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CONSTRUCTION PROGRAMME
KINCARDINE OFFSHORE WINDFARM PROJECT

Prepared	Checked	Reviewed	Approved	ECoW Approved
May 16, 2019	May 16, 2019	May 17, 2019	May 17, 2019	May 17, 2019
Organisation: KOWL	Organisation: KOWL	Organisation: KOWL	Organisation: KOWL	Organisation: KOWL
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Revision History

Date	Rev. Status	Purpose of Issue*	Remarks	Initials
07/03/2018	A1	Issued for Review	Updated for Comments received from internal review and Updated Programme	AC
09/03/2018	B1	Issued for External Review		AC
23/04/2018	C1	For Information		AC
25/04/2019	C2	Issued for Review		AF

*Purpose of Issue: for information, for review, for approval

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ACRONYMS ABBREVIATIONS and DEFFINITIONS

CoP	Construction Programme
HDD	Horizontal Direction Drilling
KOWL	Kincardine Offshore Wind Limited
Kv	Kilovolt
MS-LOT	Marine Scotland Licence and Operations Team
MW	Mega Watt
MHWS	Mean High Water Spring
Nm	Nautical Mile
SNH	Scottish Natural Heritage
WTG	Wind Turbine Generators

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1.0 Introduction

1.1 Purpose of the Document

This document has been created to satisfy Condition 9 of the Section 36 Consent issued by Marine Scotland Licensing Operations Team (MS-LOT) to Kincardine Offshore Wind Ltd (KOWL) for the Kincardine Offshore Windfarm (the Project).

Condition 9 requires the production of a Construction Programme (CoP). The overall aim of the CoP is to provide the current construction programme for the development.

1.2 Scope of the Document

This document confirms the timing and programme of construction activities for Tranche 2 of the Project. 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 Approach to Amending and Updating this CoP

The nature of the construction process proposed for the Project means that updates to this document may be required as the project progresses.

Where the need for an update or amendment to this document is identified following approval from Marine Scotland Licensing Operations Team (MS-LOT), either through a consultation response, or due to practicalities arising as the project progresses, KOWL will communicate the suggested update/amendment to MS-LOT prior to editing the approved document.

1.4 Compliance

Compliance with the consent conditions are documented in the commitments register and where applicable throughout the CoP.

2.0 Project Overview


2.1 Summary

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, in a location that provides suitable water depth for a floating offshore wind demonstrator development (approximately 60-80m).

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 MHWS including the underground cables connecting to the onshore substation at Redmoss.

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2.2 Turbine Locations

The project originally consisted of 8 locations. This has been reduced to 6 locations and hence the designations have now changed as follows;

Table 2-1 Turbine Designations

Location designation Pre-2019	New location designation post 2019
KIN-01	KIN-01
KIN-02	KIN-02
KIN-03	KIN-03
KIN-04	n/a
KIN-05	n/a
KIN-06	KIN-04
KIN-07	KIN-05
KIN-08	KIN-06

The position of the locations 'KIN-01' through to 'KIN-06' together with the key project boundaries are detailed in APPENDIX A - Field layout in document KOWL-DR-0001-015.

This drawing is a controlled document and shall form the approved source for all coordinates in both UTM and Latitude/Longitude positions.

It must be stressed that the locations are the centre of the turbine and not the centre of the substructure.

2.3 Principal Components

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, size and power rating of the turbines, together with the substructure type.

The Project will now consist of the following offshore components:


- 1 x 2MW WTG (currently in operation)
- 5 x 9.5MW WTGs (to be installed 2020)
- 5 x 33kv inter-array cables (to be installed 2020)
- 2 x export cables (one currently installed)
- All turbine substructures are the semi-submersible Windfloat™ design.

2.4 Installed Components

The onshore sub-station has been completed.

The first deployment was a 2MW WTG and associated substructure, anchors and mooring lines in 2018 on location 'KIN-01'. One export cable was also installed, through a Horizontal Directional Drilling (HDD) hole from landfall to circa 20m water depth and then along the export cable corridor to 'KIN-01' location.

A condition in the existing marine licence requires Third Party Certification or Verification (or suitable alternative as agreed, in writing, with the Licensing Authority) for all WTGs, mooring systems and WTG substructures prior to the commencement of the works.

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2.5 Project Design Life

The design life for the windfarm is 25 years.

3.0 Consent Conditions

Table 3-1 Licence conditions relevant to CoP

Licence	Condition Number	Name	Wording in Licence	Where addressed in this document
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>	<p>Section 4 and Table 4-1</p> <p>This CoP will be provided to Scottish Ministers for approval prior to the commencement of Tranche 2.</p>

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4.0 Detailed Construction Programme

Tranche 1 has been completed and details of the installed works have been outlined in section 2.4.

