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Construction Programme

KINCARDINE OFFSHORE WINDFARM PROJECT

Prepared	Checked	Reviewed	Approved
09/03/2018	09/03/2018	09/03/2018	09/03/2018
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1. Introduction

1.1. Purpose of the Document

This document has been authored to satisfy condition 9 of the Section 36 Consent Licence issued to Kincardine Offshore Windfarm Ltd (KOWL) for the Kincardine Offshore Windfarm (Project). This document provides the current (at the time of writing) Construction Programme (CoP) proposed for the Project, (see Section 1.5 for the wording of the condition), which requires the submission of a Construction Programme no later than six months prior to the Commencement of the Development.

1.2. Scope of the Document

This document confirms the timing and programme of construction activities for Tranche 1 (see Section 1.3 for details) of the Project. This document will be updated prior to the commencement of further Tranches as necessary. The CoP includes details of both on-shore and offshore works to provide full details of the Project, however, it should be noted that the requirements of the Section 36 Consents are pertinent to the offshore works only.

1.3. Project Overview

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

The Project is located south-east of Aberdeen approximately 8nm (15km) from the Scottish coastline and provides suitable water depth for a floating offshore wind demonstrator development (approximately 60-80m) (Figure 1-1).

The project is split into the following areas:

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

This Construction Programme (CoP) encompasses both the onshore and offshore areas.

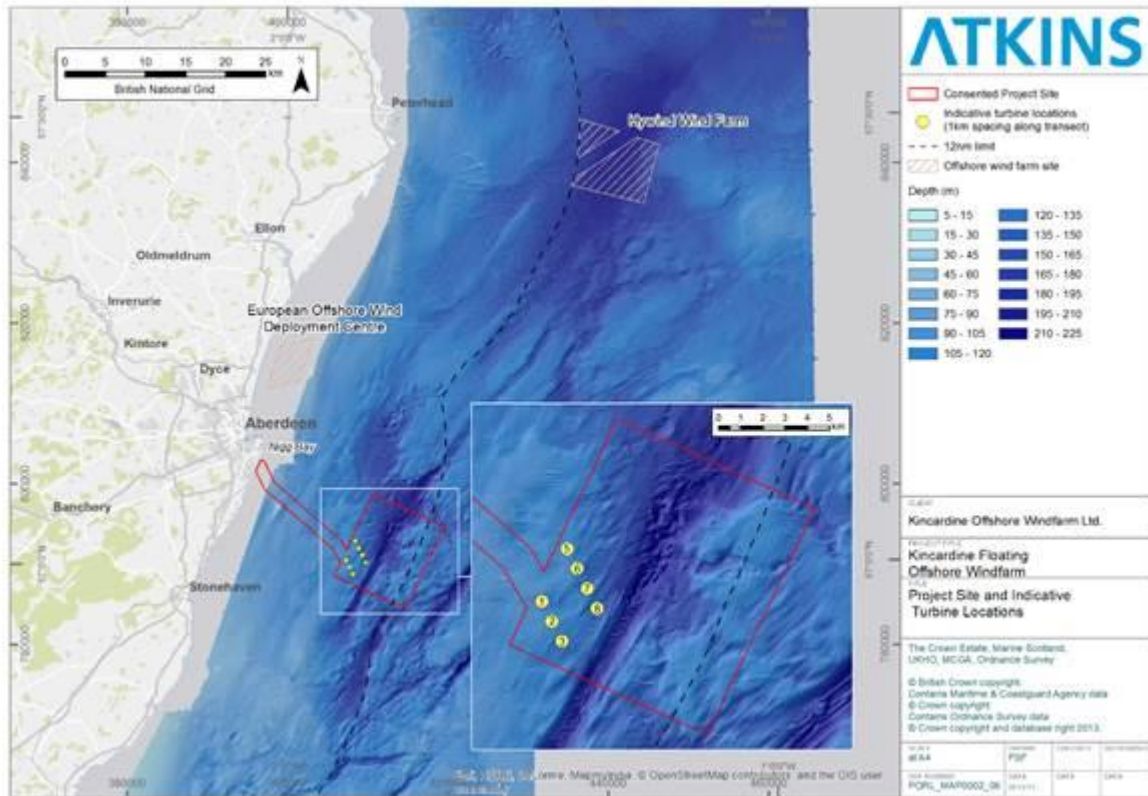


Figure 1-1 Project site and indicative turbine locations

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

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

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

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Table 1-1 Summary of document timelines

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

Project Components

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

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

- WTGs: 1 x 2MW and 6 x 8.4MW
- Substructures: combination of semi-submersible and semi-spar (number of each still to be decided)
- 33kv inter-array and two export cables

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

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

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Construction Programme Overview

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

Table 1-2 Indicative construction programme

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

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

1.4. Approach to Amending and Updating this Construction Programme

This CoP refers to Tranche 1 only. If there is any material change to the CoP, updates will be undertaken where necessary and the CoP re-issued.

This CoP will also be updated and re-issued prior to the commencement of future Tranches to provide a detailed Construction Programme for those tranches.

