## **Beatrice Offshore Windfarm Limited Construction Operations**



Issue Date: 03 December 2018

LF000005-WNO-013: Weekly Notice of Operations - Rev 82 Notice of Operations at Beatrice Offshore Wind Farm

Work Planned for the Period 03.12.2018 to 09.12.2018

Construction of the Beatrice Offshore Wind Farm commenced on the 1<sup>st</sup> of April 2017. This notice will be updated weekly giving information on the progress and resources involved in the offshore project. The intention is to give an overview of activities and vessels involved. Should anyone have questions regarding the operations, we kindly ask you to put them forward well in advance.

Beatrice Offshore Windfarm Limited (BOWL) is developing the Beatrice Offshore Wind Farm in the 'Outer' Moray Firth on the north-western point of the Smith Bank, approximately 7 nm off the Caithness coastline. The development site will cover an approximate area of up to  $130 \, \text{km}^2$  and will consist of 84 7MW offshore wind turbines (with a total capacity of  $588 \, \text{MW}$ ) and two HVAC Offshore Transformer Modules (OTM). Water depths in the area range from approximately 38m below LAT in the south of the field to 60m below LAT in the north. The generated power will be transmitted to the grid via two subsea export / transmission cables with a landfall near Portgordon to the south of the field and grid connection at Blackhillock. The transmission cables cover a route of approximately 38m m from the wind farm boundary back to the landfall. The Beatrice Offshore Wind Farm development area is highlighted in red below, the OFTW cable corridor in black.

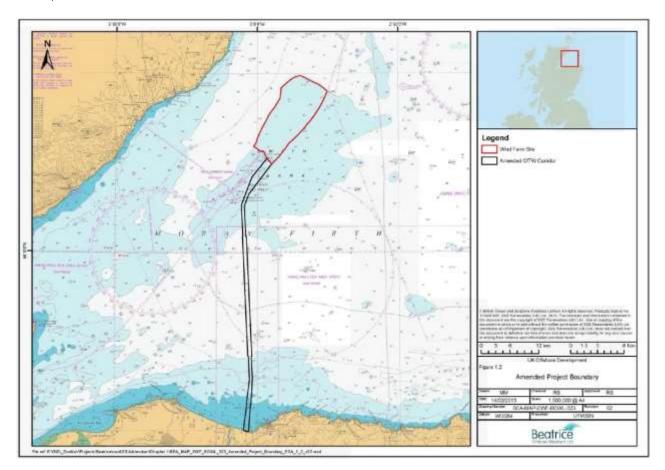


Fig. 1 Beatrice Offshore Wind Farm Location

#### 1. Contact Details for Marine Coordination

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The following contact can provide more information if required. Please note that specific queries can also be addressed to the relevant vessel or shore based representative.

Telephone Number	+44 (0) 3302 020329	
Emergency Contact (24/7)	+44 (0) 7342 028207	
Email for Marine Coordinator	mc.bowl@sse.com	
Address	Unit 1 Harbour Office Wick Caithness KW1 5HA	

#### 2. Ongoing Operations

#### 2.1 Offshore Transmission Modules (OTMs) Commissioning Works

Siemens Transmission and Distribution Ltd (STDL) are carrying out limited commissioning works on OTM1 and OTM2 throughout the winter 2018/19. BOWL electrical commission teams are continuing energisation and switching operations on both OTMs.

The following assets are now under the control of the SSE operational safety rules: EC1, EC2 & EC3. OTM1 &OTM2 and all Strings on site.



Fig. 2 OTM 1

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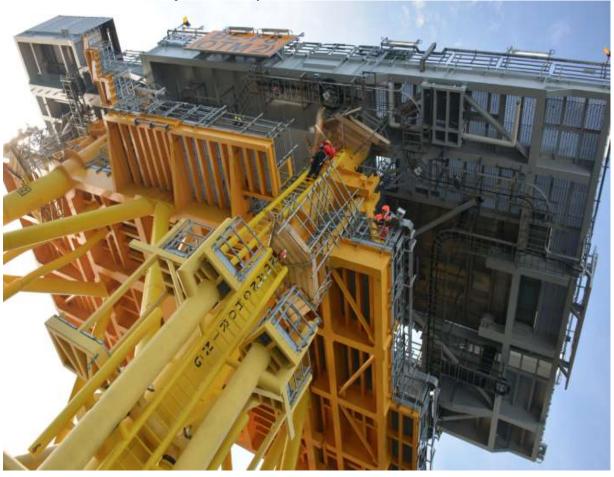


Fig. 3 OTM 2

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#### 2.2 Offshore Installation of Wind Turbines

Siemens Gamesa Renewable Energy (SGRE) will supply and install 84 x 7.0 MW wind turbines in the Beatrice Offshore Windfarm (BOWL). Wind turbine installation and commissioning works commenced offshore during July 2018, with completion of the installation expected in the Spring of 2019.

