



REPORT



Hornsea Project One Offshore Windfarm

Weekly Notice of Operations

For Week Commencing	17 th September 2018
Notice Number	53
Issue Date:	18th September 2018

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1. Ørsted Marine & Helicopter Co-ordination Centre

Routine enquiries (24 hours)	0044 (0) 207 811 1171
Emergency number (24 hours)	0044 (0) 207 811 1170
Email	MHCC_HOW01_ADM@orsted.co.uk

2. The UK main ports supporting current operations

Grimsby - Crew Transfer Vessels (CTV), light logistics (personnel, tools and equipment) & main vessel port logistics

3. Safety Information

All vessels not involved in construction activities are requested to keep 500m distance from construction and dive vessels whilst transiting the area

All vessels should proceed with caution whilst navigating and/or working in the area and be aware of the statutory 50m safety zone around each fixed asset.

There is a Confirmed UXO in position 53°50.29'N 001°47.04'E in-between B24 & C23; a 200m exclusion zone in place.

The Self-Propelled Jack Up Barge (JUB) GMS Endeavour is jacked up at Z13 and requires a 500m exclusion zone. The Self-Propelled Jack Up Barge (JUB) GMS Evolution is jacked up at Z01 and requires a 500m exclusion zone.

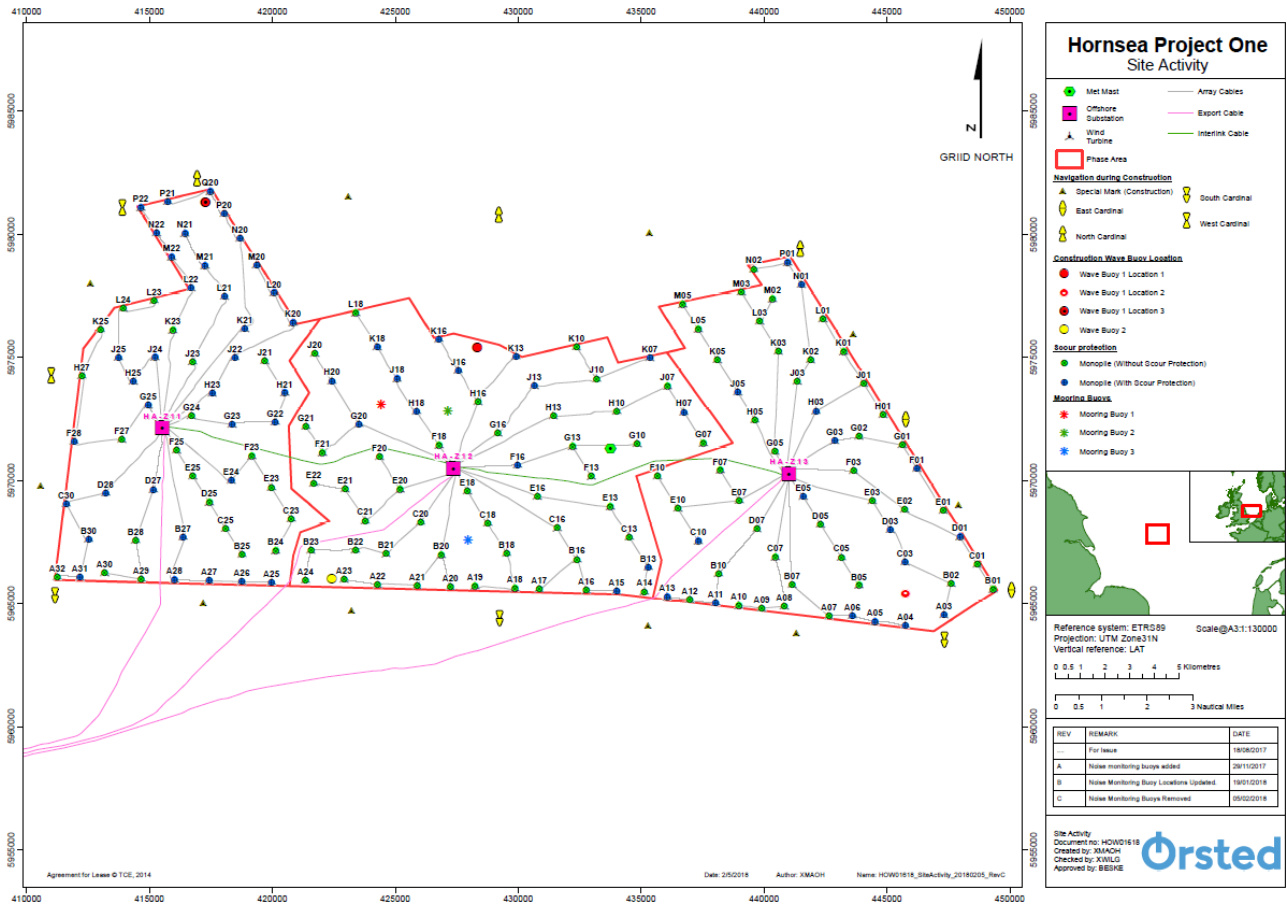
Z01 "RCS" is now installed and in position 52°32.11'N 00°57.07'E.

Installation vessels Innovation and Sea Installer on site to continue monopile and TP installation.

