

Seagreen Offshore Wind Farm

Offshore Transmission Asset Development Specification and Layout Plan

May 2020



Project Title	Seagreen Wind Energy Ltd
Document Reference Number	LF000009-CST-OF-PLN-0005

Offshore Transmission Asset Development Specification and Layout Plan (OTA DSLP)

OTA Marine Licence Condition 3.2.2.6

For the approval of Scottish Ministers

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Rev	Date	Reason for Issue	Originator	Checker	ECoW	Approver
02	01/05/2020	For approval	Xodus Group Ltd			

Table of Contents

Consent Plan Overview.....	4
1. Introduction.....	7
1.1 Consents and Licences	7
1.2 Project Description.....	7
1.3 Consent and Licence Requirements.....	8
1.4 Linkages with other Consent plans and Consent Conditions.....	10
1.5 Construction Management	10
1.6 Updates and Amendments	10
2. Scope and Objectives of the OTA DSLP	11
3. Development Specification and Layout – Offshore Transmission Asset – OSPs	11
3.1 Introduction	11
3.2 OSPs Location.....	11
3.3 OSPs Foundation Types.....	11
3.4 Bathymetry and Seabed Conditions	11
3.5 Other Key Constraints.....	12
3.6 Coordinates for OSPs Locations.....	12
3.7 OSPs Dimensions.....	12
3.8 OSPs Finishes.....	13
4. Development Specification and Layout – Offshore Transmission Asset – Export Cables	21
4.1 Introduction	21
4.2 Arrangement and Lengths	21
4.3 Bathymetry and Seabed Conditions	23
4.4 Other Spatial Constraints.....	23
5. Development Specification and Layout – Offshore Transmission Asset – OSPs Interconnector Cable ..	29
5.1 Introduction	29
5.2 Arrangement and Length	29
5.3 Bathymetry and Seabed Conditions	29
5.4 Key Constraints	29
6. Compliance with the ES, the ES Addendum and the Cable Landfall ER	30

6.1	Compliance with Construction Methods Assessed in the ES and ES Addendum	30
6.2	Delivery of Construction-related Mitigation Proposed in the ES and ES Addendum	30
7.	References	31
	Appendix A – OTA DSLP List of Abbreviations and Definitions	32
	Appendix B – The OTA DSLP Change Management Procedure	35
	Appendix C – GIS information to Support the OTA DSLP	36
	Appendix D – Compliance with ES parameters and processes	37
	Appendix E – Summary of other mitigation commitments (out with Appendix D)	38

Consent Plan Overview

Purpose of the Offshore Transmission Asset Development Specification and Layout Plan (OTA DSLP)

This Offshore Transmission Asset Development Specification and Layout Plan (OTA DSLP) is submitted by Seagreen Wind Energy Limited (SWEL) (hereinafter referred to as Seagreen) on behalf of Seagreen Alpha Wind Energy Limited (SAWEL) and Seagreen Bravo Wind Energy Limited (SBWEL) to address the specific requirements of Condition 3.2.2.6 of the Offshore Transmission Asset (OTA) Marine Licence granted by the Scottish Ministers under the Marine (Scotland) Act 2010 and the Marine and Coastal Access Act 2009 on 10 October 2014, as varied on 6 March 2019 (the OTA Marine Licence).

Seagreen Alpha and Seagreen Bravo Offshore Wind Farms (OWFs) and the OTA are collectively referred to as the 'Seagreen Project'.

The overall aims and objectives of the OTA DSLP are to provide details of the proposed specification and layout of the development in so far as it relates to the:

- two Offshore Substation Platforms (OSPs);
- three Offshore Export Cables, connecting the two OSPs to landfall, and
- the OSPs Interconnector Cable, which runs between the two OSPs.

All Seagreen Contractors (including their Sub-Contractors) involved in the Seagreen OTA Project are required to comply with this OTA DSLP through conditions of contract.

A separate Offshore Wind Farm Development Specification and Layout Plan (OWF DSLP) (LF000009-CST-OF-PLN-0004) addresses Section 36 (S36) Consents Condition 12.

While SWEL note that condition 12 of the S36 consent requires that the OWF DSLP shows the location of the substation platforms, SWEL considers this part of the OTA infrastructure and this information has been included in the OTA DSLP rather than the separate OWF DSLP.

Scope of the OTA DSLP

This OTA DSLP covers, in line with the requirements of condition 3.2.2.6 of the OTA Marine Licence, industry standards and good practice, the following:

- the proposed location of each individual OSP, seabed conditions, bathymetry, confirmed foundation type for each OSP and any key constraints recorded on the Site;
- a list of latitude and longitude coordinates accurate to three decimal places of minutes of arc for each OSP, which is also provided as a geographic information system (GIS) shape file using World Geodetic System 1984 (WGS84) format;
- a table and diagram of each OSP, showing dimensions;
- the finishes for each OSP; and
- the length and proposed arrangements on the seabed of all cables.

Structure of the OTA DSLP

The OTA DSLP is structured as follows:

Section 1&2	Provides an overview of the Project and the consent requirements that underpin the content of this OTA DSLP. It also sets out the purpose, objectives and scope of the OTA DSLP and sets out the process for making updates and amendments.
Section 3	Provides the required details in relation to the development specification and layout of the OSPs.
Section 4	Provides the required details in relation to the development specification and layout of the Export Cables.
Section 5	Provides the required details in relation to the development specification and layout of the OSPs Interconnector Cable.
Section 6	Demonstrates compliance with the original application and commitments made.
Section 7	Lists the references made within this OTA DSLP.
Appendices	Appendix A – Abbreviations and Definitions Appendix B – Change Management Process Appendix C – GIS information to Support the OTA DSLP Appendix D – Compliance with ES Parameters Appendix E – Summary Mitigation Measures

Plan Audience

This OTA DSLP will be submitted for approval to the Licensing Authority in consultation with other stakeholders in relation to monitoring compliance with the specific requirements of the relevant consent condition.

Copies of the OTA DSLP are to be held in the following locations:

- Seagreen's head office;
- Seagreen's construction office and marine coordination centre;
- at the premises of any Contractor (as appropriate), including the Seagreen ECoW, appointed by Seagreen; and
- aboard any vessel engaged in the OTA Works.

1. Introduction

1.1 Consents and Licences

Seagreen Wind Energy Limited (SWEL), (hereafter referred to as Seagreen) was granted Section 36 Consents (S36 Consents) under the Electricity Act 1989 by Scottish Ministers in October 2014 for Seagreen Alpha and Seagreen Bravo Offshore Wind Farms (OWFs), as varied. Marine Licences for Seagreen Alpha and Bravo OWFs and the Offshore Transmission Asset (OTA) were also granted by Scottish Ministers in October 2014, under the Marine (Scotland) Act 2010 and the Marine and Coastal Access Act 2009, (together the 'Marine Licences').

Seagreen Alpha and Seagreen Bravo Offshore Wind Farms (OWFs) and the OTA are collectively referred to as the 'Seagreen Project'.

In 2018, following application by Seagreen, the Alpha OWF Marine Licence and Bravo OWF Marine Licence were varied by Scottish Ministers, following application by Seagreen in 2019 these licences were subsequently varied. In 2019, the OTA Marine Licence was also varied by the Scottish Ministers. In 2019, the Bravo Marine Licence was assigned from Seagreen Bravo Wind Energy Limited (SBWEL) to Seagreen Alpha Wind Energy Limited (SAWEL).

1.2 Project Description

The Seagreen Project is located in the North Sea, in the outer Firth of Forth and Firth of Tay region and comprises the OWFs (the wind turbine generators (WTGs), their foundations and associated array cabling), together with associated infrastructure of the OTA (Offshore Substation Platform (OSP), their foundations the offshore export cable and interconnector cable), to facilitate the export of renewable energy to the national electricity transmission grid. The location of the Seagreen Project is shown in Figure 1.0.

The Seagreen Project will consist of the following key components:

- 150 WTGs; comprising:
 - 114 WTGs installed on three legged steel jackets, each installed on suction bucket caissons;
 - 36 WTGs installed on up to four legged steel jackets, each installed on pin pile foundations;
 - Two OSPs, each installed on 12 pin pile foundations;
 - A network of inter-array subsea cables as detailed below;
 - Circa 300km of inter-array cables to connect strings of WTGs on suction bucket caissons together and to connect these WTGs to OSP 1
 - Circa 55km of inter-array cables to connect strings of WTGs on piled foundations together and to connect these WTGs to OSP 2; and
 - Circa 3km of interconnector cable to connect the two OSPs
 - Inter-array cables will be buried where possible and where burial is not possible cable protection will be provided.

- Three subsea export cables, totalling circa 190km in length, to transmit electricity from the OSPs to the landfall at Carnoustie and connecting to the onshore export cables for transmission to the onshore substation and connection to the National Grid network. Export cables will be buried where possible and where burial is not possible cable protection will be provided.