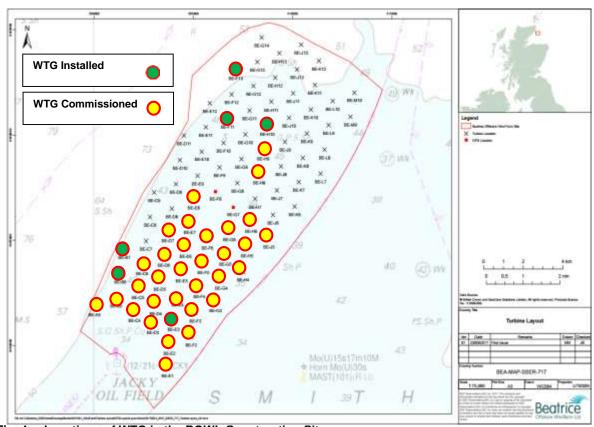


Fig. 4 Locations of WTG in the BOWL Construction Site

#### Table 1 WTG Installation and Commissioning Progress

Turbine installation completed at: 38 Locations

Turbine commissioning complete at: 32 Locations

Location ID	Latitude WGS84	Longitude WGS84	WTG Installed	WTG Commissioned
BE-A5	58° 12.471' N	002° 59.996' W	30.10.2018	12.11.2018
BE-B5	58° 12.687' N	002° 58.873' W	01.11.2018	16.11.2018
BE-B6	58° 13.308' N	002° 58.664' W	26.11.2018	
BE-B7	58° 13.929' N	002° 58.456' W	25.11.2018	
BE-C4	58° 12.307' N	002° 57.948' W	26.09.2018	09.10.2018

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Location ID	Latitude WGS84	Longitude WGS84	WTG Installed	WTG Commissioned
BE-C5	58° 12.902' N	002° 57.749' W	03.10.2018	28.10.2018
BE-C6	58° 13.524' N	002° 57.541' W	19.10.2018	05.11.2018
BE-C7	58° 14.144' N	002° 57.332' W		
BE-C8	58° 14.766' N	002° 57.124' W		
BE-C9	58° 15.386' N	002° 56.915' W		
BE-D3	58° 11.995' N	002° 57.002' W	20.08.2018	03.09.2018
BE-D4	58° 12.497' N	002° 56.834' W	28.09.2018	11.10.2018
BE-D5	58° 13.117' N	002° 56.626' W	06.10.2018	22.10.2018
BE-D6	58° 13.739' N	002° 56.417' W	18.10.2018	16.11.2018
BE-D7	58° 14.359' N	002° 56.209' W	15.10.2018	28.10.2018
BE-D8	58° 14.981' N	002° 55.999' W		
BE-D9	58° 15.602' N	002° 55.790' W		
BE-D10	58° 16.223' N	002° 55.582' W		
BE-D11	58° 16.844' N	002° 55.373' W		
BE-E1	58° 10.900' N	002° 56.256' W	08.10.2018	22.10.2018
BE-E2	58° 11.470' N	002° 56.128' W	02.09.2018	15.09.2018
BE-E3	58° 12.090' N	002° 55.920' W	17.11.2018	
BE-E4	58° 12.712' N	002° 55.710' W	05.11.2018	21.11.2018
BE-E5	58° 13.333' N	002° 55.502' W	08.09.2018	19.09.2018
BE-E6	58° 13.954' N	002° 55.293' W	09.09.2018	06.10.2018
BE-E7	58° 14.575' N	002° 55.084' W	06.09.2018	17.09.2018
BE-E8	58° 15.196' N	002° 54.875' W	14.10.2018	29.10.2018
BE-E9	58° 15.817' N	002° 54.665′ W		
BE-E10	58° 16.438' N	002° 54.456' W		
BE-E11	58° 17.059' N	002° 54.247' W		
BE-E12	58° 17.680' N	002° 54.037' W		
BE-F2	58° 11.685' N	002° 55.005′ W	23.07.2018	06.08.2018
BE-F3	58° 12.306' N	002° 54.796' W	01.09.2018	12.09.2018
BE-F4	58° 12.927' N	002° 54.588' W	15.09.2018	28.09.2018
BE-F5	58° 13.548' N	002° 54.378' W	22.08.2018	13.09.2018
BE-F6	58° 14.168' N	002° 54.169' W	23.08.2018	09.08.2018
BE-F9	58° 16.031' N	002° 53.540' W		
BE-F10	58° 16.653' N	002° 53.330' W		
BE-F11	58° 17.274' N	002° 53.120' W	01.12.2018	
BE-F12	58° 17.894' N	002° 52.911' W		
BE-F13	58° 18.516' N	002° 52.701' W	11.11.2018	
BE-G3	58° 12.544' N	002° 53.726' W	14.08.2018	25.08.2018
BE-G4	58° 13.142' N	002° 53.464' W	12.08.2018	24.08.2018
BE-G5	58° 13.762' N	002° 53.254' W	02.08.2018	22.08.2018
BE-G6	58° 14.384' N	002° 53.044' W	24.07.2018	23.08.2018
BE-G8	58° 15.625' N	002° 52.625' W		
BE-G9	58° 16.247' N	002° 52.415' W		
BE-G10	58° 16.867' N	002° 52.204' W		
BE-G11	58° 17.488' N	002° 51.994' W		
BE-G12	58° 18.109' N	002° 51.784' W		B
BE-G13	58° 18.730' N	002° 51.574' W		Blades to be installed