Discrepancies identified between coordinates should be questioned immediately to Ørsted. Information is supplied on a 'not for navigation' basis. All coordinates are WGS84 unless otherwise stated.

4. Deployed navigation aids and buoys

The offshore site boundary for HOW01 is shown as below, and will be marked by standard IALA navigation marks. All buoys have been deployed as per below tables.



4.1 Demarcation Buoys

Station	Coordinates	Broadcast Details
HOW01 DELTA	53° 49.170' N 002° 06.502' E	SPECIAL MARK, YELLOW PILLAR, YELLOW CROSS LIGHT:FL Y 5S
HOW01 ECHO	53° 49.283' N 002° 01.003' E	SPECIAL MARK, YELLOW PILLAR, YELLOW CROSS LIGHT:FL Y 5S
HOW01 ALPHA	53° 57.903' N 002° 00.863' E	SPECIAL MARK, YELLOW PILLAR, YELLOW CROSS LIGHT: FL Y 5S
HOW01 BRAVO	53° 55.734' N 002° 08.474' E	SPECIAL MARK, YELLOW PILLAR, YELLOW CROSS LIGHT: FL Y 5S
HOW01 CHARLIE	53° 52.021' N 002° 12.474' E	SPECIAL MARK, YELLOW PILLAR, YELLOW CROSS LIGHT: FL Y 5S

HOW01 FOXTROT	53° 49.510' N 001° 50.006' E	SPECIAL MARK, YELLOW PILLAR, YELLOW CROSS LIGHT: FL Y 5S
HOW01 GOLF	53° 49.623' N 001° 44.506' E	SPECIAL MARK, YELLOW PILLAR, YELLOW CROSS LIGHT: FL Y 5S
HOW01 HOTEL	53° 52.133' N 001° 38.400' E	SPECIAL MARK, YELLOW PILLAR, YELLOW CROSS LIGHT: FL Y 5S
HOW01 INDIA	53° 56.589' N 001° 40.109' E	SPECIAL MARK, YELLOW PILLAR, YELLOW CROSS LIGHT: FL Y 5S
HOW01 JULIET	53° 58.586' N 001° 49.624' E	SPECIAL MARK, YELLOW PILLAR, YELLOW CROSS LIGHT: FL Y 5S
HOW01 WEST	53° 54.551' N 001° 38.708' E	WEST CARDINAL YELLOW BLACK YELLOW PILLAR, Q (9) 15s, 2 CONES APEX INWARDS
HOW01 WEST NORTH WEST	53° 58.263' N 001° 41.238' E	WEST CARDINAL YELLOW BLACK YELLOW PILLAR, VQ (9) 10s, 2 CONES APEX INWARDS
HOW01 SOUTH	53° 49.396' N 001° 55.504' E	SOUTH CARDINAL YELLOW OVER BLACK PILLAR: 2 CONES APEX DOWNWARDS LIGHT: Q (6) + 1L FL 15s
HOW01 SOUTH WEST	53° 49.500' N 001° 39.007' E	SOUTH CARDINAL YELLOW OVER BLACK PILLAR: 2 CONES APEX DOWNWARDS LIGHT: VQ (6) + 1L FL 10s
HOW01 NORTH WEST	53° 58.928' N 001° 44.004' E	NORTH CARDINAL, BLACK OVER YELLOW PILLAR, VQ, TOPMARK; 2 CONES APEX UPWARDS
HOW01 NORTH	53° 58.244' N 001° 55.244' E	NORTH CARDINAL, BLACK OVER YELLOW PILLAR, Q, TOPMARK; 2 CONES APEX UPWARDS
HOW01 NORTH EAST	53° 57.590' N 002° 06.473' E	NORTH CARDINAL, BLACK OVER YELLOW PILLAR, VQ, 2 CONES APEX UPWARDS
HOW01 EAST	53° 53.878' N 002° 10.474' E	EAST CARDINAL BLACK YELLOW BLACK PILLAR, Q(3) 10s, 2 CONES APEX OUTWARDS
HOW01 SOUTH EAST	53° 50.165' N 002° 14.470' E	EAST CARDINAL BLACK YELLOW BLACK PILLAR, VQ(3) 5s, 2 CONES APEX OUTWARDS
HOW01 SOUTH SOUTH EAST	53° 49.056' N 002° 12.000' E	SOUTH CARDINAL YELLOW OVER BLACK PILLAR, VQ (6) + L fl 10s, 2 CONES APEX DOWNWARDS

4.2 RCS Site

HOW01 RCS S	53°37.385'N 000°56.164'E	South Cardinal VQ (6) +LFL 10s (White) Top Mark: South Day Mark: Yellow Black Racon: Tango REMOVED UNTIL FURTHER NOTICE
HOW01 RCS E	53°37.586'N 000°56.619'E	East Cardinal VQ (3) 5s (White) Top Mark: East Day Mark: Black Yellow Black REMOVED UNTIL FURTHER NOTICE
HOW01 RCS N	53°37.925'N 000°56.164'E	North Cardinal VQ (White) Top Mark: North Day Mark: Black Yellow
HOW01 RCS W	53°37.754'N 000°55.689'E	West Cardinal VQ (9) 10s (White) Top Mark: West Day Mark: Yellow Black Yellow

