based upon achieving consent in 2013, with the activities below taking place between Q4 2015 and Q4 2019. The grey shading shows the indicative timing and duration of activities presented in the ES for the purposes of impact assessment. The green shading represents the timings/durations for the programme presented in this CoP.

Table 7.1 indicates that the key construction works for Stage 1 of the Seagreen Project are broadly aligned with the relative timings and durations set out within the indicative programme as presented in the ES. In most cases, the duration of the key construction activities is less than the total durations suggested in the ES and the total duration of the programme as set out in this CoP is the same as anticipated within the original ES. It should be noted that the final 12 months of the Stage 1 programme is driven by two specific activities: landfall duct burial and the laying of inter-array cable rock protection – the main construction works being completed within three years of the commencement of construction. When confirmed, the Stage 2 construction programme will be included in a future update to this CoP such that a comparison with the indicative 4-year construction programme can be made.

Based on the above, the CoP is considered to be in accordance with the ES, ES Addendum and Application.

Table 7.1: ES Indicative Construction Programme Years 1 to 5 (with current construction years) (grey shading) relative to the timings set out in this CoP (green shading)

Construction Activity	Year 1 (2020)				Year 2 (2021)				Year 3 (2022)				Year 4 (2023)				Year 5 (2024)							
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
Installation of export cables (from MHWS to project areas inc. landfall)													Landfall				works only							
Offshore foundations / substructure installation																								
Array cable installation																	Rock protection works only							
Installation of turbines and offshore platforms																								
Project completion																					TBC →			

8. References

Table 8.1 Seagreen Document References

SWEL Document Number	Title
LF000009-CST-OF-MST-0001	Offshore Wind Farm Construction Method Statement
LF000009-CST-OF-MST-0002	Offshore Transmission Asset Construction Method Statement

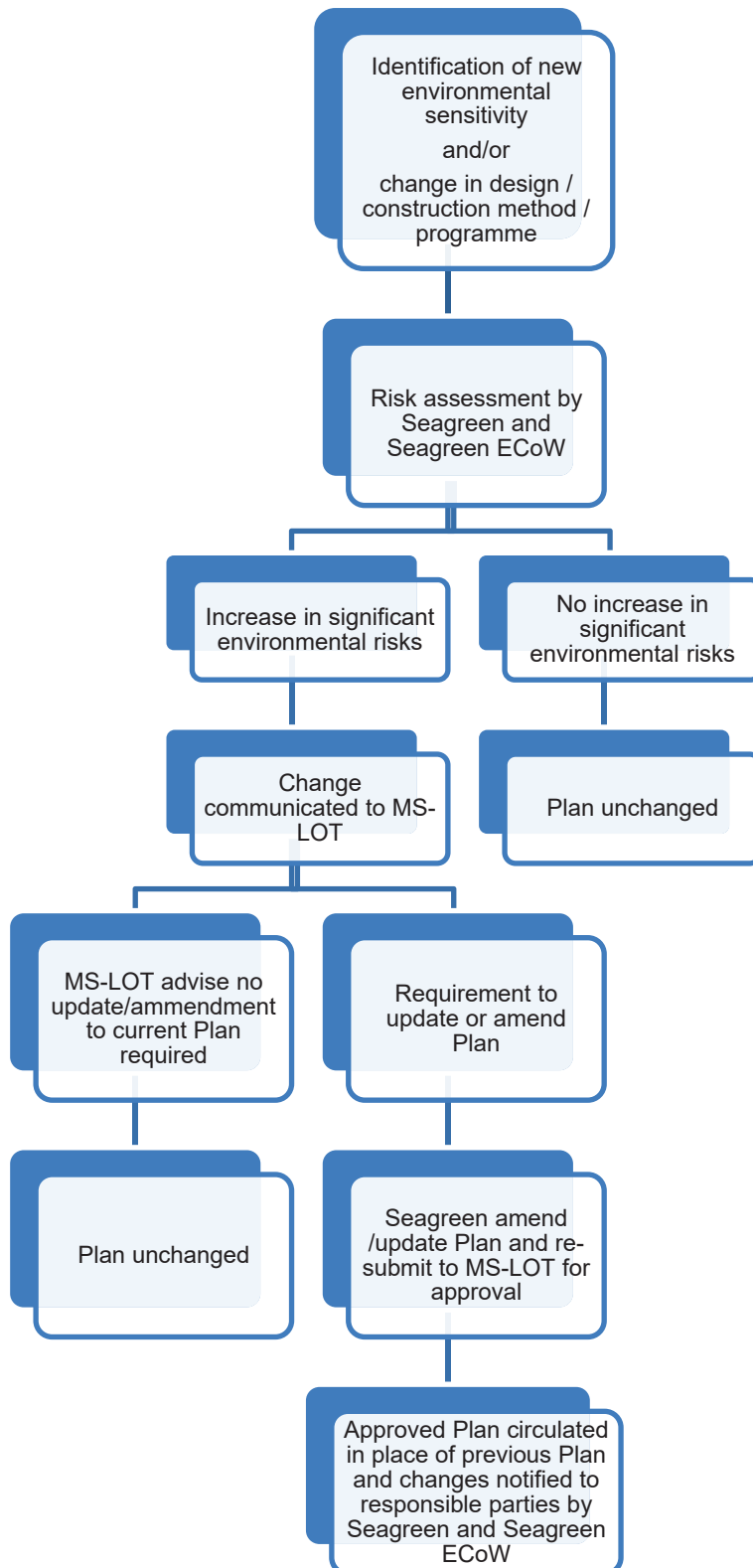
Appendix A – CoP List of Abbreviations and Definitions