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Location ID	Latitude WGS84	Longitude WGS84	WTG Installed	WTG Commissioned
BE-G14	58° 19.351' N	002° 51.362' W		
BE-H4	58° 13.356' N	002° 52.339' W	31.07.2018	20.08.2018
BE-H5	58° 13.977' N	002° 52.130' W	20.07.2018	03.08.2018
BE-H6	58° 14.598' N	002° 51.920' W	19.07.2018	01.08.2018
BE-H7	58° 15.219' N	002° 51.709' W		
BE-H8	58° 15.840' N	002° 51.499' W	16.08.2018	24.11.2018
BE-H9	58° 16.461' N	002° 51.289' W	17.09.2018	24.11.2018
BE-H10	58° 17.082' N	002° 51.079' W	02.12.2018	
BE-H11	58° 17.703' N	002° 50.867' W		
BE-H12	58° 18.324' N	002° 50.657' W		
BE-H13	58° 18.944' N	002° 50.446' W		
BE-J5	58° 14.192' N	002° 51.005' W	14.07.2018	10.08.2018
BE-J6	58° 14.812' N	002° 50.795' W		
BE-J7	58° 15.433' N	002° 50.585' W		
BE-J8	58° 16.055' N	002° 50.373' W		
BE-J9	58° 16.675' N	002° 50.163' W		
BE-J10	58° 17.296' N	002° 49.952' W		
BE-J11	58° 17.917' N	002° 49.741' W		
BE-J12	58° 18.538' N	002° 49.530' W		
BE-J13	58° 19.159' N	002° 49.319' W		
BE-K6	58° 15.027' N	002° 49.669' W		
BE-K7	58° 15.648' N	002° 49.459' W		
BE-K8	58° 16.269' N	002° 49.247' W		
BE-K9	58° 16.890' N	002° 49.036' W		
BE-K10	58° 17.510' N	002° 48.825' W		
BE-K11	58° 18.131' N	002° 48.614' W		
BE-K12	58° 18.752' N	002° 48.403' W		
BE-L7	58° 15.862' N	002° 48.333' W		
BE-L8	58° 16.482' N	002° 48.122' W		
BE-L9	58° 17.104' N	002° 47.910' W		
BE-L10	58° 17.724' N	002° 47.698' W		
BE-M9	58° 17.317' N	002° 46.784' W		
BE-M10	58° 17.938' N	002° 46.571' W		

#### 2.2.1 Activity Description

On behalf of BOWL, Siemens Gamesa Renewable Energy (SGRE) will supply 84 x SWT -7.0-154, 7MW Wind Turbine Generators to the laydown and assembly yard at Nigg Energy Park, in the Moray Firth.