4.3 Mooring buoys

HOW01 MOORING 3	53° 51.107' N 001° 54.279' E	SPECIAL MARK, YELLOW PILLAR, NO TOPMARK LIGHT: FL Y 5S
HOW01 MOORING 2	53° 53.915' N 001° 53.457' E	SPECIAL MARK, YELLOW PILLAR, NO TOPMARK LIGHT:FL Y 5S
HOW01 MOORING 1	53° 54.025' N 001° 50.986' E	SPECIAL MARK, YELLOW PILLAR, NO TOPMARK LIGHT:FL Y 5S

4.4 Wave Buoys

HOW01 Wave 1	53° 55.316' N 001° 54.519' E	SPECIAL MARK YELLOW BOUY, Q (5) 20s – (YELLOW) TOPMARK; YELLOW CROSS
HOW01 Wave 2	53° 50.203' N 001° 49.253' E	SPECIAL MARK YELLOW BOUY, Q (5) 20s – (YELLOW) TOPMARK; YELLOW CROSS

4.5 Subsea Monuments – On Seabed

Monument 1	53° 51.647' N 001° 48.904' E
Monument 2	53° 44.466' N 001° 24.407' E

5. HOW01 Vessel Update

Below is a list of vessels working on the Hornsea One Project.

VCC – Vessel Clearance Certificate, this ensure all procedures have been followed to allow a vessel to begin operations.

Vessel Details		Summary of Vessel Communications				Work Schedule		Vessel Clearance Certificate	
Vessel Name	MMSI	Contact Number	E-mail	Type	Frequencies Monitored	Start/Arrival	Work Package	VCC Issued	VCC Number
Adventure	235109237	+44 7446 054547	gvadventure@gmail.com	VHF	Ch. 16 & P1 @ 162.050 MHz	18/05/2018	Export Cable	18/05/2018	HOW01-VCC-064
Breaker	371150000	+31 615367813	Breakersurvey57@gmail.com	VHF	Ch. 16 & P1 @ 162.050 MHz	19/03/2018	Export Cable	19/03/2018	HOW01-VCC-024
Coastal Challenger	244913000	+87 0773 2004 01	challenger@coastalworkboats.com	VHF	Ch. 16 & P1 @ 162.050 MHz	04/09/2018	Export Cable	04/09/2018	HOW01-VCC-087
Connector	373479000	+47 52858356	master@connector.solstadfarstad.com	VHF	Ch. 16 & P1 @ 162.050 MHz	04/04/2018	Export Cable	04/04/2018	HOW01-VCC-040
CRC Gladiator	235112943	07932 042 977	crcgladiator@commercialribcharter.co.uk	VHF	Ch. 16 & P1 @ 162.050 MHz	02/09/2018	Export Cable	02/09/2018	HOW01-VCC-089
Edda Mistral	232008600	+44 1472 86 8003	master.nb470@ostensjo.no	VHF	Ch. 16 & P1 @ 162.050 MHz	09/09/2018	Construction	09/09/2018	HOW01-VCC-092
Esvagt Castor	220003000	(+45) 61 62 67 74	castor@esvagtvesel.com	VHF	Ch. 16 & P1 @ 162.050 MHz	24/10/2017	Construction	27/10/2017	HOW01-VCC-009
Eurus Express	219047000	+4723671838	eurusexpress@a1offshore.dk	VHF	Ch. 16 & P1 @ 162.050 MHz	26/08/2018	Export Cable	24/08/2018	HOW01-VCC-086

Vessel Details		Summary of Vessel Communications				Work Schedule		Vessel Clearance Certificate	
Vessel Name	MMSI	Contact Number	E-mail	Type	Frequencies Monitored	Start/Arrival	Work Package	VCC Issued	VCC Number
GMS Endeavour	370582000	+44 07379 922184	endeavour.master@fleet.gmsuae.com	VHF	Ch. 16 & P1 @ 162.050 MHz	13/03/2018	Construction	15/04/2018	HOW01-VCC-025
GMS Evolution	374250000	+870773261545	evolution.master@fleet.gmsuae.com	VHF	Ch. 16 & P1 @ 162.050 MHz	15/06/2018	Construction	16/06/2018	HOW01-VCC-010
Havila Phoenix	311000229	(+47) 21 038 800	bridge.phoenix@havilaship.com	VHF	Ch. 16 & P1 @ 162.050 MHz	26/02/2018	Array Cable	07/07/2018	HOW01-VCC-018
Innovation	218781000		bridge.innovation@ships.deme.be	VHF	Ch. 16 & P1 @ 162.050 MHz		Foundations	22/01/2018	HOW01-VCC-016
JB108 (Unmanned)	N/A	N/A	N/A	N/A	N/A	14/09/2018	Export Cable	13/09/2018	HOW01-VCC-096
Lange Wapper	250309000	(+44) 07702 657434	bridge.langewapper@ships.deme-group.com	VHF	Ch. 16 & P1 @ 162.050 MHz	24/09/2017	Export Cable	24/09/2017	HOW01-VCC-004
Living Stone	244010952		Captain.Livingstone@ships.deme-group.com	VHF	Ch. 16 & P1 @ 162.050 MHz	28/08/2018	Export Cable	29/08/2018	HOW01-VCC-081
MCS Pampero	235092103	07769934448	mcspampero@maritimecraft.co.uk	VHF	Ch. 16 & P1 @ 162.050 MHz	31/05/2018	Construction	30/05/2018	HOW01-VCC-067
Natalie C	232004523	+44(0)7786512045	natalieb@e-catch.info	VHF	Ch. 16 & P1 @ 162.050 MHz	10/04/2018	Export Cable	10/04/2018	HOW01-VCC-039
Ndurance	209851000	+870 773167594	ndurancecaptain@boskalis.com	VHF	Ch. 16 & P1 @ 162.050 MHz	03/09/2018	Export Cable	02/09/2018	HOW01-VCC-026

