

Hornsea Project One Offshore Windfarm Weekly Notice of Operations

For Week Commencing	21 st of October 2019
Notice Number	106
Issue Date:	21 st of October 2019

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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

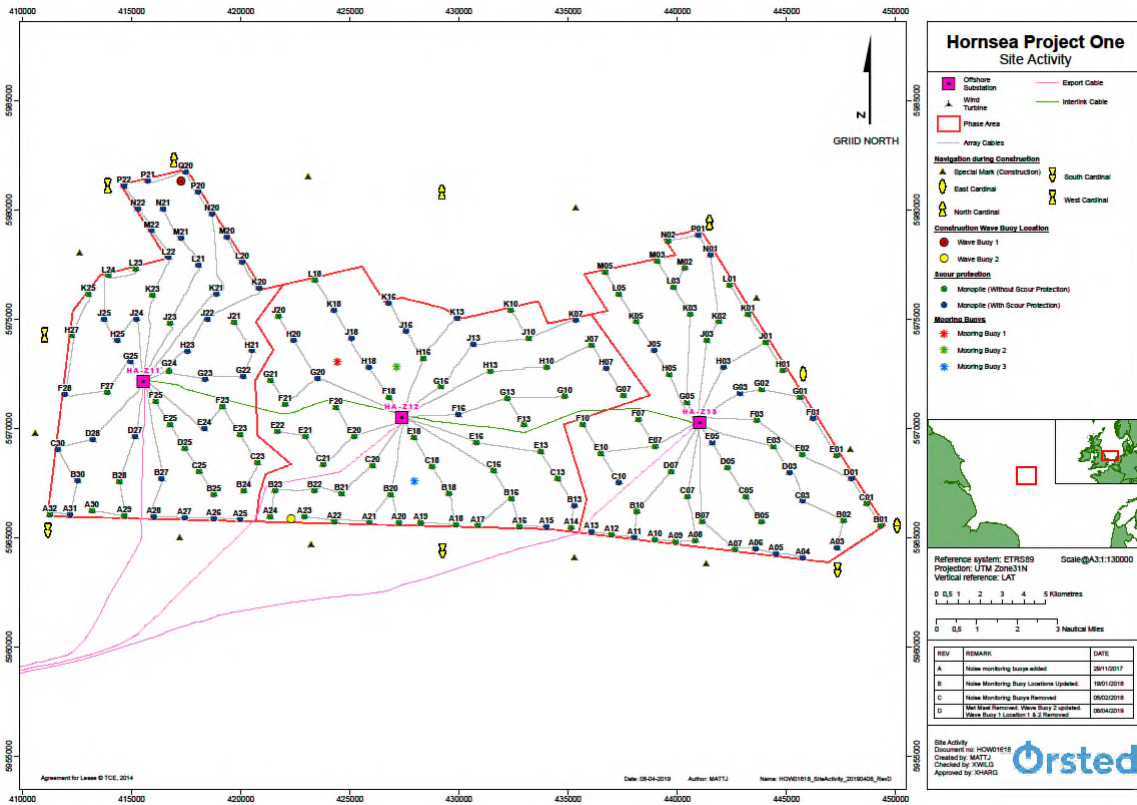
All vessels should proceed with caution whilst navigating and/or working in the area and be aware of the statutory 50m safety zone around each fixed asset.

Increased helicopter activity is expected as hoisting to WTGs begins.

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° 56.09725' N 001° 40.04315' E	SPECIAL MARK, YELLOW PILLAR, YELLOW CROSS LIGHT: FL Y 5S
HOW01 JULIET	53° 58.587' N 001° 49.254' E	SPECIAL MARK, YELLOW PILLAR, YELLOW CROSS LIGHT: FL Y 5S
HOW01 WEST	53° 54.550' N 001° 38.784' E	WEST CARDINAL YELLOW BLACK YELLOW PILLAR, Q (9) 15s, 2 CONES APEX INWARDS
HOW01 WEST NORTH WEST	53° 58.261' N 001° 41.251' 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° 58.969' N 001° 43.984' E	NORTH CARDINAL, BLACK OVER YELLOW PILLAR, VQ, TOPMARK; 2 CONES APEX UPWARDS
HOW01 NORTH	53° 58.277' N 001° 55.354' E	NORTH CARDINAL, BLACK OVER YELLOW PILLAR, Q, TOPMARK; 2 CONES APEX UPWARDS
HOW01 NORTH EAST	53° 57.590' N	NORTH CARDINAL, BLACK OVER YELLOW PILLAR, VQ, 2 CONES APEX UPWARDS

	002° 06.473' E	
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 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

4.3 Wave Buoys

HOW01 Wave 1	53° 58.391' N 001° 44.320' E	SPECIAL MARK YELLOW BOUY, Q (5) 20s – (YELLOW) TOPMARK; YELLOW CROSS
HOW01 Wave 2	53° 50.123' N 001° 49.152' E	SPECIAL MARK YELLOW BOUY, Q (5) 20s – (YELLOW) TOPMARK; YELLOW CROSS

4.4 Subsea Monuments – On Seabed

Monument 1	53° 51.647' N 001° 48.904' E	
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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.