Following pre-assembly, five sets of WTGs will be loaded onto the Offshore Installation / Jack up vessel Pacific Orca. The vessel will transport the WTGs to the BOWL construction site, installing each of the structures in a pre-programmed installation sequence.

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The commissioning works will be carried out using a combination of the Walk to Work (W2W) vessel Island Crown and crew transfer vessels (CTVs), Fob Swath 3 and Seacat Resolute.

SGRE will also install and commission the Supervisory Control and Data Acquisition (SCADA) system for the operation of the WTGs.



Fig. 5 Siemens SWT-7.0-154 WTG installed at Beatrice OWF

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#### 2.2.2 Vessels Involved in Activity

The Offshore Supply Vessel / Jack-up Pacific Orca will carry out the installation of the 84 WTG. The commissioning works for the WTG will then be carried out using the W2W vessel Island Crown and CTVs Seacat Resolute and Fob Swath 3.

Pacific Orca		
General Description and Dims	Offshore Installation / Jack up Vessel 161m x 49m	
Call Sign:	5BRE3	
MMSI:	210548000	
Onshore Representative:	Gert Christensen, Marine Operation Manager Siemens Gamesa Renewable Energy A/S Fiskergade 1-9, 7100 Vejle, Denmark Mobile: +45 24295577 mailto:gert.christensen@siemensgamesa.com	



Island Crown		
General Description and Dimensions:	Accommodation and 'Walk to Work' vessel	
·	L:96.8m / B:20m	
Call Sign: LACO8		
MMSI:	257245000	
	Gert Christensen, Marine Operation Manager	
Onshore Representative:	Siemens Gamesa Renewable Energy A/S	
	Fiskergade 1-9, 7100 Vejle, Denmark	
	Mobile: +45 24295577	
	mailto:gert.christensen@siemensgamesa.com	



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Fob Swath 3		
General Description and Dimensions:	Crew Transfer Vessel (CTV)	
General Description and Dimensions.	L: 25m / B: 11m	
Call Sign:	OUWY2	
MMSI: 219460000		
	Gert Christensen, Marine Operation Manager	
	Siemens Gamesa Renewable Energy A/S	
Onshore Representative:	Fiskergade 1-9, 7100 Veile, Denmark	
<u>-</u>	Mobile: +45 24295577	
	mailto:gert.christensen@siemensgamesa.com	



Seacat Resolute		
General Description and Dimensions:	Crew Transfer Vessel (CTV)	
·	L: 25m / B: 11m	
Call Sign: 2FWR9		
MMSI:	235094873	
	Gert Christensen, Marine Operation Manager	
Onshore Representative:	Siemens Gamesa Renewable Energy A/S	
	Fiskergade 1-9, 7100 Vejle, Denmark	
	Mobile: +45 24295577	
	mailto:gert.christensen@siemensgamesa.com	



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#### 2.3 Operational & Maintenance (O & M)

The transfer of custody, from project construction to Operations and Maintenance (O & M), of the first six WTG's on the Amber String took place on 7<sup>th</sup> September 2018. The Gold, Blue and Lime Strings are now also under O & M custody.

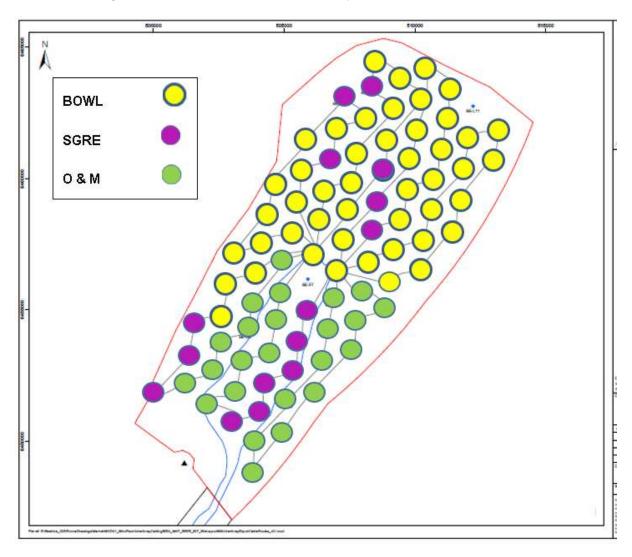


Fig. 8 Custody of Assets Chart

Siemens Gamesa Renewable Energy (SGRE) has taken over operational control of the scheduled maintenance and troubleshooting of the WTGs on the Amber, Gold, Blue and Lime String Assets. To assist them in this regard they have engaged the CTV Seacat Mischief and an Airbus Helicopter H145 aircraft operated by the German company WIKING Helikopter Service GmbH.

