

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 and Landfall Alternative Cable Installation Marine
Licence Condition 3.1.1
For the approval of Scottish Ministers

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Rev	Date	Reason for Issue	Originator	Checker	ECoW	Approver
08	22/06/2022	Approved for Use				

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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 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; 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 licence granted by the Scottish Ministers on 6 March 2019 (reference 04678/19/0) in respect of the Seagreen Offshore Transmission Assets (OTA) associated with the Seagreen Alpha and Seagreen Bravo Wind Farms (OWFs) (as varied, the OTA Marine Licence); and

(3) the Marine Licence granted by the Scottish Ministers under the Marine (Scotland) Act 2010 on 21 November 2019, amended on 24 February 2020 (ref 07050/20/0), 18 August 2021 (ref MS-00009445), and 28 April 2022 (ref MS-00009749) for the Seagreen Alpha and Seagreen Bravo Offshore Wind Farms (OWFs) and their associated Offshore Transmission Assets (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	Provides 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 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 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. In addition, an additional ML was granted in 2019, and subsequently varied on 24 February 2020, 18 August 2021 and 28 April 2022, 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 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.

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 36 WTGs on piled jacket foundations with 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.

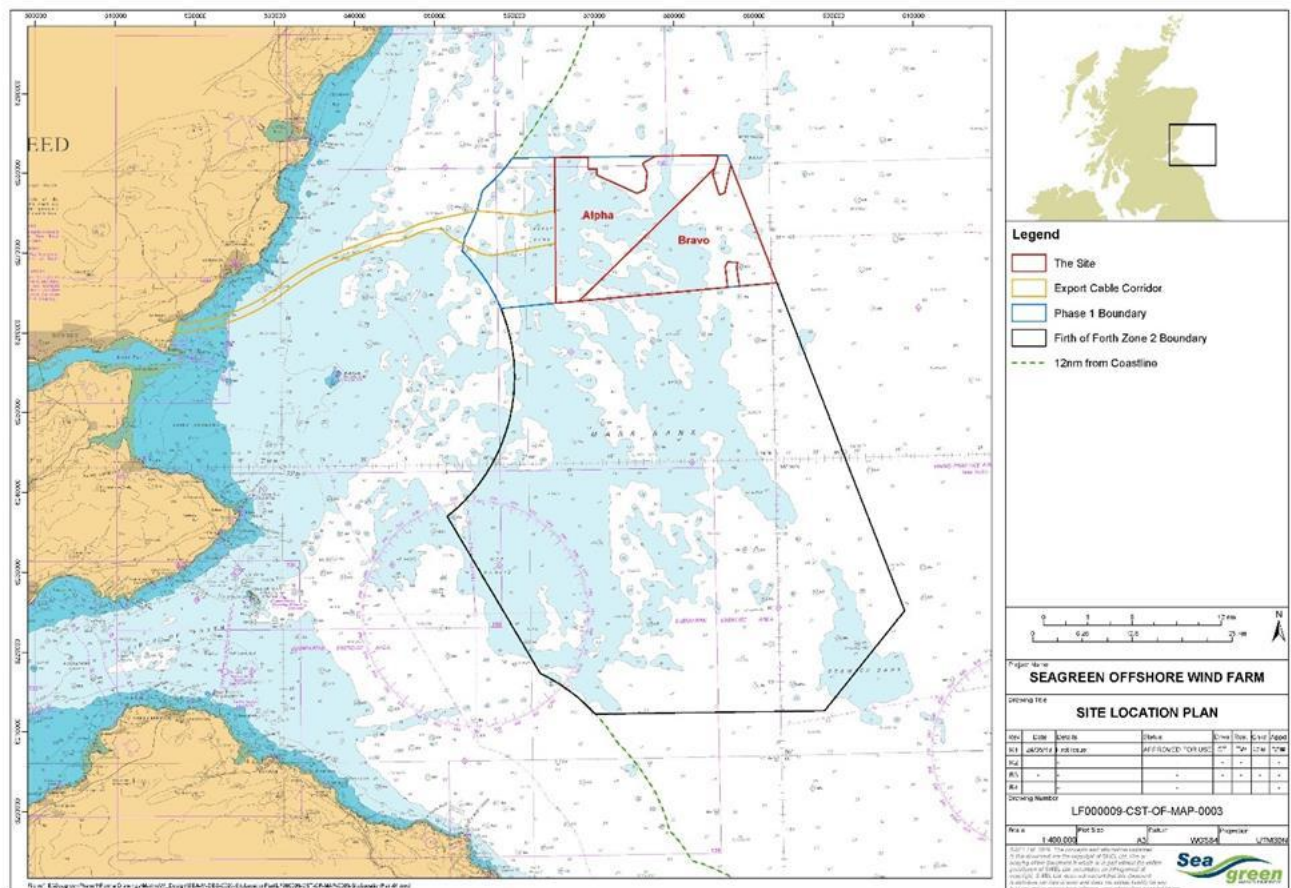


Figure 1.1 – Seagreen Project Location

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 07 of the CoP was approved by Scottish Ministers on 28 April 2022. 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 07. Additional consultation required in relation to Rev 08 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 07 of the CoP was approved by Scottish Ministers on 28 April 2022. 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 07. Additional consultation required in relation to Rev 08 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.	Section 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, 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 04678/19/0.	Section 3

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 6 details contingency planning for the OWFs and OTA. The full construction programme is provided in Appendix C – Construction Programme.

Construction commenced in 2020, with completion in 2023. 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 36 WTGs on piled jacket foundations with 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), OSP interconnection cable, and subtidal export cables; and Stage 2 covering installation of the second OSP (foundations and topsides) Stage 2 OTA works will coincide with Stage 2 OWF construction works.