Term	Description
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 licences granted by the Scottish Ministers on 28 August 2018 (reference 04676/18/0), 12 December 2019 (reference 04676/19/0), 10 October 2022 (reference MS-00010075) and 20 December 2022 (reference MS-00010136)
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 licences granted by the Scottish Ministers on 28 August 2018 (reference 04677/18/0), 12 December 2019 (reference 04677/19/0), 10 October 2022 (reference MS-00010076) and 20 December 2022 (reference MS-00010137)
CGLMC	Carnoustie Golf Links Management Committee
CMS	Construction Method Statement as required under Alpha and Bravo Section 36 Condition 10 and the Offshore Transmission Asset Marine Licence Condition 3.2.2.4
(the) consents	Collective term used to describe the Section 36 consents and Marine Licences issued to SAWEL, SBWEL and SWEL
Contractor	A contractor as appointed by SWEL
CoP	Construction Programme as required under Alpha and Bravo Section 36 Condition 9 and the Offshore Transmission Asset Marine Licence Condition 3.2.2.3
ECoW	Ecological Clerk of Works as required under Alpha and Bravo Section 36 Condition 29 and the OTA Marine Licence Condition 3.2.2.12.
ES	Environmental Statement
FID	Final Investment Decision
HDPE	High density polyethylene
JAP	Jacket Assembly Port
JNCC	Joint Nature Conservation Committee
Landfall	The point above MHWS where the OTA export cables connect to the OnTW
LAT	Lowest Astronomical Tide
Licensing Authority	Marine Scotland acting on behalf of the Scottish Ministers
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.

Term	Description
Marine Licences	The three marine licences for the Seagreen Project, comprising the Alpha Marine Licence, the Bravo Marine Licence and the OTA Licence
MCA	Maritime and Coastguard Agency
MHWS	Mean High Water Springs
MOD	Ministry of Defence
MS-LOT	Marine Scotland Licensing and Operations Team
NLB	Northern Lighthouse Board
OnTW	Onshore Transmission Works, from landfall consisting of onshore buried export cables and new transmission substation
OTA	Offshore Transmission Asset, comprising the OSPs and the transmission cable required to connect the Wind Farm Assets to the OnTW from the OSPs to the MHWS at the landfall at Carnoustie
OTA 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 the OTA on 10 October 2014 as amended by the revised marine licences granted by the Scottish Ministers on 6 March 2019 (reference 04678/19/0) and 10 October 2022 (reference MS-00010078)
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
OWF	Collective term used to describe the Wind Farm Assets and OTA
PLGR	Pre-lay grapnel run
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
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
SEPA	Scottish Environmental Protection Agency
Site	The area outlined in red in both Figure 1 attached to the S36 consents Annex 1 and the figure contained in Part 4 of the Marine Licence
SNH	Scottish Natural Heritage

Term	Description
Seagreen (SWEL)	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
WTG	Wind turbine generator

Appendix B – The CoP Change Management Procedure



Appendix C – Construction Programme

	2020				2021				2022				2023				2024				2025				2026										
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4							
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
STAGE 1																																			
Fabrication & Assembly:																																			
Suction bucket foundation jackets																																			
WTGs																																			
OSP jacket foundation substructure																																			
OSP topside																																			
Pre-Campaign Surveys and Seabed Preparation*																																			
Offshore Site Establishment																																			
Offshore Wind Farm (OWF):																																			
Suction bucket jacket substructures installation																																			
Inter-Array Cable installation (+rock protection)																																			
WTG installation and commissioning																																			
Offshore Transmission Asset (OTA):																																			
Works at Landfall																																			
Pre-Lay Grapnel Run																																			
OSP jacket foundation substructure installation																																			
OSP topside installation and commissioning																																			
Subtidal Export cable installation																																			
STAGE 2 (all dates TBC)																																			
Fabrication & Assembly:																																			
Foundations (type to be determined)																																			
WTGs																																			
OSP jacket foundation substructure																																			
OSP topsides																																			
Pre-Campaign Surveys and Seabed Preparation*																																			
Offshore Wind Farm (OWF):																																			
Foundation installation																																			
Inter-Array Cable installation																																			
WTG installation and commissioning																																			
Offshore Transmission Asset (OTA):																																			
OSP jacket foundation substructure installation																																			
OSP topside installation and commissioning																																			
OSP interconnector cable installation																																			
Full electricity generation (TBC)																																			

Key:
 Key dates
 Pre-Campaign Surveys
 Fabrication and Assembly of Key Components
 Stage 1 OWF and OTA Construction Activities
 Stage 2 OWF and OTA Construction Activities
 * subject to separate Marine Licences

Dates to be confirmed



Appendix D – MOD Barry Buddon Firing Range Communications Protocol