The helicopter is based in a temporary hanger at Wick airport and will be used to transport suitably qualified SGRE technicians to work on the turbines when conditions to transfer by

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CTV are exceeded, but flying conditions are within limits. The technicians will be transferred to and from the nacelle by heli-hoist.

#### 2.3.1 Vessel & Aircraft Engaged in Activity

Seacat Mischief		
General Description and Dimensions:	Crew Transfer Vessel (CTV) L: 24m / B: 8m	
Call Sign:	2IXU5	
MMSI:	235113651	
Onshore Representative:	Martin Baker Offshore Service Manager Beatrice Offshore Windfarm Ltd +44 7921 836268 Martin.baker@siemensgamesa.com	



Wiking Helicopter H145		
O	Airbus H145. Twin-engine, multi-purpose helicopter. LOA	
General Description and Dimensions:	13.63 x 3.29 x 4.00m	
	Rotor diameter 11.0m	
Call Sign:	WHS2AF "Wiking Alpha Foxtrot"	
	Martin Baker	
	Offshore Service Manager	
Onshore Representative:	Beatrice Offshore Windfarm Ltd	
	+44 7921 836268	
	Martin.baker@siemensgamesa.com	



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#### 2.4 Scientific Equipment Removal & Service and Re-installation

The University of Aberdeen has completed servicing of moorings listed in Table 1 and reinstalled them in their current locations.

Table 1

Name	As laid coordinates (WGS84 datum)		Characteristics
17	57° 57.763'N	003° 31.245′ W	Subsurface with acoustic release
42	57° 52.345'N	003°29.043' W	Subsurface with acoustic release
45	57° 57.266' N	003°16.088' W	Subsurface with acoustic release
89	57° 56.052' N	003° 38.235' W	Subsurface with acoustic release
160	58° 17.648'N	002° 49.931'W	Subsurface with transponder
161	58° 13.000' N	002° 56.011' W	Subsurface with transponder.
162	58° 18.176' N	002° 54.124' W	Subsurface with transponder.
164	58° 12.817' N	002° 51.694' W	Subsurface with transponder

The University installed short-term moorings, as per Table 2, on 26th November and removed them on 2<sup>nd</sup> December.

Table 2

Name	As laid coordinates (WGS84 datum)		Characteristics
230	58°11.820' N	002° 52.920'W	Subsurface
231	58°11.490' N	002° 52.140′ W	Subsurface
232	58°11.130' N	002° 51.360′ W	Subsurface

The mooring service works detailed in Table 3 have also been completed.

Table 3

Name		d coordinates S84 datum)	Characteristics
3	57° 44.073'N	003°19.802'W	Surface marked (dhan, 12' aluminium & Radar reflector)
4	57° 41.373'N	003°05.570′W	Surface marked (dhan, 12' aluminium & Radar reflector

The moorings support sound recording equipment and acoustic loggers that record echolocation clicks of dolphins and porpoises (see images as the foot of this notice) Subsurface moorings fitted with acoustic releases extend no more than three metres vertically from the seabed. Subsurface moorings without acoustic releases extend no more than two metres vertically from the seabed.

All works were carried out by Moray First Marine Ltd using the MV Waterfall.

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#### 2.4.1 Vessel Engaged in Activity

Waterfall				
<b>General Description and Dimensions:</b>	Workboat, UK MCA Cat.2, 60nm from safe haven			
	LOA 16m, Beam 6m.			
Call sign:	2CBT4			
MMSI:	235071392			
On Board Contact:	Bill Ruck, 07775 802963			
E-mail:	bill@moraymarine.com			



A Notice to Mariners will be issued when the moorings are permanently discontinued.

For information and enquiries please contact:

Tim Candido- Barton, Lighthouse Field Station, University of Aberdeen, George Street, Cromarty, Ross-shire, IV11 8YL.