There will be a gap in construction between February 2023 (end of WTG installation in Stage 1) and April 2023 (start of piling operations in Stage 2). During this gap, some WTGs on suction buckets will be commissioned and begin generating in Stage 1, following installation of the first OSP.

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 – Construction Programme).

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 – December 2022 <p>Site Establishment (subject to separate marine licence exemption) now complete</p> <p>Pre-Lay Grapple Run</p> <ul style="list-style-type: none"> November 2021 – February 2023 <p>WTG Jacket Suction Bucket Substructures installation:</p> <ul style="list-style-type: none"> October 2021 – November 2022

Milestone	Anticipated Programme
	Inter-array Cables installation: <ul style="list-style-type: none"> November 2021 – February 2023 WTG installation <ul style="list-style-type: none"> November 2021 – March 2023
Timing and sequencing of construction work <i>Stage 2</i>	WTG Piled Foundation Substructures: <ul style="list-style-type: none"> Pile installation April 2023 – July 2023 Jacket installation on to piles: July 2023 – September 2023 Inter-array Cables installation (including Pre-Lay Grapnel Run): <ul style="list-style-type: none"> August 2023 – October 2023 WTG installation <ul style="list-style-type: none"> September 2023 – November 2023
Final Commissioning of Wind Farm	November 2023
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 – August 2022 (Landfall main construction works complete - pull-in of remaining export cables 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

Milestone	Anticipated Programme
	Subtidal Export Cable installation <ul style="list-style-type: none"> February 2022 – October 2022 (All Export Cables)
Timing and sequencing of construction work <i>Stage 2</i>	OSP Interconnector Cable installation <ul style="list-style-type: none"> May 2023 OSP Jacket Foundation Substructure installation <ul style="list-style-type: none"> May 2023 – August 2023 OSP Topside installation <ul style="list-style-type: none"> May 2023 – August 2023
Final Commissioning of OTA	November 2023

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 up to 114 WTGs on suction bucket caisson foundations, and installation of the first OSP. Stage 2 will cover installation of up to 36 WTGs with piled foundations, and installation of the second OSP. There is potential that WTGs on suction buckets may be commissioned and begin generating in Stage 1 after installation of the 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 proposes to licence the deployment of construction buoys to demarcate the wind farm site area separately and therefore commencement of construction for the OWF is 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. The Seagreen Project has reached financial close, and orders have been placed and fabrication has commenced for components of the Seagreen Project required early in the construction process, or those with long lead in times, including the WTGs.

The delivery and stockpiling of materials and onshore fabrication activities to facilitate construction of the Seagreen Project has commenced, as shown in the programme in Appendix C and discussed below in section 4.4.

