



**REPORT**



# Hornsea Project One Offshore Windfarm

## Weekly Notice of Operations

For Week Commencing	28th January 2019
Notice Number	71
Issue Date:	29 <sup>th</sup> January 2019

Prepared Benjamin Skelly (BESKE), 6 September 2017  
Checked Benjamin Skelly (BESKE), 15 September 2017  
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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	<a href="mailto:MHCC_HOW01_ADM@orsted.co.uk">MHCC_HOW01_ADM@orsted.co.uk</a>

## 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

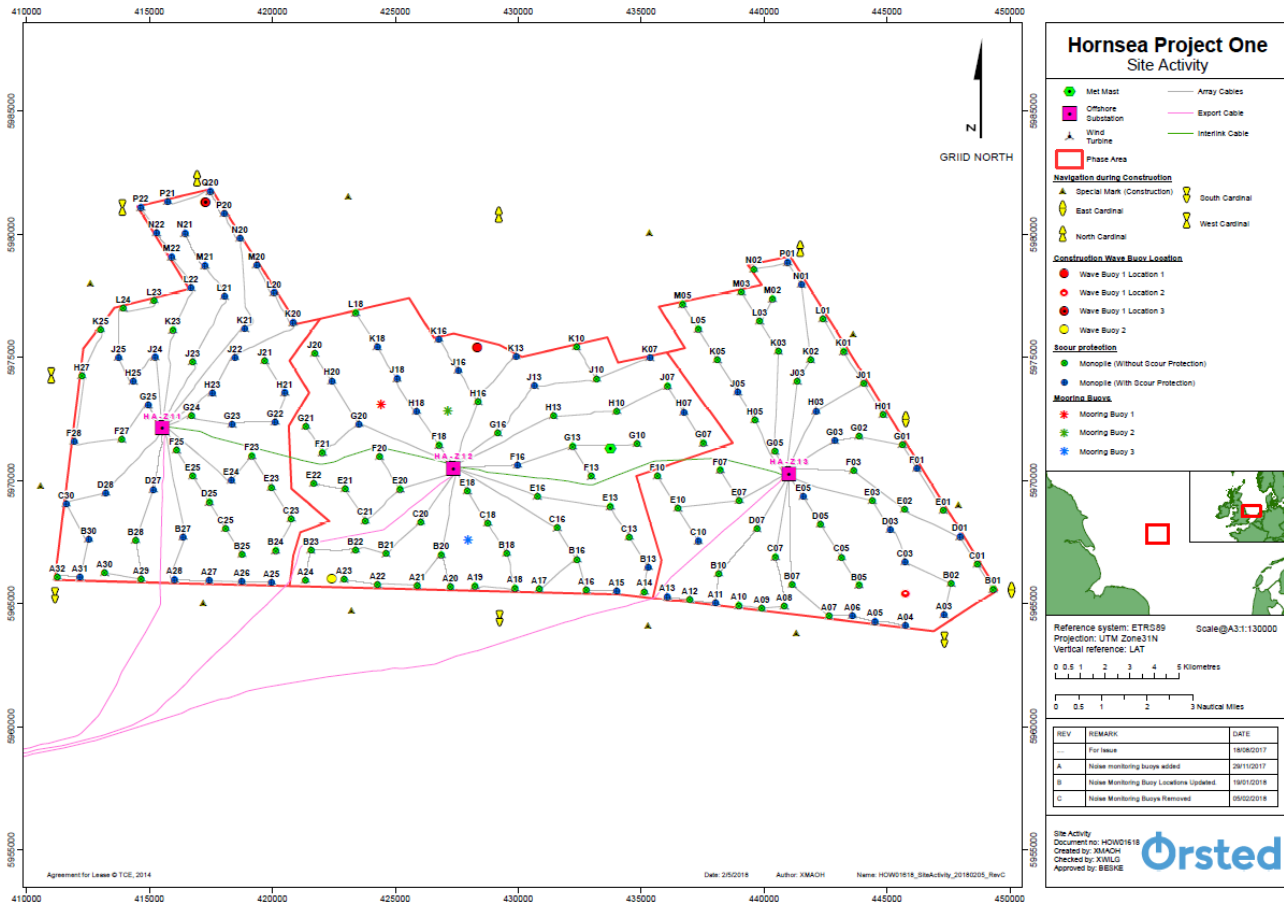
All vessels should proceed with caution whilst navigating and/or working in the area and be aware of the statutory 50m safety zone around each fixed asset.