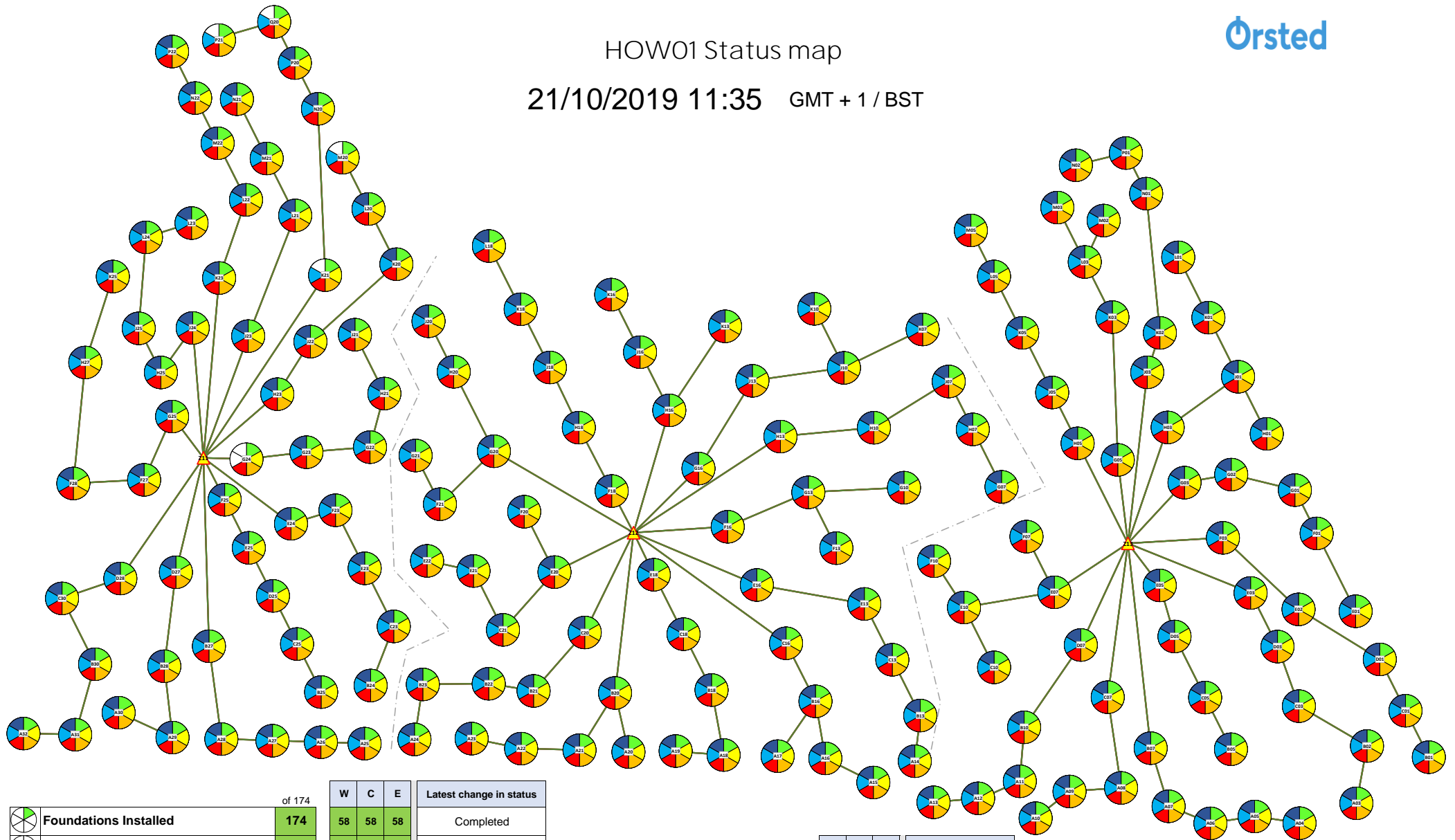
Vessel Details		Summary of Vessel Communications				Work Schedule		Vessel Clearance Certificate	
Vessel Name	MMSI	Contact Number	E-mail	Type	Frequencies Monitored	Start/Arrival	Work Package	VCC Issued	VCC Number
GUARD VESSELS									
Esvagt Castor	220003000	(+45) 61 62 67 74	castor@esvagtvesse.com	VHF	Ch. 16 & P1 @ 162.050 MHz	24/10/2017	Construction	27/10/2017	HOW01-VCC-009
CREW TRANSFER VESSELS									
MHO Grimsby	219025992	+45 53 65 46 45	mho-grimsby@mho-co.dk	VHF	Ch. 16 & P1 @ 162.050 MHz	25/07/2018	Construction	27/07/2018	HOW01-VCC-080
Fob Swath 5	219464000	+4530326614	Fob5@outlook.dk	VHF	Ch. 16 & P1 @ 162.050 MHz	12/02/2019	WTG	05/02/2019	HOW01-VCC-113
Fob Swath 8	219142000	+4521341229	Fob8@outlook.dk	VHF	Ch. 16 & P1 @ 162.050 MHz	04/02/2019	WTG	03/02/2019	HOW01-VCC-115
MHO Gurli	219023785	+45 53 69 46 45	mho-gurli@mho-co.dk	VHF	Ch. 16 & P1 @ 162.050 MHz	05/03/2019	Construction	05/03/2019	HOW01-VCC-120
Fob Swath 1	219015382	+4553612729	fobswath1@hotmail.dk	VHF	Ch. 16 & P1 @ 162.050 MHz	28/05/2019	WTG	28/05/2019	HOW01-VCC-129
MCS Swath 2	232021202	01475830687	mcswath2@maritimecraft.co.uk	VHF	Ch. 16 & P1 @ 162.050 MHz	18/07/2019	O&M	TBC	HOW01-VCC-133
SERVICE OPERATION VESSELS									
Edda Mistral	232008600	+44 1472 86 8003	master.mistral@ostensjo.no	VHF	Ch. 16 & P1 @ 162.050 MHz	10/09/2018	Construction	09/09/2018	HOW01-VCC-092
Deep Cygnus	257205000	+47 21034535	bridge@deepcygnus.no	VHF	Ch. 16 & P1 @ 162.050 MHz	04/02/2019	WTG	03/02/2019	HOW01-VCC-116
Edda Fjord	257204000	+4748994526	master.fjord@ostensjo.no	VHF	Ch. 16 & P1 @ 162.050 MHz	23/09/2019	Construction	23/09/2019	HOW01-VCC-141
OTHER VESSELS									
Curtis Marshall	235107219	TBC	master@bmarshallmarine.co.uk	VHF	Ch. 16 & P1 @ 162.050 MHz	22/10/2019	HOW2	TBC	HOW01-VCC-143