4.3 Pre-Campaign Surveying and Subtidal Seabed Preparation

Seabed preparation activities will be 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 December 2022. 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 jacket suction bucket substructures;
- WTG piled foundation 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 likely to be 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 the assembly port (Able Seaton) 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 – Construction Programme).

4.4.1 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 will be transported to the JAP between June 2021 and August 2022.

The assembled WTG jacket suction bucket substructures are expected to be 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 in Table 3.1. Installation methods are set out in the OWF CMS (LF000009-CST-OF-MST-0001) (see Table 1.2)

4.4.2 WTG Piled Foundations Substructures Manufacture, Supply and Installation

Piles will be transported to the wind farm site directly from the fabrication location and as required during the installation process.

Piled jacket fabrication will commence in April 2022. The jacket sub-structures are expected to be stored at the fabrication location and transported directly to site as required during the installation process.

Pile installation is planned to take place in a single phase in Stage 2. Jacket sub-structures will then be installed on to pre-installed piles. These activities will occur as per the timings set out in Table 3.1. Further information on installation methods is set out in the OWF CMS (LF000009-CST-OF-MST-0001) (see Table 1.2).

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 February 2023 (for Stage 1). The cables are expected to be transported directly to site from the manufacturing facility.

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

WTG delivery from the manufacturing facilities to the onshore laydown areas are scheduled from July 2021 until July 2022. Onshore pre-assembly and pre-commissioning of WTGs will take 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.

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.”

It is anticipated that WTGs on suction buckets may be commissioned and begin generating at the end of Stage 1, prior to installation of the 36 WTGs with piled foundations and the second OSP in Stage 2. Stage 2 will be commissioned over a three-month period between September 2023 and November 2023.

Therefore, the anticipated date of Final Commissioning of the Seagreen Project is scheduled to be November 2023.

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 will be undertaken in December 2020. It is noted that vessels will not be involved in these activities, however, for the purposes of this document, the Commencement of the OTA is considered to be December 2020.

The Seagreen Project has reached financial close, and orders have been placed for components of the OTA required early in the construction process, or those with long lead in times, including, for example, the export cable and steel for OSP fabrication.

5.3 Pre-Campaign Surveys and Subtidal Seabed Preparation

Seabed preparation activities will be required in advance of 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 (04678/19/0).

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. The second OSP jacket foundation substructure will be installed over a four-month period between May 2023 and August 2023, coinciding with pile installation and jacket installation for the WTG jacket substructures (see Table 3.1).

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 between May 2023 and August 2023 (see Table 3.1).

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 by May 2023.

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 will be phased to match installation requirements and will be delivered directly to the project site from the manufacturing facility.

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

Subtidal export cables will be 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 is November 2023 as this is the date that electricity from all WTGs will be exported via the OTA to the grid on a commercial basis.

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 the Seagreen Project generally lie within the relative timings and durations set out within the indicative programme as presented in the ES. In all 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 less than anticipated within the original ES.

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

Construction Activity	Year 1 (2019)				Year 2 (2020)				Year 3 (2021)				Year 4 (2022)				Year 5 (2023)			
	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)																				
Offshore foundations / substructure installation																				
Array cable installation																				
Installation of turbines and offshore platforms																				
Project completion																				

The timings for installation of the export cables and inter array cables presented in this CoP lie beyond what was presented in the ES, however, the duration of activity is shorter in comparison to the ES, which is due

to the phased installation approach. Therefore, the durations presented in this CoP in relation to the export cable installation are in accordance with the ES, ES Addendum and Application.