**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.**

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

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

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

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

**4.4 Wave Buoys**

<b>HOW01 Wave 1</b>	53° 50.033' N 002° 10.316' E	SPECIAL MARK YELLOW BOUY, Q (5) 20s – (YELLOW) TOPMARK; YELLOW CROSS
<b>HOW01 Wave 2</b>	53° 50.123' N 001° 49.152' E	SPECIAL MARK YELLOW BOUY, Q (5) 20s – (YELLOW) TOPMARK; YELLOW CROSS

**4.5 Subsea Monuments – On Seabed**

<b>Monument 1</b>	53° 51.647' N 001° 48.904' E
<b>Monument 2</b>	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.

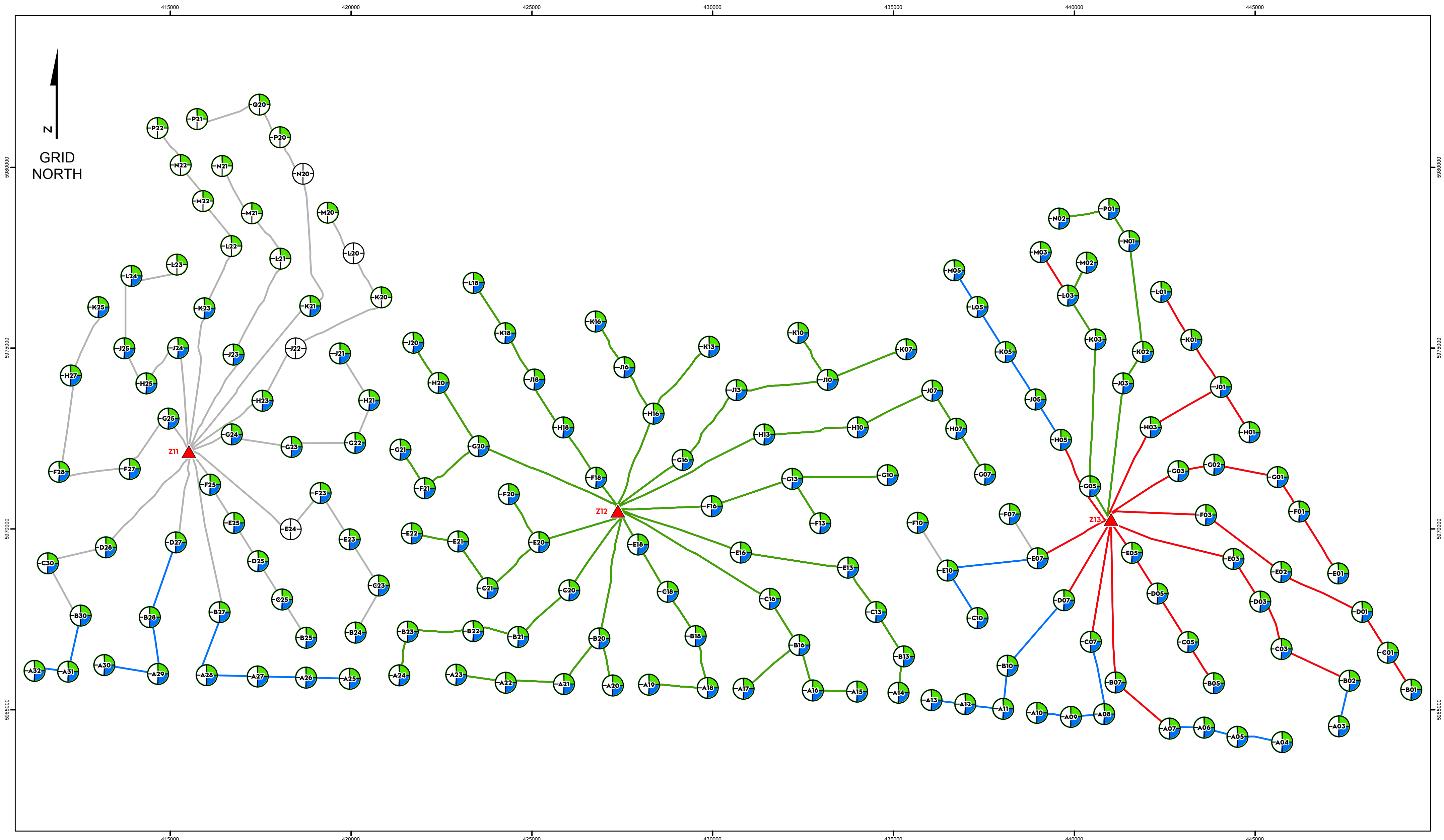
Vessel Details		Summary of Vessel Communications				Work Schedule		Vessel Clearance Certificate	
Vessel Name	MMSI	Contact Number	E-mail	Type	Frequencies Monitored	Start/Arrival	Work Package	VCC Issued	VCC Number
<b>GUARD VESSELS</b>									
Esvagt Castor	220003000	(+45) 61 62 67 74	<a href="mailto:castor@esvagtvesel.com">castor@esvagtvesel.com</a>	VHF	Ch. 16 & P1 @ 162.050 MHz	24/10/2017	Construction	27/10/2017	HOW01-VCC-009
Resolute	2350690136		<a href="mailto:russel@drdiesel.co.uk">russel@drdiesel.co.uk</a>	VHF	Ch. 16 & P1 @ 162.050 MHz	13/04/2018	Export Cable	13/04/2018	HOW01-VCC-041
Adventure	235109237	+44 7446 054547	<a href="mailto:gvadventure@gmail.com">gvadventure@gmail.com</a>	VHF	Ch. 16 & P1 @ 162.050 MHz	18/05/2018	Export Cable	18/05/2018	HOW01-VCC-064
Gertrude Ann	232007970	-	<a href="mailto:gvgertrudeann@gmail.com">gvgertrudeann@gmail.com</a>	VHF	Ch. 16 & P1 @ 162.050 MHz	18/05/2018	Export Cable	18/05/2018	HOW01-VCC-084
Esvagt Carina	219010516	+45 82 13 65 54	<a href="mailto:carina@esvagtvesel.com">carina@esvagtvesel.com</a>	VHF	Ch. 16 & P1 @ 162.050 MHz	28/10/2019	Construction	28/01/2019	HOW01-VCC-110
<b>CREW TRANSFER VESSELS</b>									
MCS Pampero	235092103	07769934448	<a href="mailto:mcsbampero@maritimecraft.co.uk">mcsbampero@maritimecraft.co.uk</a>	VHF	Ch. 16 & P1 @ 162.050 MHz	31/05/2018	Construction	30/05/2018	HOW01-VCC-067
OOO Nerz	232010560	+45 53 65 46 45	<a href="mailto:occ-nerz@mho-co.dk">occ-nerz@mho-co.dk</a>	VHF	Ch. 16 & P1 @ 162.050 MHz	25/07/2018	Construction	27/07/2018	HOW01-VCC-080
Rix Leopard	235113904	+44 (0) 07702 657434	<a href="mailto:rix.leopard@rix.co.uk">rix.leopard@rix.co.uk</a>	VHF	Ch. 16 & P1 @ 162.050 MHz	13/03/2018	Construction	22/03/2018	HOW01-VCC-021