Vessel Details		Summary of Vessel Communications				Work Schedule		Vessel Clearance Certificate	
Vessel Name	MMSI	Contact Number	E-mail	Type	Frequencies Monitored	Start/Arrival	Work Package	VCC Issued	VCC Number
OOC Nerz	232010560	+45 53 65 46 45	occ-nerz@mho-co.dk	VHF	Ch. 16 & P1 @ 162.050 MHz	25/07/2018	Construction	27/07/2018	HOW01-VCC-080
Resolute	2350690136		russel@drdiesel.co.uk	VHF	Ch. 16 & P1 @ 162.050 MHz	13/04/2018	Export Cable	13/04/2018	HOW01-VCC-041
Rix Leopard	235113904	+44 (0) 07702 657434	rix.leopard@rix.co.uk	VHF	Ch. 16 & P1 @ 162.050 MHz	13/03/2018	Construction	22/03/2018	HOW01-VCC-021
Rix Lynx	235115745	+07836615491	rix.lynx@rix.co.uk	VHF	Ch. 16 & P1 @ 162.050 MHz	11/04/2018	Construction	11/04/2018	HOW01-VCC-023
Rover Alpha	235010380	+44 (0) 7947402153	george.west533@btinternet.com	VHF	Ch. 16 & P1 @ 162.050 MHz	06/04/2018	Export Cable	06/04/2018	HOW01-VCC-036
Sea Installer	219456000	TBC	bridge_si@a2sea.com	VHF	Ch. 16 & P1 @ 162.050 MHz	13/09/2018	Foundations	TBC	TBC
Skandi Captain	258345000	+47 959 83 925	captain.captain@captain.dof.no	VHF	Ch. 16 & P1 @ 162.050 MHz	04/08/2018	Construction	04/08/2018	HOW01-VCC-069
VikingFjord	258493000	+4790638579	vikingfjord@mmred.no	VHF	Ch. 16 & P1 @ 162.050 MHz	21/04/2018	Construction	20/04/2018	HOW01-VCC-043
Wind Inovation	235113838	+45 21 325 431	master.wi@c-bed.nl	VHF	Ch. 16 & P1 @ 162.050 MHz	07/07/2018	Construction	06/07/2018	HOW01-VCC-029

6. Asset Installation Status

Foundations Scour Protection, Monopiles (MP), Transition piece (TP) and Turbine Installation Progress

- Complete
- Not required

WTG ID	Foundation			Turbine			WTG ID	Foundation			Turbine		
	Scour	MP	TP	Tower	Nacelle	Blades		Scour	MP	TP	Tower	Nacelle	Blades
A03	Complete	Complete	Complete				B28	Not required					
A04	Complete						B30	Complete					
A05	Complete						C01	Not required					
A06	Complete						C03	Complete					
A07	Not required						C05	Not required	Complete	Complete			
A08	Not required						C07	Not required					
A09	Not required						C10	Complete					
A10	Not required						C13	Not required	Complete	Complete			
A11	Complete						C16	Not required	Complete	Complete			
A12	Not required						C18	Not required	Complete	Complete			
A13	Complete						C20	Not required	Complete	Complete			
A14	Not required	Complete	Complete				C21	Not required	Complete	Complete			
A15	Complete	Complete	Complete				C23	Not required					
A16	Not required	Complete	Complete				C25	Not required					
A17	Not required	Complete	Complete				C30	Complete					
A18	Not required	Complete	Complete				D01	Complete					
A19	Not required	Complete	Complete				D03	Complete					
A20	Not required	Complete	Complete				D05	Not required	Complete	Complete			
A21	Not required	Complete	Complete				D07	Not required					
A22	Not required	Complete	Complete				D25	Not required					
A23	Not required	Complete	Complete				D27	Complete					
A24	Not required	Complete	Complete				D28	Complete					
A25	Complete						E01	Not required	Complete	Complete			
A26	Complete						E02	Not required					
A27	Complete						E03	Not required					
A28	Complete						E05	Complete	Complete	Complete			
A29	Not required						E07	Not required					
A30	Not required						E10	Not required					
A31	Complete						E13	Not required	Complete	Complete			
A32	Not required						E16	Not required	Complete	Complete			
B01	Not required						E18	Not required	Complete	Complete			
B02	Not required						E20	Not required	Complete	Complete			
B05	Not required						E21	Not required	Complete	Complete			
B07	Not required						E22	Not required	Complete	Complete			
B10	Not required						E23	Not required					
B13	Complete	Complete	Complete				E24	Complete					
B16	Not required	Complete	Complete				E25	Not required					
B18	Not required	Complete	Complete				F01	Complete	Complete	Complete			
B20	Not required	Complete	Complete				F03	Not required	Complete	Complete			
B21	Not required	Complete	Complete				F07	Not required					
B22	Not required	Complete	Complete				F10	Not required					
B23	Not required	Complete	Complete				F13	Not required	Complete	Complete			
B24	Not required						F16	Complete	Complete	Complete			
B25	Not required						F18	Not required	Complete	Complete			
B27	Complete						F20	Not required	Complete	Complete			