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

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

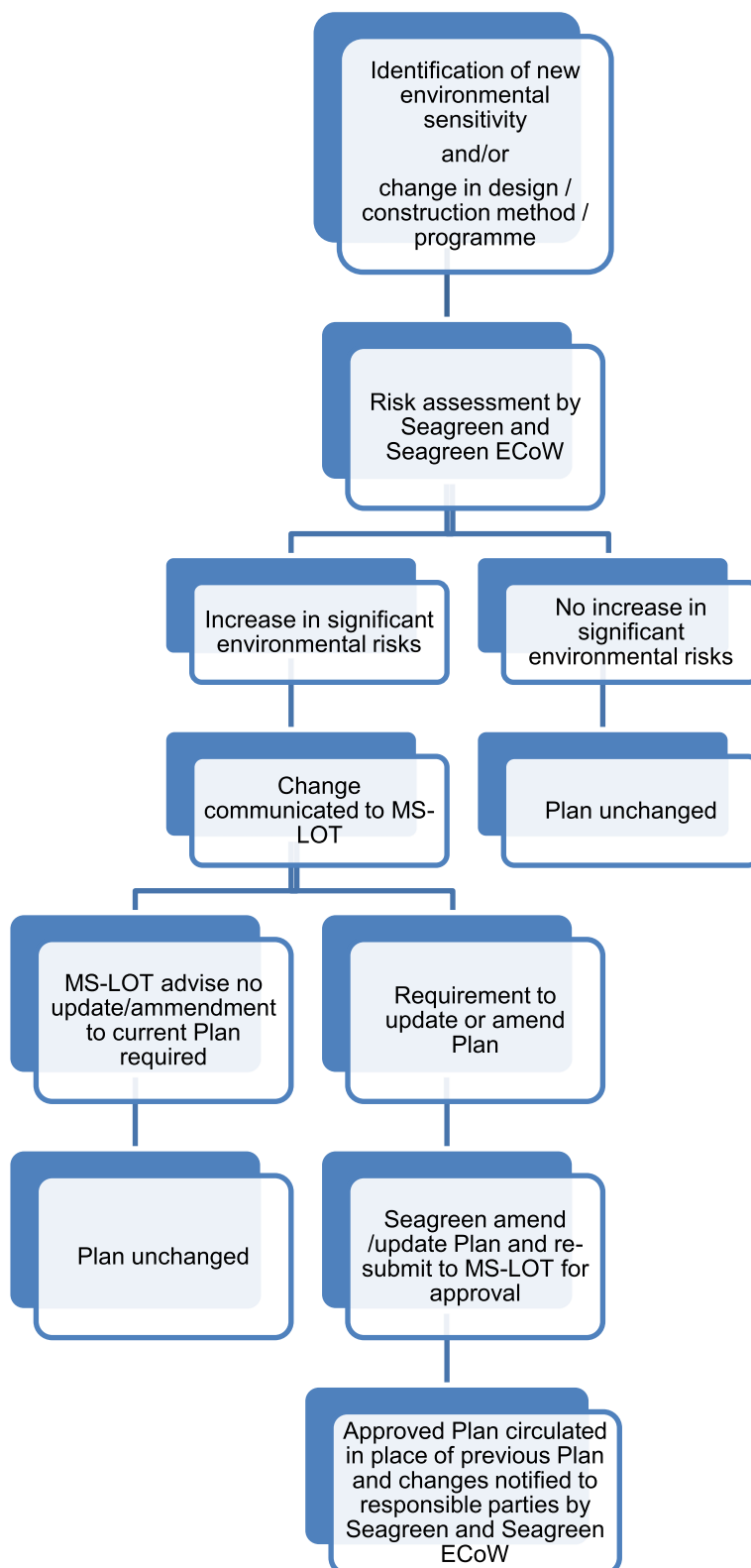
Appendix A – CoP List of Abbreviations and Definitions

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 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)
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 Ministers on 12 December 2019 (reference 04677/19/0)
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 licence granted by the Scottish Ministers on 6 March 2019 (reference 04678/19/0)
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

	Stage 1												Stage 2														
	2019				2020				2021				2022				2023										
	Oct	Nov	Dec	Q4	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Fabrication & Assembly:																											
Suction bucket foundation jackets																											
WTG piled foundation jackets																											
WTGs																											
OSP jacket foundation substructures																											
OSP topsides																											
Pre-Campaign Surveys and Subtidal Seabed Preparation (subject to separate ML)																											
Offshore Site Establishment																											
Offshore Wind Farm (OWF):																											
Suction bucket jacket substructures installation																											
Inter-Array Cable installation																											
Pile installation																											
Piled foundation jacket substructures installation																											
WTG installation and commissioning																											
Offshore Transmission Asset (OTA):																											
Works at Landfall																											
Pre-Lay Grapple Run																											
OSP jacket foundation substructures installation																											
OSP topside installation and commissioning																											
OSP interconnector cable installation																											
Subtidal Export cable installation																											
Full electricity generation																											

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

Appendix D – MOD Barry Buddon Firing Range Communications Protocol