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
Rix Lynx	235115745	+07836615491	<a href="mailto:rix.lynx@rix.co.uk">rix.lynx@rix.co.uk</a>	VHF	Ch. 16 & P1 @ 162.050 MHz	11/04/2018	Construction	11/04/2018	HOW01-VCC-023
Fob Swath 5	219464000	TBC	TBC	VHF	Ch. 16 & P1 @ 162.050 MHz	TBC	WTG	TBC	HOW01-VCC-113
Fob Swath 8	219142000	TBC	TBC	VHF	Ch. 16 & P1 @ 162.050 MHz	TBC	WTG	TBC	HOW01-VCC-114
<b>JACK UP SHIPS</b>									
Sea Installer	219456000	020 3145 4420	<a href="mailto:bridge_si@a2sea.com">bridge_si@a2sea.com</a>	VHF	Ch. 16 & P1 @ 162.050 MHz	13/09/2018	Foundations	13/09/2018	HOW01-VCC-095
GMS Endeavour	370582000	+44 07379 922184	<a href="mailto:endeavour.master@fleet.gmsuae.com">endeavour.master@fleet.gmsuae.com</a>	VHF	Ch. 16 & P1 @ 162.050 MHz	13/03/2018	Construction	15/04/2018	HOW01-VCC-025
GMS Evolution	374250000	+870773261545	<a href="mailto:evolution.master@fleet.gmsuae.com">evolution.master@fleet.gmsuae.com</a>	VHF	Ch. 16 & P1 @ 162.050 MHz	15/06/2018	Construction	16/06/2018	HOW01-VCC-010
Innovation	218781000	-	<a href="mailto:bridge.innovation@ships.deme.be">bridge.innovation@ships.deme.be</a>	VHF	Ch. 16 & P1 @ 162.050 MHz	23/12/2017	Foundations	22/01/2018	HOW01-VCC-016
Apollo	253586000	+32 470 783 880	<a href="mailto:captain.apollo@ships.deme-group.com">captain.apollo@ships.deme-group.com</a>	VHF	Ch. 16 & P1 @ 162.050 MHz	19/01/2019	Foundations	19/01/2019	HOW01-VCC-109
Bold Tern	229080000	+47 22 62 76 68	<a href="mailto:master.bot@fredolsen.com">master.bot@fredolsen.com</a>	VHF	Ch. 16 & P1 @ 162.050 MHz	TBC	WTG	TBC	HOW01-VCC-111
Sea Challenger	219019002	+4589889010	<a href="mailto:bridge_sc@a2sea.com">bridge_sc@a2sea.com</a>	VHF	Ch. 16 & P1 @ 162.050 MHz	TBC	WTG	TBC	HOW01-VCC-112