WTG ID	Foundation			Turbine			WTG ID	Foundation			Turbine		
	Scour	MP	TP	Tower	Nacelle	Blades		Scour	MP	TP	Tower	Nacelle	Blades
F21							J22						
F23							J23						
F25							J24						
F27							J25						
F28							K01						
G01							K02						
G02							K03						
G03							K05						
G05							K07						
G07							K10						
G10							K13						
G13							K16						
G16							K18						
G20							K20						
G21							K21						
G22							K23						
G23							K25						
G24							L01						
G25							L03						
H01							L05						
H03							L18						
H05							L20						
H07							L21						
H10							L22						
H13							L23						
H16							L24						
H18							M02						
H20							M03						
H21							M05						
H23							M20						
H25							M21						
H27							M22						
J01							N01						
J03							N02						
J05							N20						
J07							N21						
J10							N22						
J13							P01						
J16							P20						
J18							P21						
J20							P22						
J21							Q20						

7. Cable Installation Status

The installation of cables is shown in the below tables.

7.1 Inter - Array Cable Status

Black: Designed Red: Laid Green: Cable Fully Buried Blue: Accepted

E03-D03 F03-E02 J01-H01 N01-P01 G02-G01 Z13-J03 H05-J05 J03-K02 K05-L05 L03-M03 L05-M05
K03-L03 E05-D05 G03-G02 Z13-G05 C03-B02 D01-C01 B02-A03 C01-B01 D05-C05 B10-A11
A12-A13 E10-C10 B07-A07 A08-A09 D07-B10 Z13-C07 Z13-E03 Z13-E05 Z13-D07 Z13-F03 L03-M02
E10-F10 B28-A29 Z13-E07 A11-A12 A09-A10 C07-A08 Z13-B07 A07-A06 A06-A05 A05-A04 C05-B05
E02-D01 Z13-G03 G01-F01 F01-E01 H03-J01 J01-K01 K01-L01 Z13-H03 K02-N01 P01-N02 G05-K03
J05-K05 Z13-H05 D03-C03 E07-F07 E07-E10 B30-A31 D27-B28 A28-A27 A27-A26 A26-A25 D25-C25
E25-D25 F25-E25 F23-E23 E23-C23 H21-J21 B27-A28 A31-A32 D28-C30 C30-B30 C23-B24 G24-G23
A29-A30 E24-F23 G23-G22 C25-B25 G22-H21 Z12-H16 H16-J16 H16-K13 J16-K16 Z12-G16 G16-J13
J10-K07 J10-K10 J13-J10 Z12-H13 H07-G07 H10-J07 H13-H10 J07-H07 Z12-F16 F16-G13 G13-F13
G13-G10 Z12-E16 B13-A14 C13-B13 E13-C13 E16-E13 Z12-C16 A16-A15 B16-A16 B16-A17 C16-B16
Z12-E18 A18-A19 B18-A18 C18-B18 E18-C18 Z12-B20 A21-A22 A22-A23 B20-A20 B20-A21 Z12-C20
B21-B22 B22-B23 B23-A24 C20-B21 Z12-E20 C21-E21 E20-C21 E20-F20 E21-E22 Z12-G20 G20-H20
H20-J20 F21-G21 G20-F21 Z12-F18 H18-J18 J18-K18 K18-L18 F18-H18 F27-F28 F28-H27 G25-F27
H27-K25 Z11-G25 H25-J25 J24-H25 J25-L24 L24-L23 Z11-J24 K23-L22 L22-M22 M22-N22 N22-P22
Z11-K23 J23-L21 L21-M21 M21-N21 Z11-J23 K21-N20 N20-P20 P20-Q20 Q20-P21 Z11-K21 H23-J22
J22-K20 K20-L20 L20-M20 Z11-H23 Z11-B27 Z11-D27 Z11-D28 Z11-E24 Z11-F25 Z11-G24

7.2 Export Cable Status

Black: Designed Red: Laid Green: Cable Fully Buried Blue: Accepted

Western (Landfall – KP32) – (KP32 – RCS) - (RCS - KP100) – (KP100 - Z11)

Central (Landfall – KP32) – (KP32 – RCS) - (RCS - KP100) – (KP100 - Z12)

Eastern (Landfall – KP32) – (KP32 – RCS) - (RCS - KP100) – (KP100 – KP115) – (KP115 - Z13)

7.3 OSS Interlink Cable Status

Black: Designed Red: Laid Green: Cable Fully Buried Blue: Accepted

Z11 – Z12

Z12 – Z13

8. Notice to Mariners updates

Below is a list of the current Notice to Mariners;