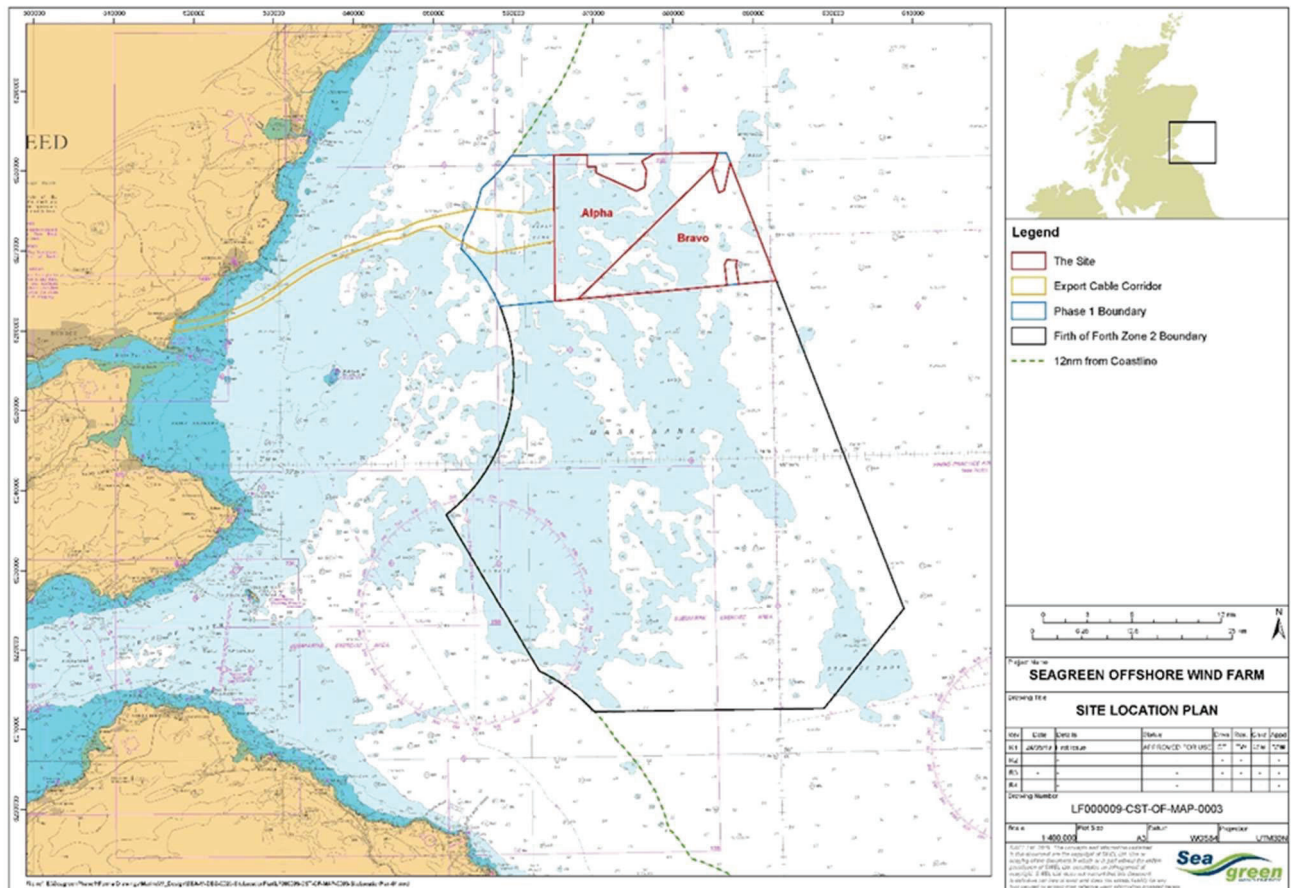


Figure 1.0 - Project Location

1.3 Consent and Licence Requirements

This OTA DLSP has been prepared to discharge condition 3.2.2.6 of the OTA Marine Licence as set out in Table 1.1.

A separate Offshore Wind Farm Development Specification and Layout Plan (OWF DSLP) (LF000009-CST-OF-PLN-0004) has been prepared for the OWF assets (i.e. the installation of the OWF foundations and turbines and the inter-array cables).

Table 1.1 - Consent Conditions to be discharged by this OTA DSLP

Consent Document	Condition Reference	Condition Text	Reference to relevant Section of this OTA DSLP
OTA Marine Licence	Condition 3.2.2.6	The Licensee must, no later than 6 months prior to the Commencement of the Works, submit a DSLP, in writing, to the Licensing Authority for their written approval. Such approval may only be granted following consultation by the Licensing Authority with the MCA, NLB, the Chamber of Shipping ("CoS"), the JNCC, SNH, the Scottish Fisherman's Federation ("SFF"), the Civil Aviation Authority ("CAA") and any such other advisors or organisations as may be required at the discretion of the Licensing Authority.	The submission of the OTA DSLP document
		The DSLP must include, but not be limited to the following: a) A plan showing the proposed location of each individual OSP, seabed conditions, bathymetry, confirmed foundation type for each OSP and any key constraints recorded on the OWF site;	Section 3
		b) A list of latitude and longitude coordinates accurate to three decimal places of minutes of arc for each OSP, this should also be provided as a geographic information system ("GIS") shape file using World Geodetic System 1984 ("WGS84") format;	Section 3 and Appendix C
		c) A table or diagram of each OSP, showing dimensions;	Section 3.7
		d) The finishes for each OSP; and	Section 3.8
		e) The length and proposed arrangements on the seabed of all cables.	Section 4 for Export Cables Section 5 for OSPs Interconnector Cable

1.4 Linkages with other Consent plans and Consent Conditions

The OTA DSLP is not linked with any other Project consent plan for the purposes of discharging condition 3.2.2.6 of the OTA Marine Licence. However, we set out below the linkage with other Project consent plans for information only.

It should be noted that information is not repeated across consent plans, rather, where pertinent information is available in linked consent plans, the relevant consent plan is referenced.

Table 1.2 - Linkage with other consent plans

Reference	Linkage with the OTA DSLP	Cross-reference in this OTA DSLP
Design Statement (DS) (required by OTA Marine Licence Condition 3.2.2.7)	The DS includes representative OTA visualisations from key viewpoints based on this OTA DSLP.	This document was provided as part of DS development. The DS Seagreen reference is LF000009-CST-OF-PLN- 013.

1.5 Construction Management

Full details of the construction management procedures, including environmental compliance, monitoring and reporting and roles and responsibilities are provided in the Offshore Construction Environmental Management Plan (LF000009-CST-OF-PLN-0014 - Offshore CEMP).

1.6 Updates and Amendments

The change management process for any updates required to the OTA DSLP including resubmission of consent plans for approval, is outlined in Appendix B.

2. Scope and Objectives of the OTA DSLP

This OTA DSLP covers, in line with the requirements of condition 3.2.2.6 of the OTA Marine Licence issued to Seagreen, industry standards and good practice and applies to all construction as required to be undertaken before the Final Commissioning of the Works.

This OTA DSLP provides details of the proposed specification and layout in so far as it relates to the:

- two Offshore Substation Platforms (OSPs);
- three Offshore Export Cables, connecting the two OSPs to landfall, and
- the OSPs Interconnector Cable, which runs between the two OSPs.

All Seagreen personnel and Seagreen's Contractors (including their Sub-Contractors) involved in the Seagreen Project must comply, with the OTA DSLP.

3. Development Specification and Layout – Offshore Transmission Asset – OSPs

3.1 Introduction

This section of the DSLP details the OTA development specification and layout of the two Offshore Substation Platforms (OSPs).

3.2 OSP Locations

The Offshore Wind Farm (OWF) layout presented in Figure 3.1 below includes the location of the two OSPs. The two OSPs are located close to the geometric centre of the OWF site.

3.3 OSP Foundation Types

The two Seagreen OSP topsides will each be supported by a six leg steel jacket. Each leg will be secured using up to two piles (12 piles each, 24 piles in total), each with an outer diameter of up to 3m and a maximum penetration into the seabed of 45m. Further details on piling parameters, approach and methodology are provided in the Offshore Transmission Asset Piling Strategy (OTA PS) (LF000009-CST-OF-PLN-0003).

3.4 Bathymetry and Seabed Conditions

The bathymetry in the area close to the OSPs is typical of the median depth range found across the site, see Figure 3.2 below. The seabed conditions in this area are characterised as a mixture of mainly silty sand to sand with some gravelly sand potentially present, as shown in Figure 3.3 below. The water depths at the OSP locations below Lowest Astronomical Tide (LAT) are set out in Table 3.1 below.

Table 3.1– OSPs location co-ordinates (WGS84) and water depths

OSP Identification	Latitude (ddm) WGS84	Longitude (ddm) WGS84	Water depth (below LAT) (m)
SN-K15	56° 35.094' N	1° 45.537' W	55.2
SN-H13	56° 34.353' N	1° 48.126' W	54.8

3.5 Other Key Constraints

The constraints that have been considered when defining the OWF site ‘developable area’ boundaries, within which the OSPs are located, are presented in Figure 3.4.

3.6 Coordinates for OSPs Locations

The OSPs will be installed approximately in the geographical centre of the OWF site, in the locations presented in Table 3.1. The GIS shapefile in Appendix C includes the co-ordinate data for the OSPs.