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
Seven Lass	235087047	+447773031577	Ashley.kirby@ocean-ecology.com	VHF	Ch. 16 & P1 @ 162.050 MHz	TBC	HOW02	02/10/2019	HOW01-VCC-142

6 Installation Status

HOW01 Status map

21/10/2019 11:35 GMT + 1 / BST



	of 174	W	C	E	Latest change in status
Foundations Installed	174	58	58	58	Completed
Array termination completed	174	58	58	58	Completed
TP's energised	174	58	58	58	Completed
WTG installed	174	58	58	58	Completed
Commissioning certificate signed	173	57	58	58	16 October 2019
240 hr test completed	169	53	58	58	15 October 2019

<u>Array cables installed</u>	174 cables
<u>Burial completed</u>	174 cables
<u>VLF test Completed</u>	36 strings
<u>Strings Energised</u>	36 strings

W	C	E	Latest change in status
58	58	58	Completed
58	58	58	Completed
12	12	12	Completed
12	12	12	Completed

6.1 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)

6.2 OSS Interlink Cable Status

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

Z11 – Z12

Z12 – Z13

7 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	
19/09/2018	Diving Met Mast Removal Preparation Campaign	
31/10/2018	Post lay rock placement r1	
09/11/2018	Notus Express TP bolt tightening vessel	
13/11/2018	UXO Detonation	

27/11/2018	Offshore Export Cable Burial – ETD Hercules	
04/01/2019	Decommissioning of Anemometry Mast	
25/01/2019	WTG Installation – Vessel Sea Challenger	
25/01/2019	WTG Installation – Bold Tern	
19/03/2019	Post Lay Rock Placement – Seahorse	
28/03/2019	Survey Vessel – Glomar Vantage	
03/05/2019	Holderness Coast Offshore Geophysical Survey	Update issued 04/06/2019
24/05/2019	Relocation of Hornsea Project One Construction Buoys	
24/05/2019	Post Lay Rock Placement Simon Stevin	
14/06/2019	Export Cable Nearshore Survey	
21/06/2019	Relocation of Hornsea Project One Construction Buoys	Update issued 04/07/19
09/08/2019	Export Cable Nearshore Cable Burial	

8 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
All locations	500m	During the presence of the Edda Mistral
All locations	500m	During the presence of the Deep Cygnus
All locations	500m	During the presence of the Edda Fjord

9 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
C05	53° 50' 50.038" N	2° 08' 08.696" E
C07	53° 50' 49.261" N	2° 05' 41.602" E

WTG ID	WGS84	
	Latitude	Longitude
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
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

WTG ID	WGS84	
	Latitude	Longitude
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
K05	53° 55' 07.572" N	2° 03' 26.888" E
K07	53° 55' 08.764" N	2° 00' 56.185" E

WTG ID	WGS84	
	Latitude	Longitude
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° 37,655" N	0° 56,163" 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