Date	Subject	Updates
15/09/2017	Export Cable Trenching Works – Tideway Offshore (Lange Wapper)	Vessels work for next 7 days per below map.
07/09/2017	Export Cable Boulder Clearance Works	Vessels work for next 7 days per below map.
20/10/2017	Hornsea One UXO Detonation, Update 8.	UXO detonation delayed due to weather
03/11/2017	Met mast Works	None
17/11/2017	offshore boulder clearance works in the offshore wind farm area	
17/11/2017	offshore installation works in the offshore Wind Farm area with the installation of scour protection and foundations.	
04/12/2017	Deployment of Acoustic Waves and Current (AWAC) Profiler	
04/12/2017	Deployment of Noise Monitoring Equipment	Revision C- updated coordinates
26/01/2018	Export Cable and Interconnector Boulder Clearance	Update 4 issued 27/02/18
13/02/2018	Export Cable Rock Placement	
24/02/2018	TP Installation – Sea Installer	
01/03/2018	Export Cable Soundwave Clearance	
02/03/2018	Pre- lay Works for Crossing Third Party Cables/Pipelines	
13/03/2018	Export Cable and Interlink Cable Laying Works	
23/03/2018	Commencement of Jack Up Accommodation platform operations	
27/03/2018	Intertidal and Nearshore Export Cable Works	
06/04/2018	Offshore Substation Installation	
03/05/2018	Transition Piece bolt tightening vessel – Eurus Express	
17/05/2018	Status of Confirmed Unexploded Ordnance	
29/05/2018	Array Cables Installation	
05/06/2018	Array Cables Boulder Clearance	
12/06/2018	OSS installation update	
14/06/2018	UXO detonation - Update	
29/06/2018	UXO Detonation - Complete	
27/07/2018	Offshore Substation Topside Installation – Z11 & Z13	
27/07/2018	Monopile and Transition Piece Installation Update - Innovation return to field	
23/08/2018	HOW01 NtM – Export Cable and Interlink Cable Installation Update (Vessel: Living Stone)	
31/08/2018	Transition piece installation - update	
31/08/2018	Intertidal and Nearshore Export Cable Works	

9. Safety Zones

The Secretary of State for the United Kingdom has declared safety zones under the following terms:

During Construction

1. 500 metres radius around each installation of wind turbine, collector substations and/or their substructures and foundations comprising the Hornsea One Offshore Wind Farm whilst work is being performed as indicated by the presence of construction vessels including jack ups.
2. 50 metres radius around each wind turbine, collector substations and/or their substructures and foundations installed but waiting to be commissioned as part of the Hornsea One Offshore Wind Farm. All fixed structures, including partially constructed structures such as turbine foundations, will be mounted and marked with a Flashing Yellow 2.5s light visible through 360 degrees with a 2nm range.

The table below indicates the Safety Zones that are active.

Asset	Size	Duration
Z13	500m	During the presence of the GMS Endeavour
Z01	500m	During the presence of the GMS Evolution
All locations	500m	During the presence of the Eurus Express
All locations	500m	During the presence of the Wind Innovation
All locations	500m	During the presence of the Innovation
All locations	500m	During the presence of the Living Stone
All locations	500m	During the presence of the Sea Installer
All locations	500m	During the presence of the Edda Mistral

10. WTG & Substation Positions

Below are the positions of locations referred to throughout this document.

WTG ID	WGS84	
	Latitude	Longitude
A03	53° 49' 36.362" N	2° 11' 58.401" E
A04	53° 49' 21.635" N	2° 10' 32.853" E
A05	53° 49' 25.952" N	2° 09' 25.058" E
A06	53° 49' 33.690" N	2° 08' 34.653" E
A07	53° 49' 32.464" N	2° 07' 42.469" E
A08	53° 49' 44.789" N	2° 06' 03.244" E
A09	53° 49' 41.917" N	2° 05' 12.846" E
A10	53° 49' 45.144" N	2° 04' 21.583" E
A11	53° 49' 48.364" N	2° 03' 30.317" E
A12	53° 49' 51.969" N	2° 02' 32.812" E
A13	53° 49' 55.157" N	2° 01' 41.865" E
A14	53° 50' 01.402" N	2° 00' 51.654" E
A15	53° 50' 01.857" N	1° 59' 49.102" E
A16	53° 50' 02.288" N	1° 58' 42.072" E
A17	53° 50' 02.970" N	1° 56' 57.238" E
A18	53° 50' 03.298" N	1° 56' 03.042" E
A19	53° 50' 05.340" N	1° 54' 34.121" E
A20	53° 50' 04.153" N	1° 53' 39.481" E
A21	53° 50' 04.804" N	1° 52' 25.513" E
A22	53° 50' 05.059" N	1° 50' 57.533" E
A23	53° 50' 11.478" N	1° 49' 42.519" E
A24	53° 50' 10.027" N	1° 48' 16.430" E
A25	53° 50' 06.274" N	1° 47' 01.273" E
A26	53° 50' 06.589" N	1° 45' 55.315" E
A27	53° 50' 06.928" N	1° 44' 42.213" E
A28	53° 50' 07.271" N	1° 43' 25.130" E
A29	53° 50' 07.587" N	1° 42' 11.275" E
A30	53° 50' 14.642" N	1° 40' 49.816" E
A31	53° 50' 08.135" N	1° 39' 55.428" E
A32	53° 50' 08.329" N	1° 39' 04.642" E
B01	53° 50' 09.901" N	2° 13' 47.045" E
B02	53° 50' 17.294" N	2° 12' 13.611" E
B05	53° 50' 13.568" N	2° 08' 48.444" E
B07	53° 50' 13.231" N	2° 06' 19.895" E
B10	53° 50' 26.838" N	2° 03' 35.969" E
B13	53° 50' 33.950" N	2° 00' 59.064" E
B16	53° 50' 42.731" N	1° 58' 20.716" E
B18	53° 50' 49.438" N	1° 55' 43.634" E
B20	53° 50' 46.022" N	1° 53' 18.081" E
B21	53° 50' 46.266" N	1° 51' 15.197" E
B22	53° 50' 50.737" N	1° 50' 07.208" E
B23	53° 50' 49.291" N	1° 48' 27.938" E
B24	53° 50' 47.725" N	1° 47' 09.129" E
B25	53° 50' 42.299" N	1° 45' 54.571" E
B27	53° 51' 03.865" N	1° 43' 42.917" E
B28	53° 50' 58.198" N	1° 41' 57.356" E
B30	53° 50' 58.492" N	1° 40' 12.842" E
C01	53° 50' 42.749" N	2° 13' 11.280" E
C03	53° 50' 44.945" N	2° 10' 30.295" E