3.7 OSPs Dimensions

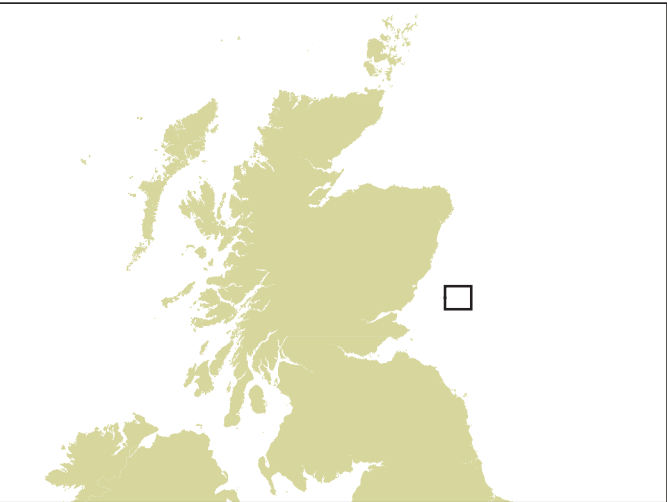
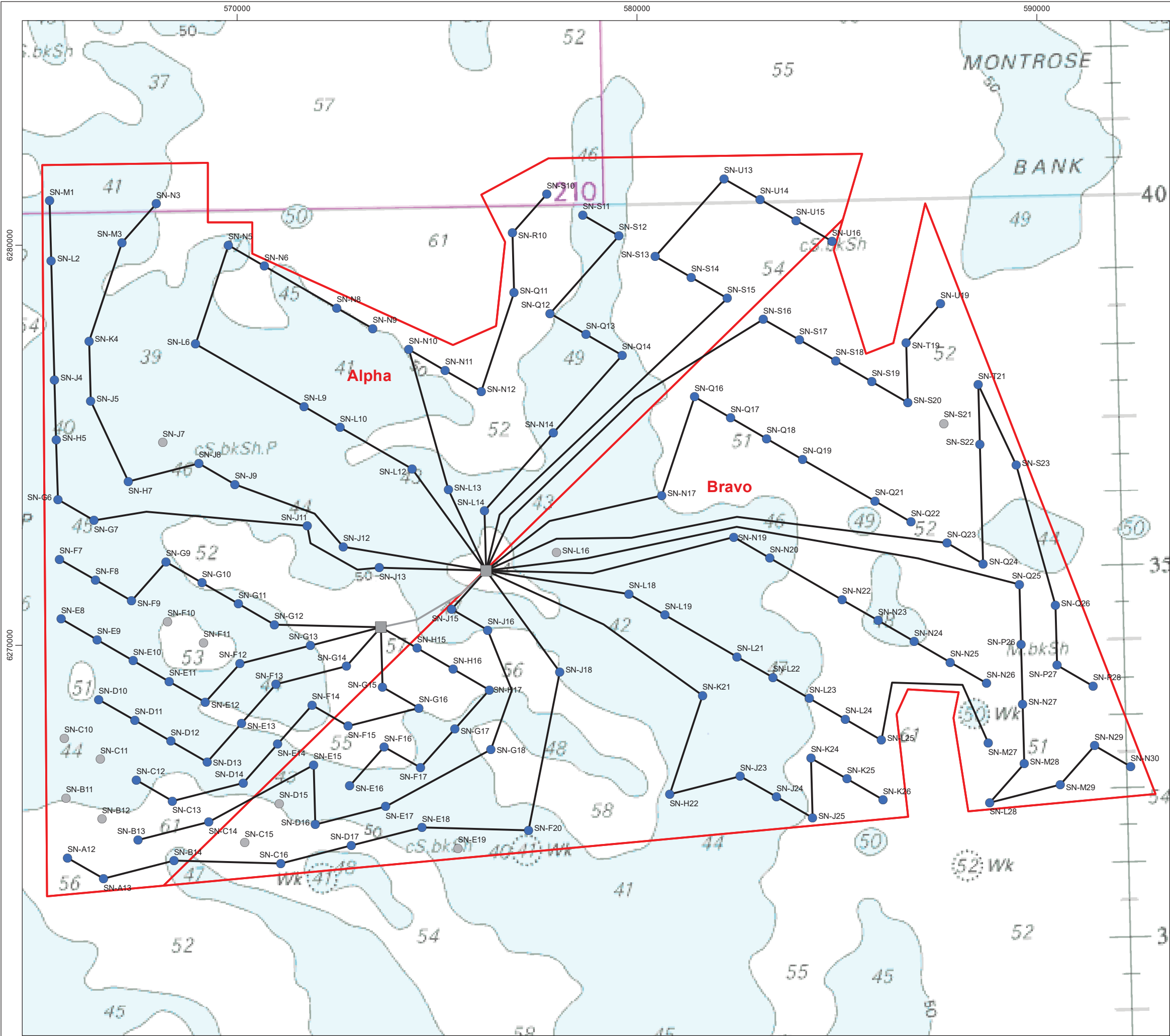
The OSPs are comprised of the OSP topside which sits upon the six leg steel jacket substructure. The OSP general and topside arrangements are shown in Figures 3.5 to 3.7. Dimensions for the OSPs are provided in Table 3.2.

Table 3.2 – Key dimensions of the OSPs

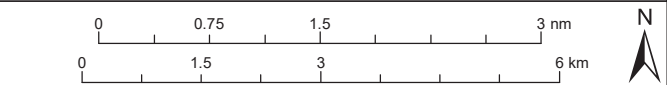
Parameter	Dimension
OSP topside dimensions	52m (l) x 35m (w) x 20m (h)
Height of topside	45m (relative to LAT)
Height of topside (including lightning protection and communications mast)	70m (relative to LAT)
Elevation between top of jacket and topside interface	25m (relative to LAT)

3.8 OSPs Finishes

The topside of each OSP will be finished in Light Grey, RAL 7035. The jacket substructure of each OSP will be finished in Traffic Yellow, RAL 1023.



- Legend**
- Site Boundary
 - Wind Turbine Generator (WTG)
 - WTG Spare Location (12)
 - Offshore Substation Platform (OSP)
 - Inter-Array Cable
 - Interconnector Cable



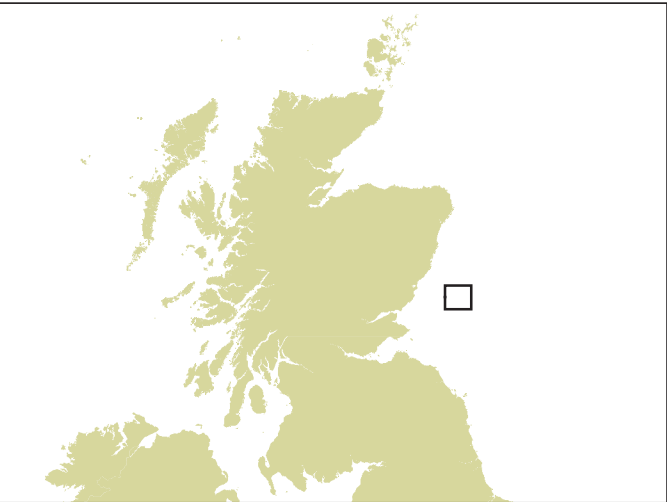
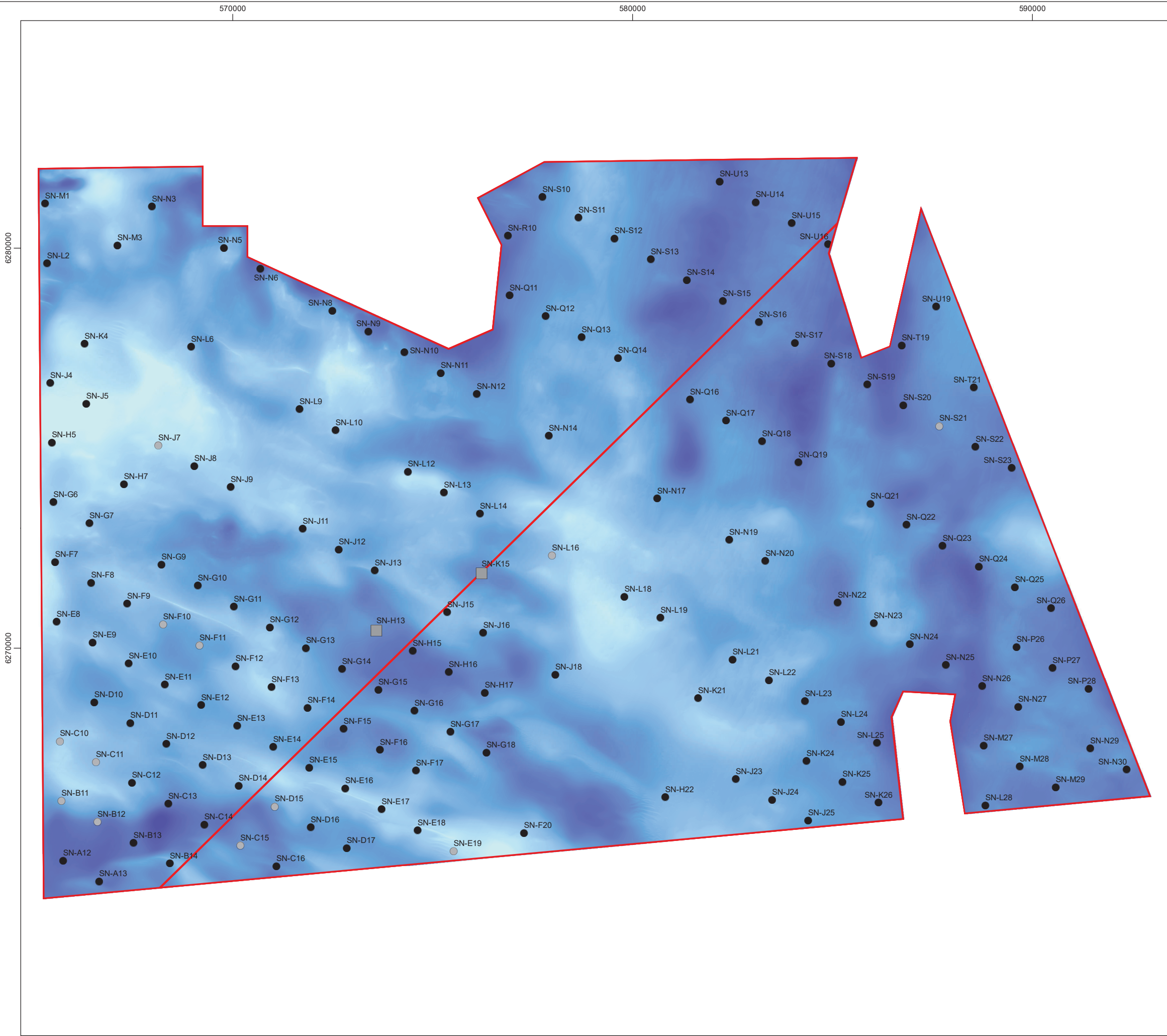
Project Name
SEAGREEN OFFSHORE WIND FARM