This detailed Construction Programme is for Tranche 2 and consists of the following works:

- WTG connection to substructure
- Mooring pre-lay
- Towing and hook-up
- Offshore cable installation
- Hot commissioning
- Project handover

An overview of the installation activities with estimated timings is given below. There will be very limited use of onshore lay-down areas, other than for the mooring system components and tower/WTG on a quayside immediately prior to installation. A contingency period of 30% for bad weather or unforeseen delays is to be expected with the timings provided below. 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.

Please note that whilst Developers will endeavour to complete works to the schedule provided below there may be occasions when due to unforeseen circumstances these timings change.



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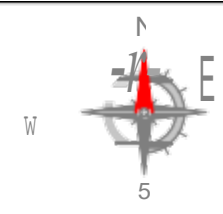
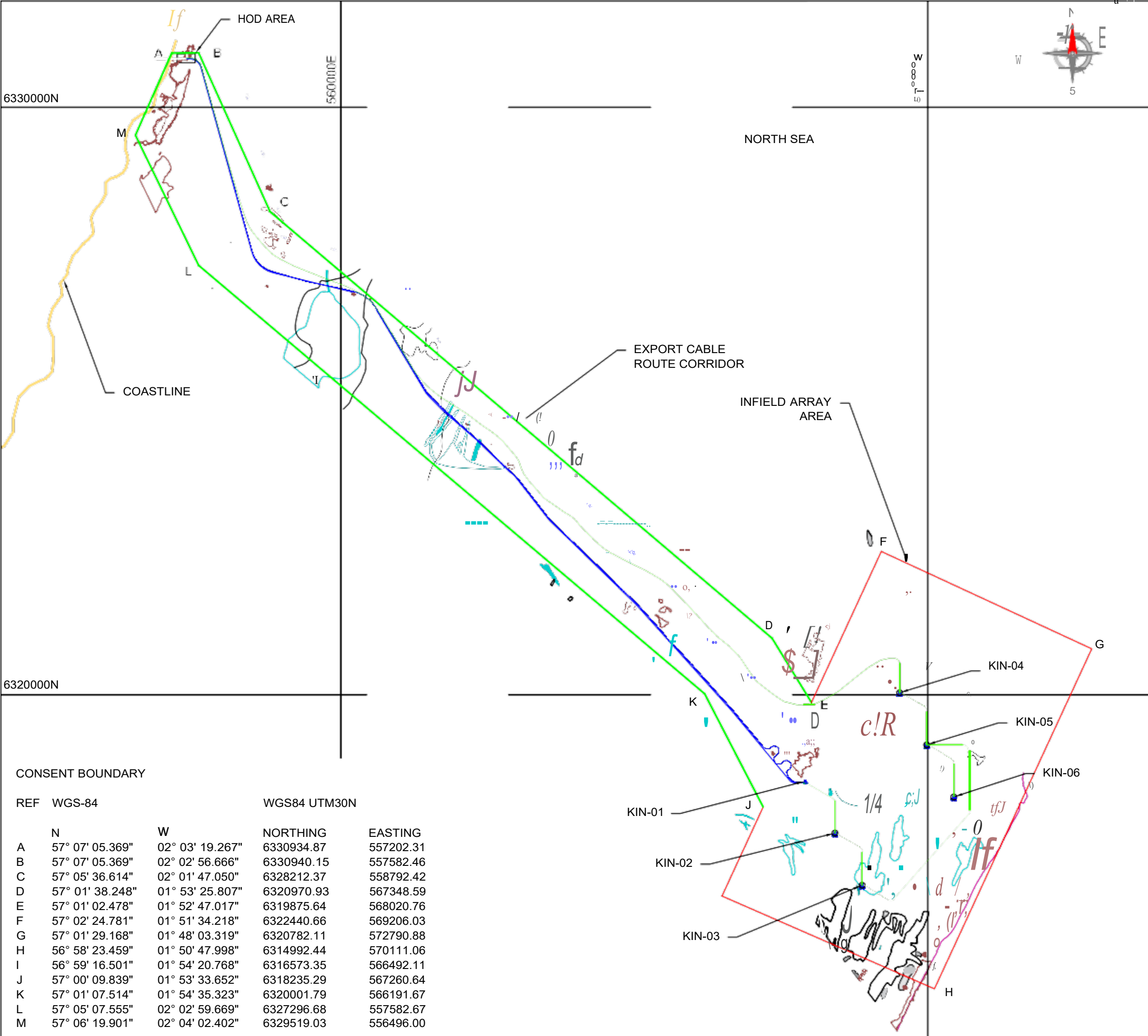
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Table 4-1 Detailed construction programme for Tranche 2