WTG ID	WGS84	
	Latitude	Longitude
C05	53° 50' 50.038" N	2° 08' 08.696" E
C07	53° 50' 49.261" N	2° 05' 41.602" E
C10	53° 51' 09.122" N	2° 02' 49.679" E
C13	53° 51' 13.312" N	2° 00' 15.913" E
C16	53° 51' 23.712" N	1° 57' 35.260" E
C18	53° 51' 28.777" N	1° 55' 00.387" E
C20	53° 51' 28.596" N	1° 52' 31.220" E
C21	53° 51' 29.321" N	1° 50' 27.756" E
C23	53° 51' 30.170" N	1° 47' 42.830" E
C25	53° 51' 16.144" N	1° 45' 17.179" E
C30	53° 51' 44.759" N	1° 39' 21.566" E
D01	53° 51' 19.036" N	2° 12' 31.748" E
D03	53° 51' 27.125" N	2° 09' 57.215" E
D05	53° 51' 33.204" N	2° 07' 21.543" E
D07	53° 51' 26.092" N	2° 05' 00.231" E
D25	53° 51' 49.986" N	1° 44' 39.770" E
D27	53° 52' 05.499" N	1° 42' 34.723" E
D28	53° 51' 59.883" N	1° 40' 49.047" E
E01	53° 51' 53.062" N	2° 11' 54.701" E
E02	53° 51' 53.838" N	2° 10' 28.350" E
E03	53° 52' 05.000" N	2° 09' 15.872" E
E05	53° 52' 09.257" N	2° 06' 42.135" E
E07	53° 52' 03.296" N	2° 04' 19.517" E
E10	53° 51' 51.400" N	2° 02' 03.364" E
E13	53° 51' 52.670" N	1° 59' 32.740" E
E16	53° 52' 04.770" N	1° 56' 50.156" E
E18	53° 52' 10.657" N	1° 54' 14.317" E
E20	53° 52' 11.164" N	1° 51' 44.332" E
E21	53° 52' 10.815" N	1° 49' 42.004" E
E22	53° 52' 17.258" N	1° 48' 31.781" E
E23	53° 52' 11.044" N	1° 46' 57.697" E
E24	53° 52' 19.198" N	1° 45' 28.085" E
E25	53° 52' 23.825" N	1° 44' 02.344" E
F01	53° 52' 48.086" N	2° 10' 54.639" E
F03	53° 52' 43.967" N	2° 08' 33.310" E
F07	53° 52' 42.594" N	2° 03' 36.484" E
F10	53° 52' 33.673" N	2° 01' 17.023" E
F13	53° 52' 32.023" N	1° 58' 49.544" E
F16	53° 52' 45.823" N	1° 56' 05.028" E
F18	53° 53' 09.705" N	1° 53' 09.308" E
F20	53° 52' 53.727" N	1° 50' 57.418" E
F21	53° 52' 57.834" N	1° 48' 50.122" E
F23	53° 52' 51.913" N	1° 46' 12.540" E
F25	53° 52' 57.661" N	1° 43' 24.901" E
F27	53° 53' 10.480" N	1° 41' 22.750" E
F28	53° 53' 06.724" N	1° 39' 35.969" E
G01	53° 53' 18.707" N	2° 10' 21.214" E
G02	53° 53' 29.078" N	2° 08' 44.887" E
G03	53° 53' 22.930" N	2° 07' 50.725" E