Drawing Title
**FIGURE 3.1 - SEAGREEN
150 TURBINE LAYOUT**

Rev	Date	Details	Status	Drwn	Rqst	Chkd	Appd
R1	09/12/19	First Issue	APPROVED FOR USE	CT	TW		AJ
R2	-	-	-	-	-	-	-
R3	-	-	-	-	-	-	-
R4	-	-	-	-	-	-	-

Drawing Number
SEA-M-DES-0055-11

Scale	Plot Size	Datum	Projection
1:95,000	A3	WGS84	UTM30N



Legend

Site Boundary

Wind Turbine Generator (WTG)

WTG Spare Location (12)

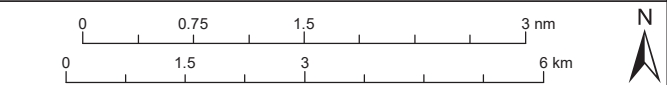
Offshore Substation Platform (OSP)

Bathymetry (m) LAT

Value

39.77

64.82



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Project Name

SEAGREEN OFFSHORE WIND FARM

Drawing Title

FIGURE 3.2 - SITE BATHYMETRY

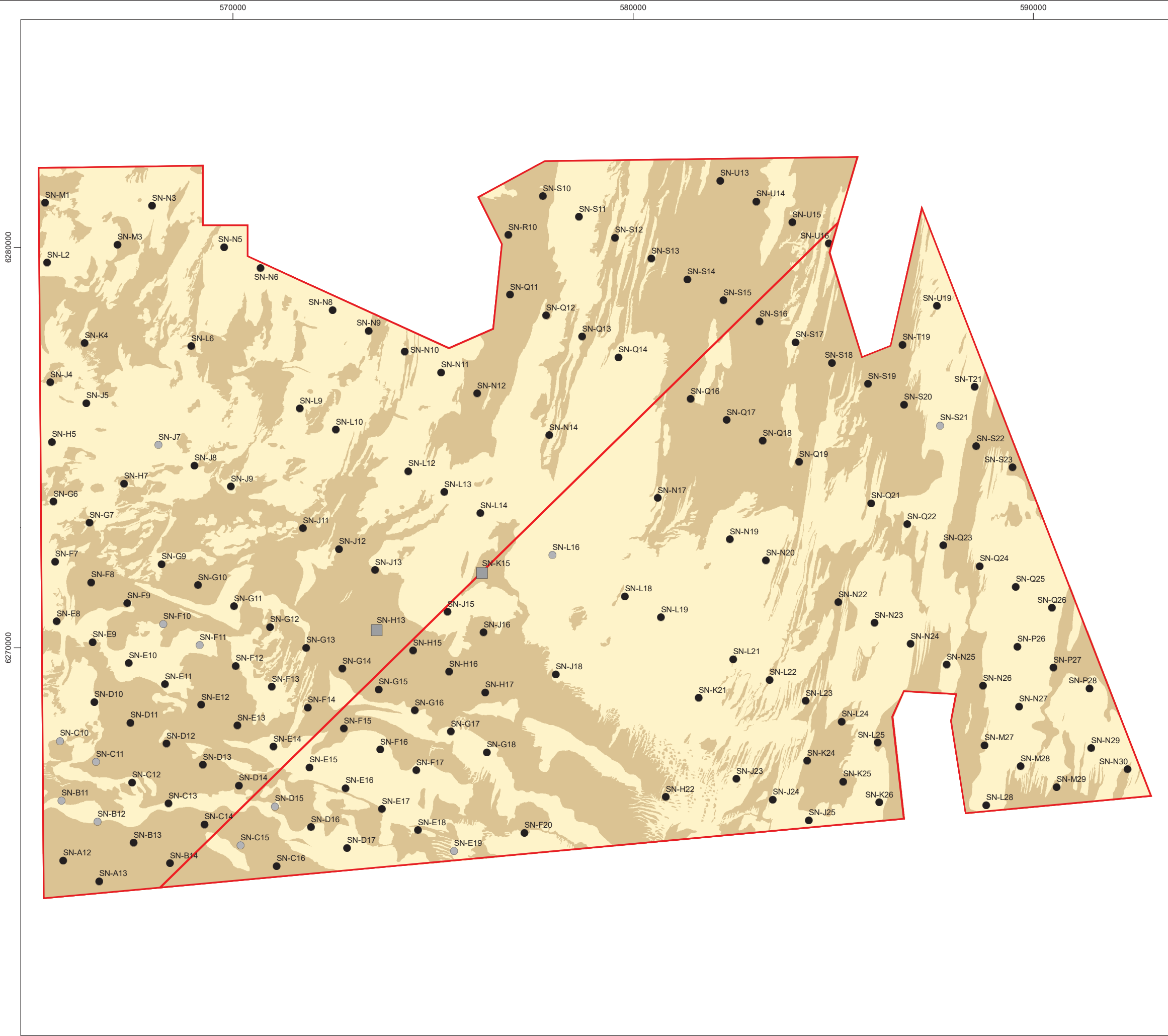
Rev	Date	Details	Status	Drwn	Rgst	Chkd	Appd
R1	10/12/19	First Issue	APPROVED FOR USE	CT	AJ	-	AJ
R2	-	-	-	-	-	-	-
R3	-	-	-	-	-	-	-
R4	-	-	-	-	-	-	-

Drawing Number

SEA-T-DES-0055-01

Scale	Plot Size	Datum	Projection
1:95,000	A3	WGS84	UTM30N

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Legend

Site Boundary

Wind Turbine Generator (WTG)

WTG Spare Location (12)

Offshore Substation Platform (OSP)