Activity	Start Date	Finish Date	2020													
			J	F	M	A	M	J	J	A	S	O	N	D		
WTG connection to substructure	17/04/20	21/08/20				■	■		■	■						
Unit 1	17/04/20	30/04/20				■										
Unit 2	01/05/20	14/05/20					■									
Unit 3	10/07/20	24/07/20								■						
Unit 4	24/07/20	07/08/20								■	■					
Unit 5	07/08/20	21/08/20									■					
Mooring Pre-lay	19/05/20	07/07/20						■	■	■						
KIN-04	19/05/20	26/05/20						■								
KIN-05	27/05/20	03/06/20						■	■							
KIN-06 (2MW)	04/06/20	11/06/20							■	■						
KIN-01	12/06/20	19/06/20							■	■						
KIN-02	22/06/20	29/06/20							■	■						
KIN-03	30/06/20	07/07/20							■	■						
Towing and Hook-up	27/05/20	31/08/20						■	■	■	■					
Unit 01 to KIN-04	27/05/20	03/06/20						■	■							

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APPENDIX A - Field layout



LEGEND			
PLANNED TURBINE LOCATIONS			
REF	WGS-84		
	N	W	
KIN-01*	57° 00' 19.095"	01° 52' 52.181"	
KIN-02	56° 59' 50.109"	01° 52' 25.710"	
KIN-03	56° 59' 21.214"	01° 51' 59.269"	
KIN-04	57° 01' 06.828"	01° 51' 18.166"	
KIN-05	57° 00' 37.897"	01° 50' 51.666"	
KIN-06*	57° 00' 08.931"	01° 50' 25.179"	
* CURRENT 2MW TURBINE AT KIN-01 LOCATION WILL BE REMOVED AND REDEPLOYED AT KIN-06 LOCATION			
REF	WGS84 UTM30N		
	NORTHINGS	EASTINGS	
KIN-01	6318532.87	567955.65	
KIN-02	6317645.51	568416.70	
KIN-03	6316758.16	568878.75	
KIN-04	6320034.94	569517.86	
KIN-05	6319147.58	569978.91	
KIN-06	6318260.23	570440.96	
-	EXISTING EXPORT CABLE ROUTE		
-	PROPOSED 2ND EXPORT CABLE ROUTE		

CONSENT BOUNDARY				
REF	WGS-84		WGS84 UTM30N	
	N	W	NORTHING	EASTING
A	57° 07' 05.369"	02° 03' 19.267"	6330934.87	557202.31
B	57° 07' 05.369"	02° 02' 56.666"	6330940.15	557582.46
C	57° 05' 36.614"	02° 01' 47.050"	6328212.37	558792.42
D	57° 01' 38.248"	01° 53' 25.807"	6320970.93	567348.59
E	57° 01' 02.478"	01° 52' 47.017"	6319875.64	568020.76
F	57° 02' 24.781"	01° 51' 34.218"	6322440.66	569206.03
G	57° 01' 29.168"	01° 48' 03.319"	6320782.11	572790.88
H	56° 58' 23.459"	01° 50' 47.998"	6314992.44	570111.06
I	56° 59' 16.501"	01° 54' 20.768"	6316573.35	566492.11
J	57° 00' 09.839"	01° 53' 33.652"	6318235.29	567260.64
K	57° 01' 07.514"	01° 54' 35.323"	6320001.79	566191.67
L	57° 05' 07.555"	02° 02' 59.669"	6327296.68	557582.67
M	57° 06' 19.901"	02° 04' 02.402"	6329519.03	556496.00

REV	DESCRIPTION	ORN	CKD	APP	DATE
A4	ISSUED FOR COMMENT	JD	JG	AW	03/04/2019
A3	ISSUED FOR COMMENT	JD	JG	AW	01/04/2019
A2	ISSUED FOR COMMENT	JD	JG	AW	29/01/2019
A1	ISSUED FOR COMMENT	GB	JG	AW	28/01/2019



CLIENT
KINCARDINE OFFSHORE WINDFARM LIMITED

PROJECT
KINCARDINE OFFSHORE WINDFARM PROJECT

TITLE
FIELD LAYOUT CONSENT AND WTG POSITION CHECK

CLIENT DRAWING NUMBER	SHEET 1 OF 1	SHEET SIZE A3
SCALE U.N.O. 1:60	W3G DRAWING NUMBER KOWL-DR-0001-015	REV A4

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