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
<b>SERVICE OPERATION VESSELS</b>									
Edda Mistral	232008600	+44 1472 86 8003	<a href="mailto:master.nb470@ostensjo.no">master.nb470@ostensjo.no</a>	VHF	Ch. 16 & P1 @ 162.050 MHz	10/09/2018	Construction	09/09/2018	HOW01-VCC-092
Wind Innovation	235113838	+45 21 325 431	<a href="mailto:master.wi@c-bed.nl">master.wi@c-bed.nl</a>	VHF	Ch. 16 & P1 @ 162.050 MHz	07/07/2018	Construction	06/07/2018	HOW01-VCC-029
Seaway Moxie	232015469	+49 303 0807 310	<a href="mailto:SeawayMoxie.Captain@Subsea7.com">SeawayMoxie.Captain@Subsea7.com</a>	VHF	Ch. 16 & P1 @ 162.050 MHz	18/01/2019	Array Cable	11/10/2018	HOW01-VCC-091
Deep Cygnus	257205000	TBC	TBC	VHF	Ch. 16 & P1 @ 162.050 MHz	TBC	WTG	TBC	HOW01-VCC-067
<b>TRENCHING VESSELS</b>									
Grand Canyon	257031820	+4721034500	<a href="mailto:master@grand-canyon.no">master@grand-canyon.no</a>	VHF	Ch. 16 & P1 @ 162.050 MHz	29/10/2018	Array Cable	27/10/2018	HOW01-VCC-044
<b>CABLE LAYING VESSELS</b>									
Seaway Aimery	232015468	(0)203 145 41 22	<a href="mailto:MSV_SeawayAimery.Bridge@Subsea7.com">MSV_SeawayAimery.Bridge@Subsea7.com</a>	VHF	Ch. 16 & P1 @ 162.050 MHz	15/10/2018	Array Cable	14/10/2018	HOW01-VCC-099
<b>PLATFORM SUPPLY VESSELS</b>									
Skandi Captain	258345000	+47 959 83 925	<a href="mailto:captain.captain@captain.dof.no">captain.captain@captain.dof.no</a>	VHF	Ch. 16 & P1 @ 162.050 MHz	04/08/2018	Construction	04/08/2018	HOW01-VCC-069

## 6. Installation Status

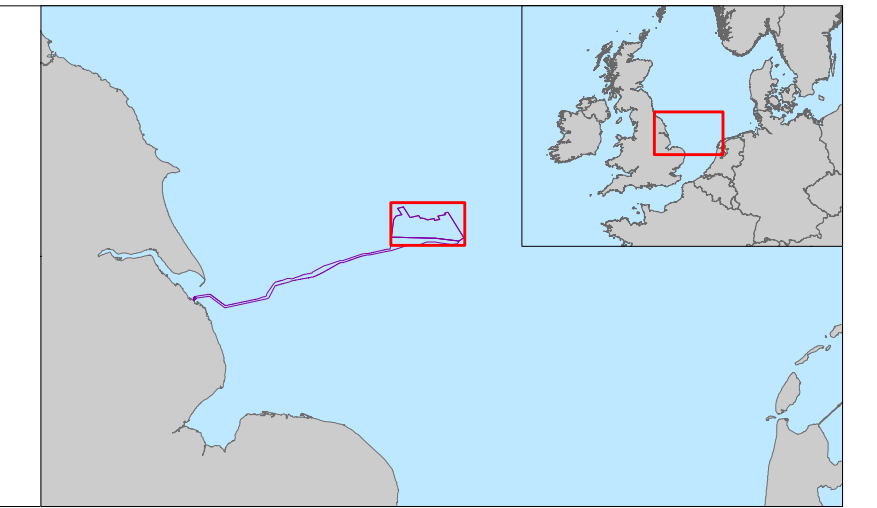


# Hornsea Project One

## Installation Progress

As at: 28/01/2019

- | WTG position              | Array Cables                       | Offshore Substations |
|---------------------------|------------------------------------|----------------------|
| MP Installation Complete  | Array Cable Installed              | Offshore Substation  |
| TP Installation Complete  | Array Cabled Buried                |                      |
| WTG Installation Complete | Array Cable - Both Ends Terminated |                      |
| WTG Commissioned          | Planned Offshore Cable             |                      |



## 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	

## 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
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 Wind Innovation
All locations	500m	During the presence of the Innovation
All locations	500m	During the presence of the Sea Installer
All locations	500m	During the presence of the Edda Mistral
All locations	500m	During the presence of the Seaway Moxie
All locations	500m	During the presence of the Deep Cygnus
All locations	500m	During the presence of the Bold Tern
All locations	500m	During the presence of the Sea Challenger

## 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

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° 37,655' 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