Seabed Classification

Gravelly Sand

Silty Sand to Sand

0 0.75 1.5 3 nm

0 1.5 3 6 km

N

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Project Name

SEAGREEN OFFSHORE WIND FARM

Drawing Title

FIGURE 3.3 - SEABED CONDITIONS

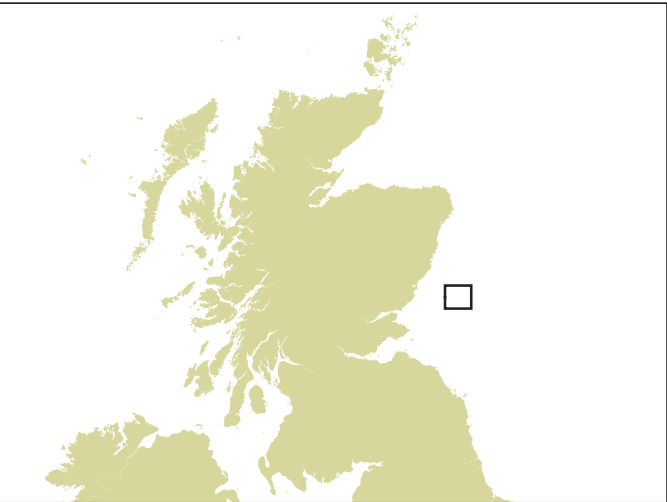
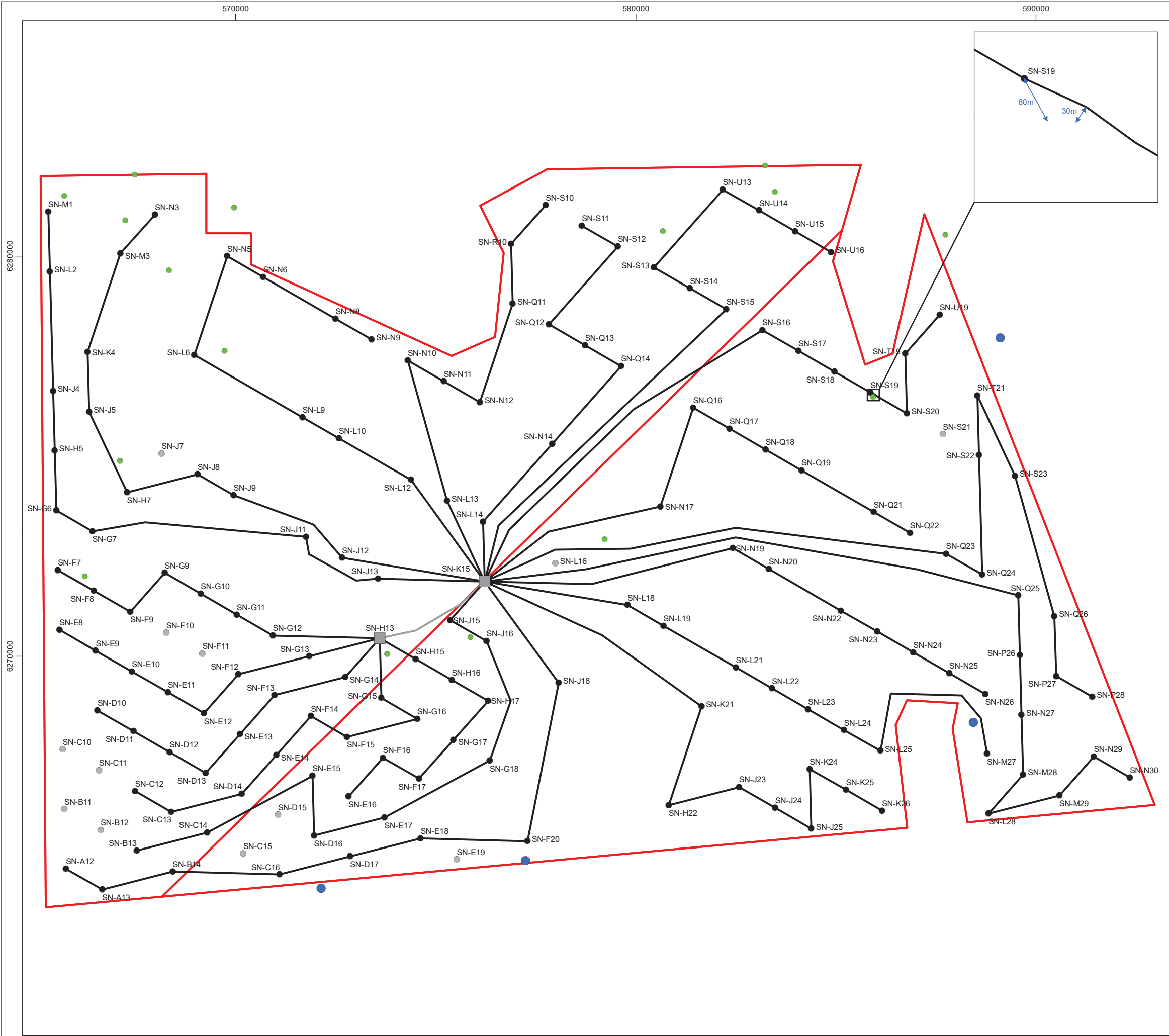
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R2	-	-	-	-	-	-	-
R3	-	-	-	-	-	-	-
R4	-	-	-	-	-	-	-

Drawing Number

SEA-T-DES-0055-02

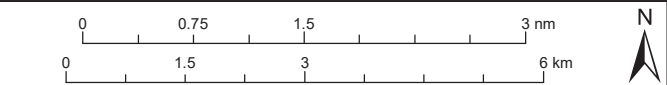
Scale	Plot Size	Datum	Projection
1:95,000	A3	WGS84	UTM30N

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Legend

- Site Boundary
- Wind Turbine Generator (WTG)
- WTG Spare Location (12)
- Offshore Substation Platform (OSP)
- Inter-Array Cable
- Interconnector Cable
- 50m AEZ
- 100m AEZ



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Project Name

SEAGREEN OFFSHORE WIND FARM

Drawing Title

FIGURE 3.4 - KEY CONSTRAINTS

Rev	Date	Details	Status	Drwn	Rqst	Chkd	Appd
R1	11/12/19	First Issue	APPROVED FOR USE	CT	AJ	-	AJ
R2	-	-	-	-	-	-	-
R3	-	-	-	-	-	-	-
R4	-	-	-	-	-	-	-

Drawing Number

SEA-T-DES-0055-03

Scale	Plot Size	Datum	Projection
1:95,000	A3	WGS84	UTM30N

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Figure 3.5- OSP General Arrangement - Elevation looking towards Platform North