WTG ID	WGS84	
	Latitude	Longitude
G05	53° 53' 08.418" N	2° 05' 37.418" E
G07	53° 53' 17.692" N	2° 02' 58.029" E
G10	53° 53' 15.940" N	2° 00' 30.655" E
G13	53° 53' 11.371" N	1° 58' 06.326" E
G16	53° 53' 26.870" N	1° 55' 19.875" E
G20	53° 53' 36.285" N	1° 50' 10.477" E
G21	53° 53' 32.086" N	1° 48' 12.302" E
G22	53° 53' 37.322" N	1° 47' 03.356" E
G23	53° 53' 32.777" N	1° 45' 27.359" E
G24	53° 53' 43.034" N	1° 43' 56.495" E
G25	53° 53' 56.193" N	1° 42' 20.081" E
H01	53° 53' 58.413" N	2° 09' 37.848" E
H03	53° 54' 01.889" N	2° 07' 08.119" E
H05	53° 53' 49.595" N	2° 04' 52.339" E
H07	53° 53' 58.250" N	2° 02' 13.562" E
H10	53° 53' 58.203" N	1° 59' 44.261" E
H13	53° 53' 50.715" N	1° 57' 23.085" E
H16	53° 54' 07.913" N	1° 54' 34.697" E
H18	53° 53' 54.332" N	1° 52' 18.349" E
H20	53° 54' 32.240" N	1° 49' 08.214" E
H21	53° 54' 15.717" N	1° 47' 23.896" E
H23	53° 54' 13.636" N	1° 44' 42.152" E
H25	53° 54' 27.208" N	1° 41' 45.708" E
H27	53° 54' 33.076" N	1° 39' 51.158" E
J01	53° 54' 38.756" N	2° 08' 53.756" E
J03	53° 54' 40.844" N	2° 06' 25.490" E
J05	53° 54' 25.489" N	2° 04' 13.018" E
J07	53° 54' 32.071" N	2° 01' 36.460" E
J10	53° 54' 40.460" N	1° 58' 57.842" E
J13	53° 54' 30.055" N	1° 56' 39.821" E
J16	53° 54' 48.951" N	1° 53' 49.494" E
J18	53° 54' 36.702" N	1° 51' 33.414" E
J20	53° 55' 07.841" N	1° 48' 29.133" E
J21	53° 54' 57.164" N	1° 46' 38.273" E
J22	53° 55' 01.037" N	1° 45' 30.774" E
J23	53° 54' 54.490" N	1° 43' 56.922" E
J24	53° 54' 59.363" N	1° 42' 32.793" E
J25	53° 54' 58.220" N	1° 41' 11.321" E
K01	53° 55' 20.531" N	2° 08' 08.070" E
K02	53° 55' 09.158" N	2° 06' 54.890" E
K03	53° 55' 19.794" N	2° 05' 42.840" E

WTG ID	WGS84	
	Latitude	Longitude
K05	53° 55' 07.572" N	2° 03' 26.888" E
K07	53° 55' 08.764" N	2° 00' 56.185" E
K10	53° 55' 22.065" N	1° 58' 12.108" E
K13	53° 55' 08.466" N	1° 55' 57.552" E
K16	53° 55' 29.495" N	1° 53' 04.806" E
K18	53° 55' 17.753" N	1° 50' 48.118" E
K20	53° 55' 47.974" N	1° 47' 39.416" E
K21	53° 55' 39.082" N	1° 45' 51.896" E
K23	53° 55' 35.340" N	1° 43' 11.666" E
K25	53° 55' 34.661" N	1° 40' 30.893" E
L01	53° 56' 03.134" N	2° 07' 21.448" E
L03	53° 55' 58.740" N	2° 05' 00.167" E
L05	53° 55' 47.400" N	2° 02' 43.201" E
L18	53° 56' 02.272" N	1° 49' 58.961" E
L20	53° 56' 26.853" N	1° 46' 56.064" E
L21	53° 56' 21.088" N	1° 45' 05.390" E
L22	53° 56' 31.415" N	1° 43' 50.684" E
L23	53° 56' 14.047" N	1° 42' 28.756" E
L24	53° 56' 03.076" N	1° 41' 20.144" E
M02	53° 56' 28.418" N	2° 05' 28.078" E
M03	53° 56' 37.189" N	2° 04' 18.012" E
M05	53° 56' 19.915" N	2° 02' 07.514" E
M20	53° 57' 02.945" N	1° 46' 15.897" E
M21	53° 57' 01.186" N	1° 44' 20.968" E
M22	53° 57' 11.249" N	1° 43' 06.483" E
N01	53° 56' 48.110" N	2° 06' 32.147" E
N02	53° 57' 07.493" N	2° 04' 45.238" E
N20	53° 57' 37.337" N	1° 45' 37.518" E
N21	53° 57' 42.938" N	1° 43' 34.681" E
N22	53° 57' 43.069" N	1° 42' 31.534" E
P01	53° 57' 16.754" N	2° 06' 00.804" E
P20	53° 58' 09.550" N	1° 45' 01.601" E
P21	53° 58' 24.599" N	1° 42' 55.249" E
P22	53° 58' 15.790" N	1° 41' 55.576" E
Q20	53° 58' 38.484" N	1° 44' 29.435" E
Substation ID	Latitude	Longitude
HA-Z01	53° 37' 39.301" N	0° 56' 9.864" E
HA-Z11	53° 53' 26.979" N	1° 42' 51.851" E
HA-Z12	53° 52' 40.210" N	1° 53' 42.938" E
HA-Z13	53° 52' 38.856" N	2° 6' 9.807" E