Tel: +44 (0)1381 600548. t.r.barton@abdn.ac.uk

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Fig. 9 Examples of equipment which the above moorings support

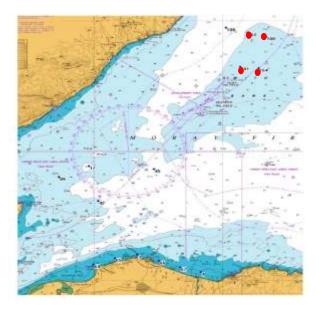


Fig. 10 Scientific equipment locations (remaining locations in red)

#### 3. General Safety Advice

All vessels engaged in the activity will exhibit appropriate lights and shapes prescribed by the International Regulations for Preventing Collisions at Sea; relative to their operations. All vessels engaged in the activity will also transmit an Automatic Identification System (AIS) message.

The Secretary of State has authorised the use of the following safety zones as per Notice to Mariners LF000005-NTM-004.

1. 500 metres radius around each wind turbine, offshore transformer module and / or their substructures and foundations comprising the Beatrice Offshore Wind Farm

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whilst work is being performed as indicated by the presence of construction vessels.

2. 50 metres radius around each wind turbine, offshore transformer module and / or their substructure and foundations installed but waiting to be commissioned as part of the Beatrice Offshore Wind Farm.

ALL VESSELS ARE REQUESTED to give all construction and support vessels a wide berth.

MARINERS ARE REMINDED to navigate with caution and keep continued watch on VHF Ch. 70 / 16 when navigating the area.

The Chart shown on page 19 below, shows the indicative transit routes and site entry gates for vessels entering the construction site from either the port of Wick (North) and Cromarty / Nigg (South) to avoid the highest density areas of static fishing gear.

#### 4. Guard Vessel Deployment

The guard vessel currently on site is Seagull and she can be contacted on Ch. 16 VHF

Project: Beatrice Offshore Windfarm Guard Vessel Deployment.				
Contractor: SHL				
Contract Purpose: Guard Vessel for the Windfarm site.				
Area: BOWL construction site: within the array cable routes and foundat				
	locations. (See Fig 1 for details)			
Deployment Dates:	1st April 2017 – 30th November 2018			
Deployment Vessel (s):	Various on a continuous 21 day rotation			
Equipment: N/A				

On behalf of BOWL, Seaway Heavy Lifting has contracted the Scottish Fishermen's Federation (SFF) to provide guard vessels during the construction phase. The guard vessel's primary duty is security of the construction site by informing and warning non-construction vessels of the ongoing activities and associated Safety Zones.

#### 5. Fisheries Liaison

Fisheries liaison associated with the activity will be co-ordinated by Brown and May Marine. For any commercial fishery queries please contact:

Jen Miller Tel + 44 (0)1379 872144 Mobile +44 (0)7519 106002 jen.miller@brownmay.com

All vessels are to be aware that there has been increased fishing activity close to the BOWL site and vessels may encounter static fishing gear whilst transiting to and from the site. Vessels sheltering to the South and West of the site should pay particular attention and keep a sharp lookout for such static fishing gear. Vessels are reminded that there are recommended transit routes to site, which should help avoid the areas of known fishing activity. (See chart Page 19)

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#### 6. Distribution List

The distribution of this notice is as per email recipient's header. A central list of recipients is maintained by the Marine Coordinator. If you are not the appropriate recipient of these notices or do not wish to receive the notices in the future, please contact us at the address included in Section 1 of this notice.

#### 7. Website

The official website of Beatrice Offshore Windfarm Limited can be found at:

#### https://www.beatricewind.com

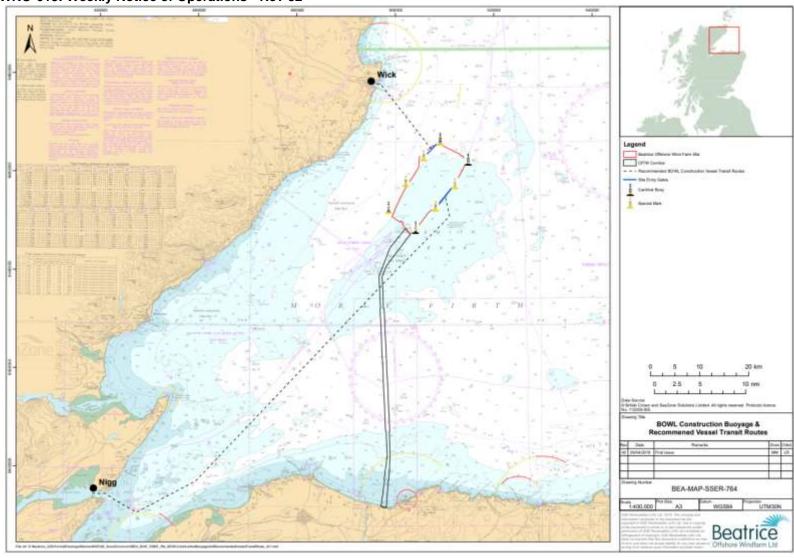
This contains all Notices to Mariners (NtM) published by BOWL and all Weekly Notices of Operations, together with a large amount of general information about the Project.