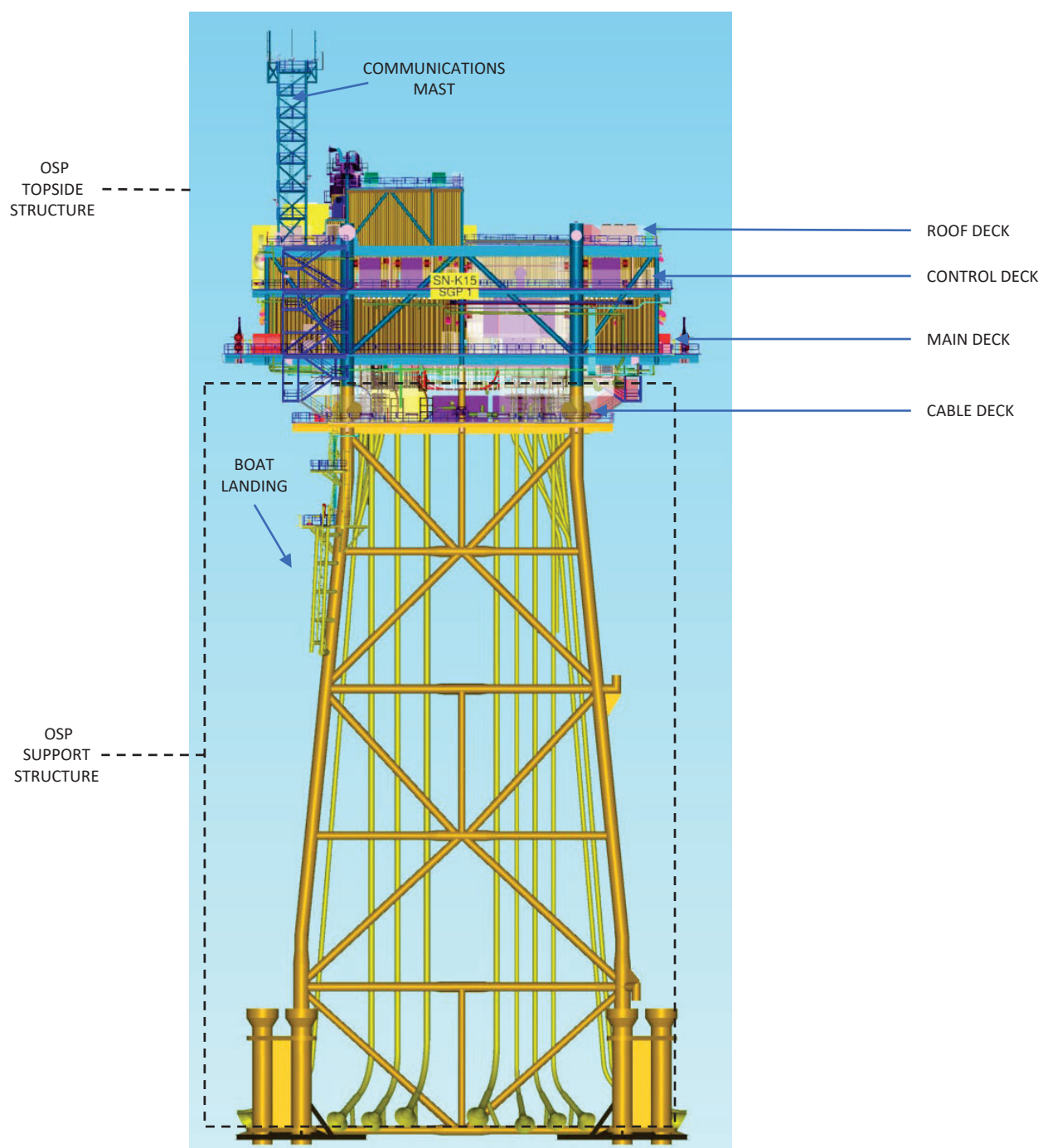


Figure 3.6 – OSP General Arrangement - Elevation looking towards Platform East

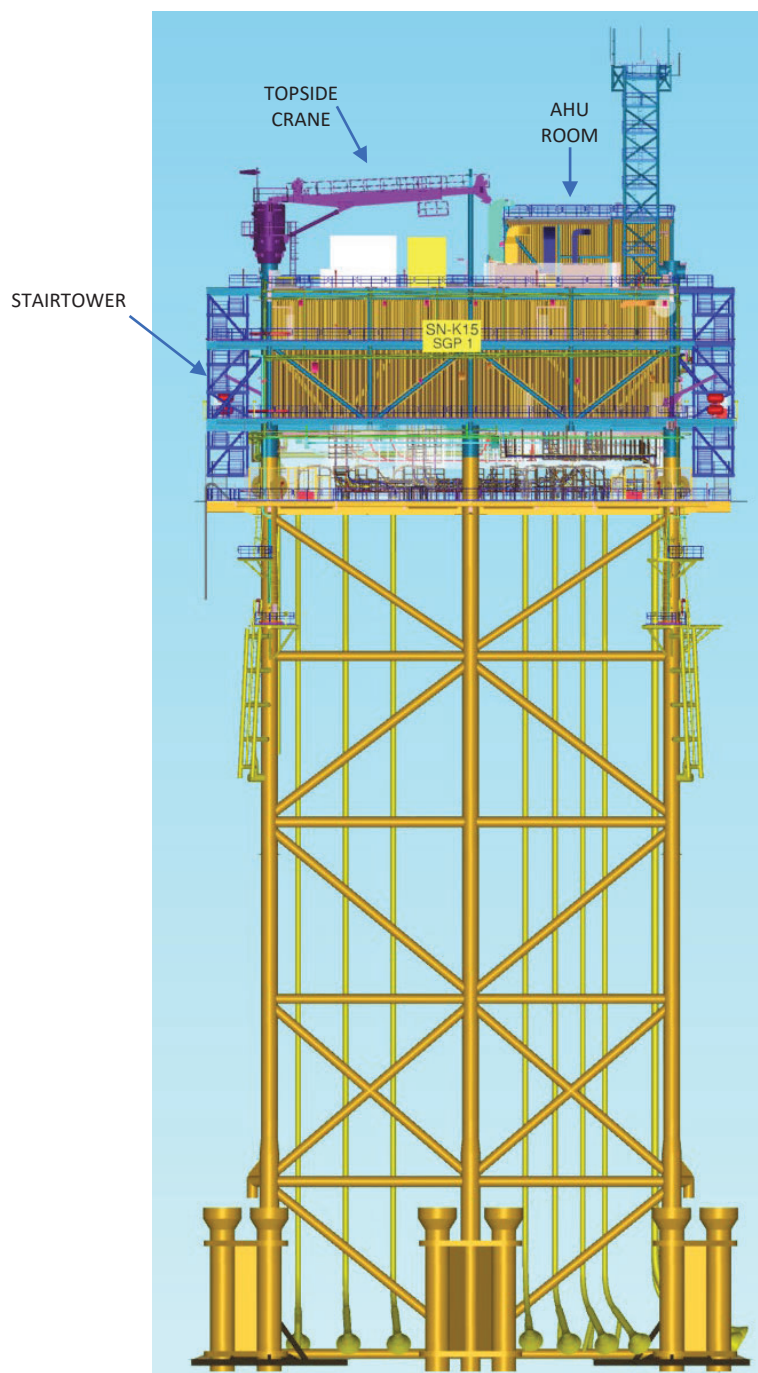
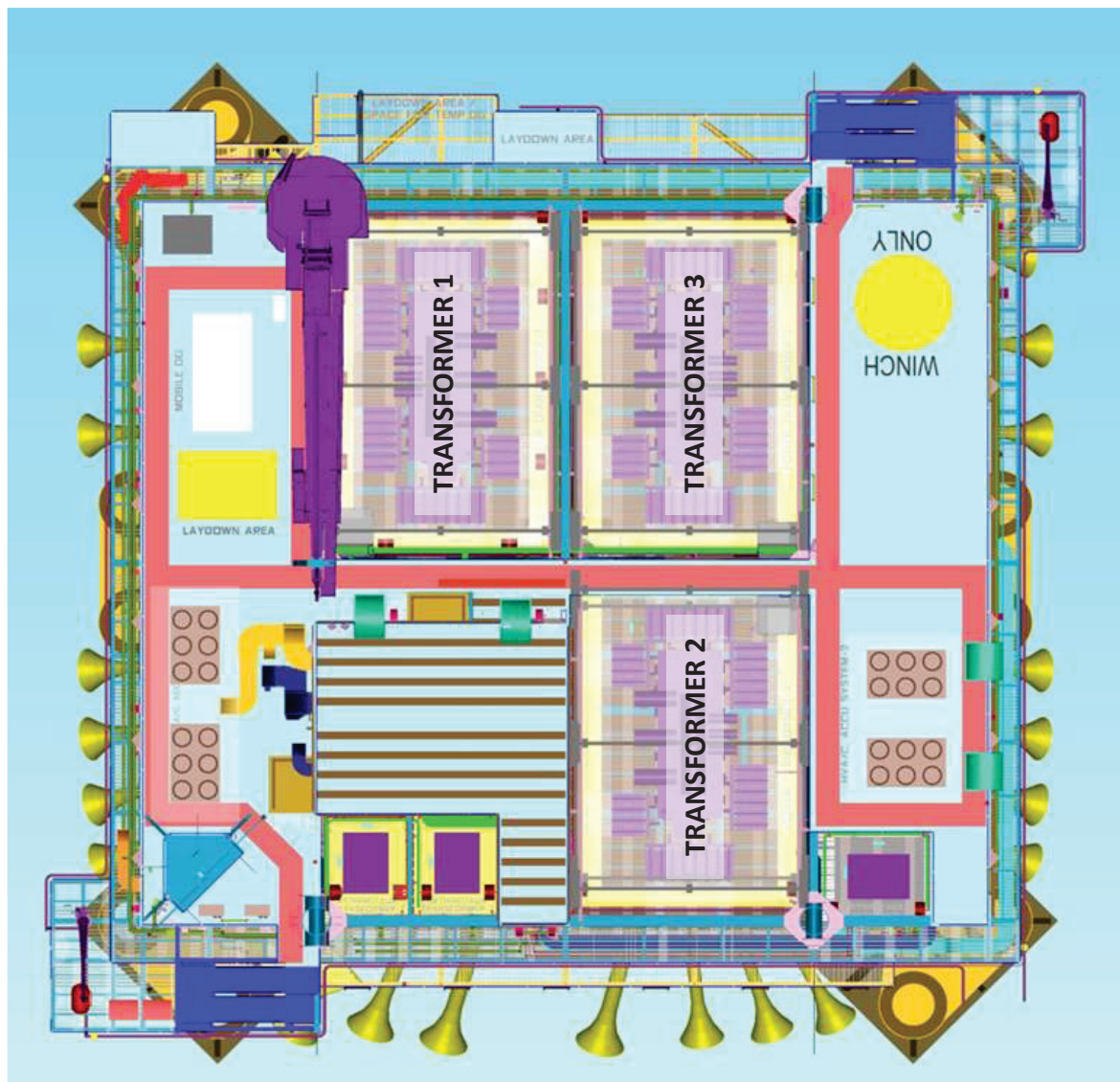


Figure 3.7 – OSP General Arrangement – Roof Deck Plan



4. Development Specification and Layout – Offshore Transmission Asset – Export Cables

4.1 Introduction

This section of the DSLP details the OTA development specification and layout of the three Export Cables.

4.2 Arrangement and Lengths

The OWF and OSPs are connected to the onshore transmission works (OnTW) by three subsea (High Voltage Alternating Current (HVAC)) 225kV cables. These are referred to as 'Export Cables' since they export electricity from the OWF site to the Onshore transmission works (OnTW). The three Export Cables will be located within the OTA corridor shown in Figure 4.1, and as defined in the OTA Marine Licence. The arrangement of the Export Cables between the OSPs and the OnTW is shown in greater detail in Figures 4.1 to 4.4.

These three subsea Export Cables will run from the OSPs within the OWF site to a common landfall location South East of Carnoustie on the Angus coast.

An overview of the total lengths, and the start and end locations of the Export Cables, are set out in Table 4.1 below. The indicative export cable route coordinates are provided in Table 4.2 below.