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1.5. Consent Condition

The following consent condition is taken from the Section 36 Licence which forms the requirement for this CoP.

Licence	Condition Number	Name	Details
S36	9	Construction Programme	<p>The Company must, no later than 6 months prior to the commencement of the Development or at such a time as agreed with the Scottish Ministers, submit a Construction Programme (“CoP”), in writing to the Scottish Ministers for their written approval. Such approval may only be granted following consultation by the Scottish Ministers with the SNH, SFF, Vattenfall, Esk DSFB, CAA, MoD, MCA, NLB, SEPA, ACC, AC, and any other such advisors or organisations as may be required at the discretion of the Scottish Ministers.</p> <p>The CoP shall set out, but not be limited to:</p> <ul style="list-style-type: none"> a) The proposed date for Commencement of Development; 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 Development infrastructure; d) Contingency planning for poor weather or other unforeseen delays; and e) The scheduled date for Final Commissioning of the Development. <p>The Company must, prior to the Commencement of the Development, provide a copy of the final CoP, and any subsequent revisions as agreed by the Scottish Ministers, to the DGC.</p>

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2. Detailed Construction Programme

2.1. Tranche 1 Construction Programme

This detailed CoP is for Tranche 1 only at this stage, and consists of the following works:

- Onshore works including HDD;
- 2MW WTG and substructure transportation from Portugal;
- 2MW WTG and substructure outfitting and assembly at Nigg;
- Export Cable 1 Installation;
- Mooring Prelay;
- 2MW WTG and substructure tow and Hookup on site
- Commissioning of the 2MW turbine.

As noted in Section 1.3, Tranche 1 may also include Export Cable 2, if necessary this section be will be updated in due course if required.

The first WTG, a 2MW demonstrator prototype fitted on a semi-submersible steel substructure will be installed during Tranche 1 at Location 1 (see Figure1-1). The turbine and substructure will be refurbished in Lisnave, Portugal, before being transported for outfitting and assembly at Nigg. Once complete, the turbine will be towed to site during the summer of 2018. The first export cable and associated mooring system for the 2MW turbine will be installed prior to this, in May/June of 2018.

An overview of the installation activities with estimated timings is given below. There will be no use of onshore lay-down areas, other than for the mooring system components on a quayside immediately prior to installation. Contingency (waiting) for poor weather or unforeseen delays will be assessed as part of the operational procedures. No construction activities will commence unless there is a safe weather window of sufficient duration to complete the planned activities and make all equipment safe.

As noted in Section 1.2 above, this CoP includes details of the construction programme for both the onshore and offshore construction works. However, in the Section 36 Consent condition it is required that the Commencement of Work date is provided in this CoP. The Commencement of Work date in this context is the date at which offshore works commence within the consented boundary shown in Figure 1-1. Therefore, the proposed **Date of the Commencement of works for the offshore elements is scheduled for 4th May 2018** (see Table 2-1).

Similarly, there is also a requirement to provide the scheduled Date of Final Commissioning. As this CoP is for Tranche 1 only, the date of scheduled **Final Commissioning for the 2MW turbine is 25th July 2018**. The Final Commissioning date for further tranches will be provided in future updates to this CoP.



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Table 2-1 Detailed construction programme for Tranche 1

Activity	Start Date	Finish Date	2018											
			F	M	A	M	J	J	A	S	O	N	D	
Onshore Works	08/02/2018	11/07/2018	█	█	█	█	█	█						
Civil Site Works	08/02/2018	24/05/2018	█	█	█	█	█							
Cable Route Ploughing	04/04/2018	15/05/2018	█	█	█	█	█							
Electrical Site Works	16/05/2018	11/07/2018	█	█	█	█	█	█						
Onshore HDD	27/03/2018	08/06/2018	█	█	█	█	█							
2MW WTG and substructure transportation to Scotland	06/04/2018	27/04/2018			█									
Substructure Transportation	06/04/2018	18/04/2018			█									
2MW WTG transportation	17/04/2018	27/04/2018			█									
2MW WTG and substructure outfitting and assembly at Nigg	30/04/2018	25/05/2018		█	█	█								
Mooring Prelay	04/05/2018	10/05/2018				█								
Transit to site	05/05/2018	06/05/2018				█								
Mooring Deployment	06/05/2018	08/05/2018				█								
Export Cable 1 Installation	28/05/2018	01/07/2018				█	█							
Boulder Clearance	28/05/2018	08/06/2018				█	█							
HDD Pull-In and Surface cable lay	20/06/2018	22/06/2018				█								
Cable Trenching	23/06/2018	01/07/2018				█	█							
2MW WTG and substructure tow and Hookup	04/06/2018	08/06/2018				█	█							
Platform Tow	04/06/2018	07/06/2018				█	█							
Platform Hookup to Moorings	07/06/2018	08/06/2018				█								
2MW Commissioning	25/07/2018	25/07/2018						█						
Hook-up to Export Cable	11/07/2018	11/07/2018						█						
Commissioning	12/07/2018	25/07/2018						█						
Date of Final Commissioning	25/07/2018	25/07/2018						█						