There is also a Twitter feed at <a href="https://twitter.com/beatricewind">https://twitter.com/beatricewind</a>.

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No Rof	Vessel Picture -	Vessel Name / Flag	Type / Function	Operator	Contact / contact details	Call sign / MMSi / IMO	LOA (m) Beam (m) Draft (m)	Date on Site	Marine Licence applicable
1		Island Crown	Walk to work WTG commissioning	Stålhaugen 12, 6065 Uksteinvik, Norway +47 70400000	Gert Christensen Marine Operations Manager Siemens Garness Renewable Energy Fiskergade 1-9 7100 Vejle DEHMARK gert.christensen@siemensgamesa.com + 45 242 95577	LACO8 / 257245000	96 x 20 m	15.07.2018	OWF
2		Seacat Intrepid	Crew Transfer Vessel / CTV	Seacat Services Ltd	Andrew Link Operations Manager, Seacat Services Ltd 2 Mariners Way, Cowes, Isle of Wight +44 (0)1983 475315 operations@seacatservices.co.uk	2HWU6 / 235107284	27 x 10 x 1.5m	25.09.2017	OWF & OTTW
3		Daiby Ribble	Crew Transfer Vesset/CTV	Seacal Services Ltd	Andrew Link Operations Manager, Seacat Services Ltd 2 Mariners Way, Cowes, Isle of Wight +44 (0) 1983 475315 operations@seacatservices.co.uk	20/05/235113236	25.75 × 10.06m	01.07.2018	OWF/OFTW
4		Seacat Resolute	Crew Transfer Vessel / CTV	Seacal Services Ltd	Gert Christensen Marine Operations Manager Siemens Gamesa Renewable Energy Fiskergade 1.9 7100 Vejle DENMARK gert.christensen@siemensgamesa.com + 45 242 95577	2FWR9 / 235094873	24 × 7m	30.06.2018	OWF
5		Pacific Orca	Offshore Supply Ship	Siemens Gamesa Renewable Energy (SGRE)	Gert Christensen Marine Operations Manager Siemens Gamesa Renewable Energy Fiskergade 1-9 7100 Vejle DEHMARK gert.christensen@siemensgamesa.com + 45 242 95577	58RE3 / 210548000	161.3 x 49.02m	10.07.2018	OWF

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No Ref	Vessel Picture -	Vessel Name / Flag	Type / Function	Operator	Contact / contact details	Call sign / MMSI / IMO -	LOA (m) Beam (m) Draft (m)	Date on Site	Marine Licence applicable
6		FOB Swath 3	Crew Transfer Vessel / CTV	Siemens Gamesa Renewable Energy (SGRE)	Gert Christensen Marine Operations Manager Siemens Gamesa Renewable Energy Fiskergade 1-9 7100 Vejle DEIMARK gert.christensen@siemensgamesa.com + 46 242 95677	OLWY2 / 219460000	24.97 x 10.83m	10.07.2018	OWF
7	صقع	CTV Seacat Mischief	Crew Transfer Vessel / CTV	Siemens Gamesa Renewable Energy (SGRE)	Martin Baker Offshore Service Manager Beatrice Offshore Windfarm +44 7921 836268 martin.baker@siemensgamesa.com	20XU5 / 235113651	24 x 8m	15.08.2018	OWF
8		Seagull	Guard Vessal	Scottish Fishermens Federation (SFF) for Seaway Heavy Lifting (SHL)	Rene Alferink / Vincent van Velsen (SHL) Wick College Building 1st Floor 1 The Shore Wick Caithness Scotland Email. beatrice-mc@shl.nl	MVBO / 233714008	40.2 x 9.0 x 5.0m	04.11.2018	OWF