Table 4.1– Overview of OTA Export Cables arrangements and cable lengths

Layout			Start Point		End Point		Approximate Length (km)
String	Start	End	Latitude (ddm) WGS84	Longitude (ddm) WGS84	Latitude (ddm) WGS84	Longitude (ddm) WGS84	
Export Cable 1	SN-K15	Landfall	56° 35.094' N	1° 45.537' W	56° 29.378' N	2° 43.0715' W	63.2
Export Cable 2	SN-K15	Landfall	56° 35.094' N	1° 45.537' W	56° 29.378' N	2° 43.0715' W	63.2
Export Cable 3	SN-K15	Landfall	56° 35.094' N	1° 45.537' W	56° 29.378' N	2° 43.0715' W	63.4

Table 4.2: Indicative Export Cable Route Coordinates

Cable Route 1			Cable Route 2			Cable Route 3		
ID	Easting	Northing	ID	Easting	Northing	ID	Easting	Northing
1	517373.84	6260619.14	1	517374.80	6260613.73	1	517375.77	6260608.33
2	517382.82	6260620.59	2	517383.70	6260615.20	2	517384.60	6260609.75
3	517392.68	6260622.18	3	517397.17	6260617.34	3	517445.84	6260620.63
4	517441.33	6260640.15	4	517521.61	6260652.05	4	517519.57	6260641.04
5	517767.67	6260731.56	5	517762.58	6260719.85	5	517759.80	6260708.34
6	518023.28	6260803.45	6	518009.52	6260773.82	6	517991.53	6260751.59

Cable Route 1			Cable Route 2			Cable Route 3		
ID	Easting	Northing	ID	Easting	Northing	ID	Easting	Northing
7	519199.47	6261066.86	7	519196.20	6261014.30	7	518341.84	6260816.15
8	520246.23	6261219.35	8	520055.98	6261078.50	8	519169.74	6260970.64
9	521691.95	6261421.46	9	520797.24	6261105.01	9	520055.73	6260997.10
10	522875.30	6261686.33	10	521826.24	6261233.53	10	522087.87	6260980.11
11	523572.84	6261871.36	11	522874.03	6261436.84	11	523572.29	6261371.30
12	524642.31	6262275.25	12	523571.57	6261621.86	12	524641.76	6261775.19
13	525413.88	6262552.10	13	524641.04	6262025.75	13	525367.54	6262064.76
14	525971.62	6262810.33	14	525366.82	6262315.32	14	525863.11	6262291.74
15	527862.87	6263964.97	15	525862.38	6262542.30	15	526774.90	6262817.74
16	528545.39	6264176.11	16	527520.43	6263489.17	16	527567.49	6263147.41
17	529484.92	6264792.57	17	528219.95	6263763.36	17	527999.29	6263356.96
18	532559.18	6267029.87	18	529483.65	6264543.07	18	529484.37	6264292.51
19	534052.86	6267943.95	19	530018.59	6264987.33	19	530754.54	6265216.88
20	537641.81	6269717.80	20	530828.22	6265573.11	20	532558.63	6266529.82
21	539027.13	6270305.69	21	532557.91	6266780.38	21	534052.31	6267443.89
22	540011.51	6270794.38	22	534051.59	6267694.45	22	537641.26	6269217.74
23	540126.80	6270902.56	23	537640.54	6269468.30	23	539000.68	6269738.72
24	540378.49	6270994.32	24	539025.85	6270056.19	24	540168.55	6270082.60
25	542069.37	6271527.20	25	540309.36	6270639.04	25	540509.72	6270587.43
26	543610.97	6271736.84	26	540698.42	6270804.32	26	541147.33	6271024.60
27	544779.53	6272068.80	27	541035.03	6271088.93	27	541837.67	6271234.94
28	545712.93	6272214.09	28	542063.89	6271415.81	28	543544.43	6271256.00
29	545942.36	6272422.40	29	543587.26	6271596.96	29	544750.01	6271613.19
30	546124.55	6272629.96	30	544482.67	6271768.32	30	545572.35	6271790.34
31	546781.04	6272958.18	31	545500.49	6271925.06	31	545932.50	6272212.10
32	547516.97	6273308.37	32	545902.86	6272305.35	32	546182.19	6272437.42
33	547887.53	6273402.68	33	546128.11	6272490.00	33	546717.13	6272574.54
34	550531.18	6274129.97	34	546766.75	6272835.94	34	548250.86	6272740.87
35	551449.04	6274146.96	35	547763.69	6273048.70	35	549186.64	6273289.33
36	552313.74	6274103.98	36	548212.96	6273124.87	36	549766.51	6273505.31
37	553959.04	6273965.72	37	549888.67	6273731.83	37	550657.07	6273866.29
38	555270.95	6273872.41	38	550630.84	6274017.25	38	551356.24	6273965.36
39	558514.46	6273689.98	39	551472.33	6274047.48	39	552352.27	6273877.50
40	562618.48	6273308.67	40	554330.50	6273849.58	40	553411.30	6273829.46
41	565232.05	6273143.06	41	558534.91	6273569.31	41	558566.16	6273385.30
42	566367.60	6272566.03	42	562560.89	6273185.97	42	562588.04	6273065.33
43	567900.18	6273011.49	43	565201.06	6272999.94	43	565174.03	6272868.95
44	569231.50	6272922.49	44	566355.00	6272417.95	44	566338.22	6272280.78
45	570600.62	6271723.17	45	567904.36	6272868.77	45	567951.98	6272739.12

Cable Route 1			Cable Route 2			Cable Route 3		
ID	Easting	Northing	ID	Easting	Northing	ID	Easting	Northing
46	573121.87	6271131.96	46	569186.55	6272771.54	46	569124.18	6272659.55
47	574177.78	6270986.00	47	570539.00	6271624.00	47	570460.14	6271522.28
48	575051.00	6271431.65	48	573073.62	6271015.27	48	573068.37	6270918.01
49	575927.90	6271841.69	49	574174.71	6270872.98	49	574205.95	6270767.42
50	576225.74	6271869.76	50	575948.08	6271783.56	50	576004.61	6271735.40
			51	576225.74	6271869.76	51	576225.74	6271869.76

The three Export Cables will be buried where possible within the seabed sediments along their length, or mechanically protected where burial is not possible. The cable burial depths will be targeted to be a minimum of one metre.

The final alignment of the Export Cables remains subject to possible further micro-siting during installation, which will be carried out within the previously assessed limits as reported in the Application.

4.3 Bathymetry and Seabed Conditions

A series of geotechnical, geophysical and benthic surveys were commissioned and completed by Seagreen to understand seabed conditions along the OTA cable corridor. The results of these surveys have been considered in defining the Export Cable routings and installation methods.

Bathymetry along the Export Cable corridor ranges from 1.41m below LAT to a maximum depth of 73.33m in the central portion of the corridor, as shown in Figure 4.2 below.

The general bathymetry of the Export Cable corridor from the landfall to the OWF site is characterised by a gently sloping seabed. The bathymetry of the Export Cable corridor within the Site is characterised by higher variability in depth than in the OWF site.

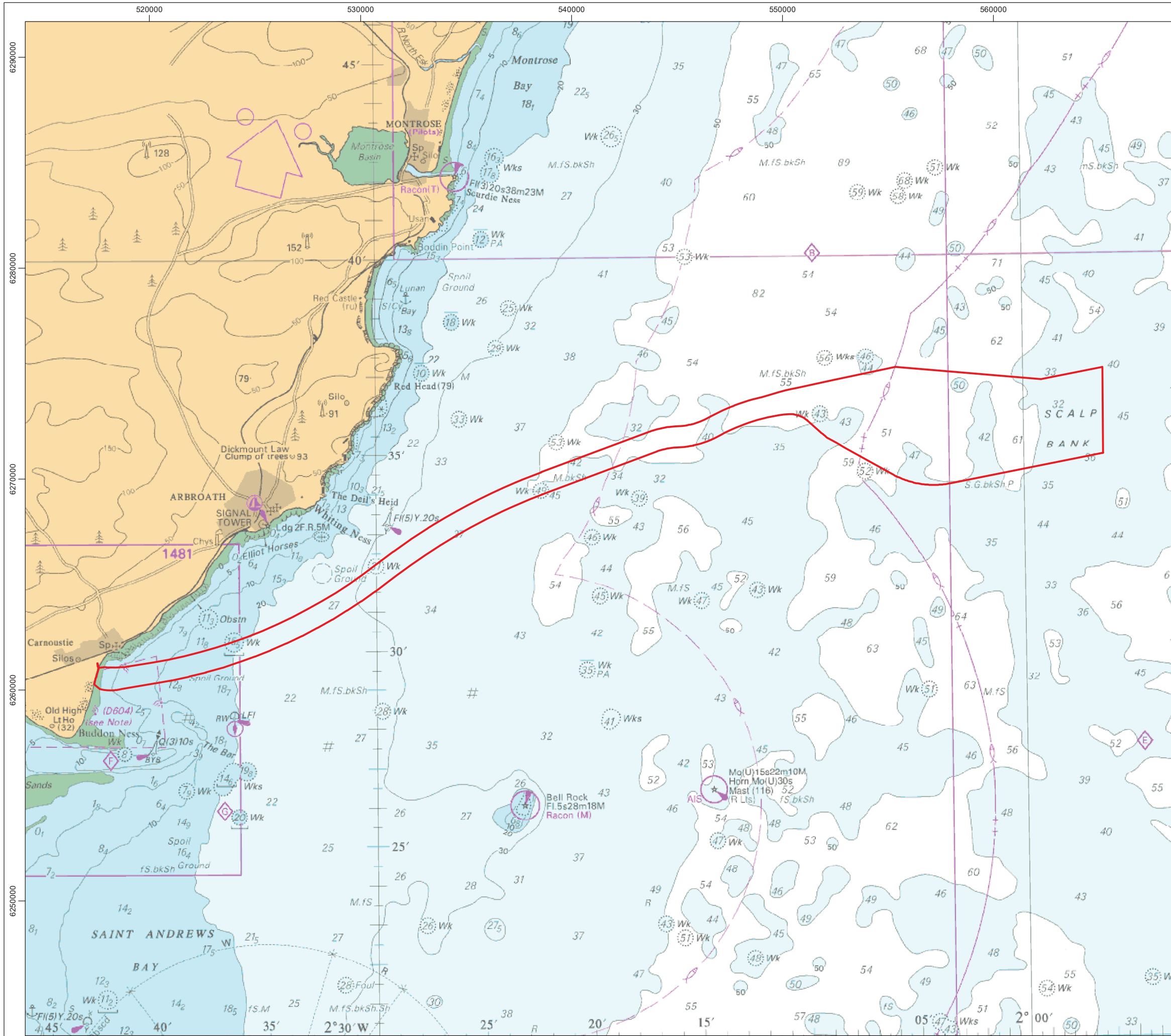
Seabed conditions along the Export Cable corridor, are presented in Figure 4.3 below.

4.4 Other Spatial Constraints

There are a small number of physical constraints within the OWF site and along the OTA Export Cable corridor. The following constraints have been considered in defining the Export Cable arrangements and layouts (and are shown in Figure 4.4):

- a 650m buffer around the Inch Cape Wind Farm. The Inch Cape Clearance Agreement boundary overlaps with the Cable Export Corridor in the section where the Corridor narrows;
- a number of Archaeological Exclusion Zones (AEZs) of 50m and 100m have been identified and the proposed cable route alignment avoids these zones; and
- the export cable corridor overlaps with the Barry Buddon Sea Danger Area and the firing ranges it contains. The cable corridor also overlaps with the northern section of the Civil Aviation Authority (CAA) Air Danger Area (D604). The proposed cable route has sought to avoid the majority of the

Danger Area extent where possible and minimise potential for any disturbance between the export cable corridor and the Danger Area by installing the offshore export cables within the northern portion of the consented offshore export cable corridor.



E:\SeagreenPhase1\FormalDrawings\MarineM_Design\SEA-M-DES-0055-DevelopmentSpecificationAndLayoutPlans\SEA-M-DES-0055-10-ExportCableRoute-01.mxd



Legend

Offshore Export Cable Corridor



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Project Name

SEAGREEN OFFSHORE WIND FARM

Drawing Title

FIGURE 4.1 - EXPORT CABLE ROUTE

Rev	Date	Details	Status	Drwn	Rqst	Chkd	Appd
R1	14/01/20	First Issue	APPROVED FOR USE	CT	AJ	-	AJ
R2	-	-	-	-	-	-	-
R3	-	-	-	-	-	-	-
R4	-	-	-	-	-	-	-

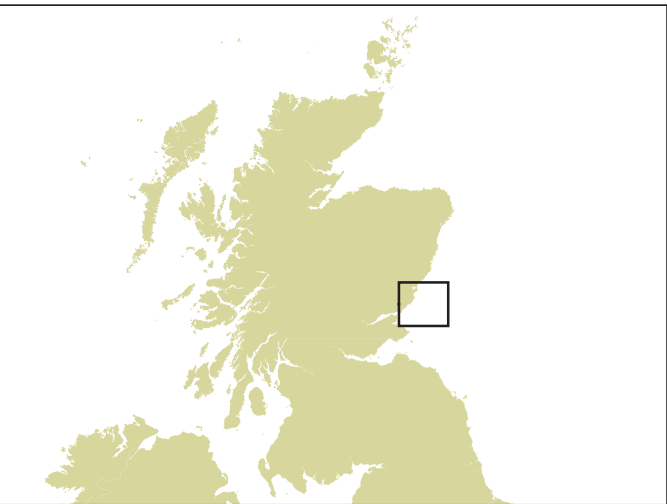
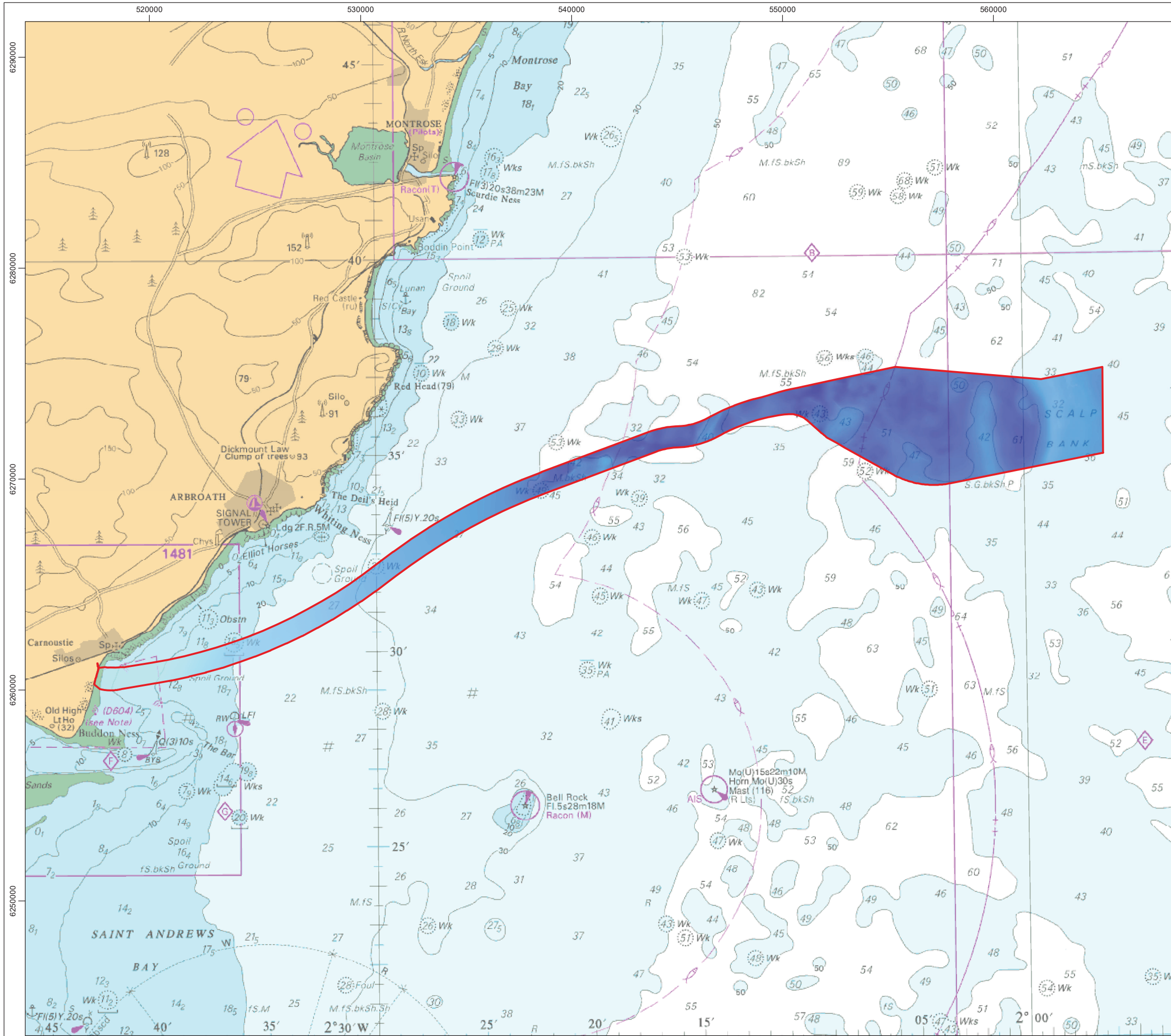
Drawing Number

SEA-T-DES-0055-10

Scale	Plot Size	Datum	Projection
1:180,000	A3	WGS84	UTM30N

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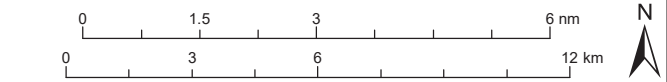
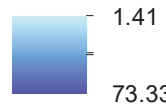




Legend

Offshore Export Cable Corridor

Bathymetry (m) LAT



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Project Name
SEAGREEN OFFSHORE WIND FARM

Drawing Title
FIGURE 4.2 - BATHYMETRY

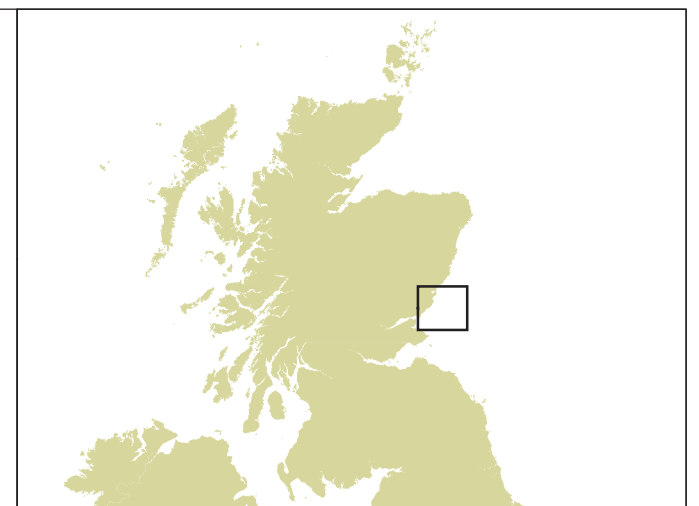
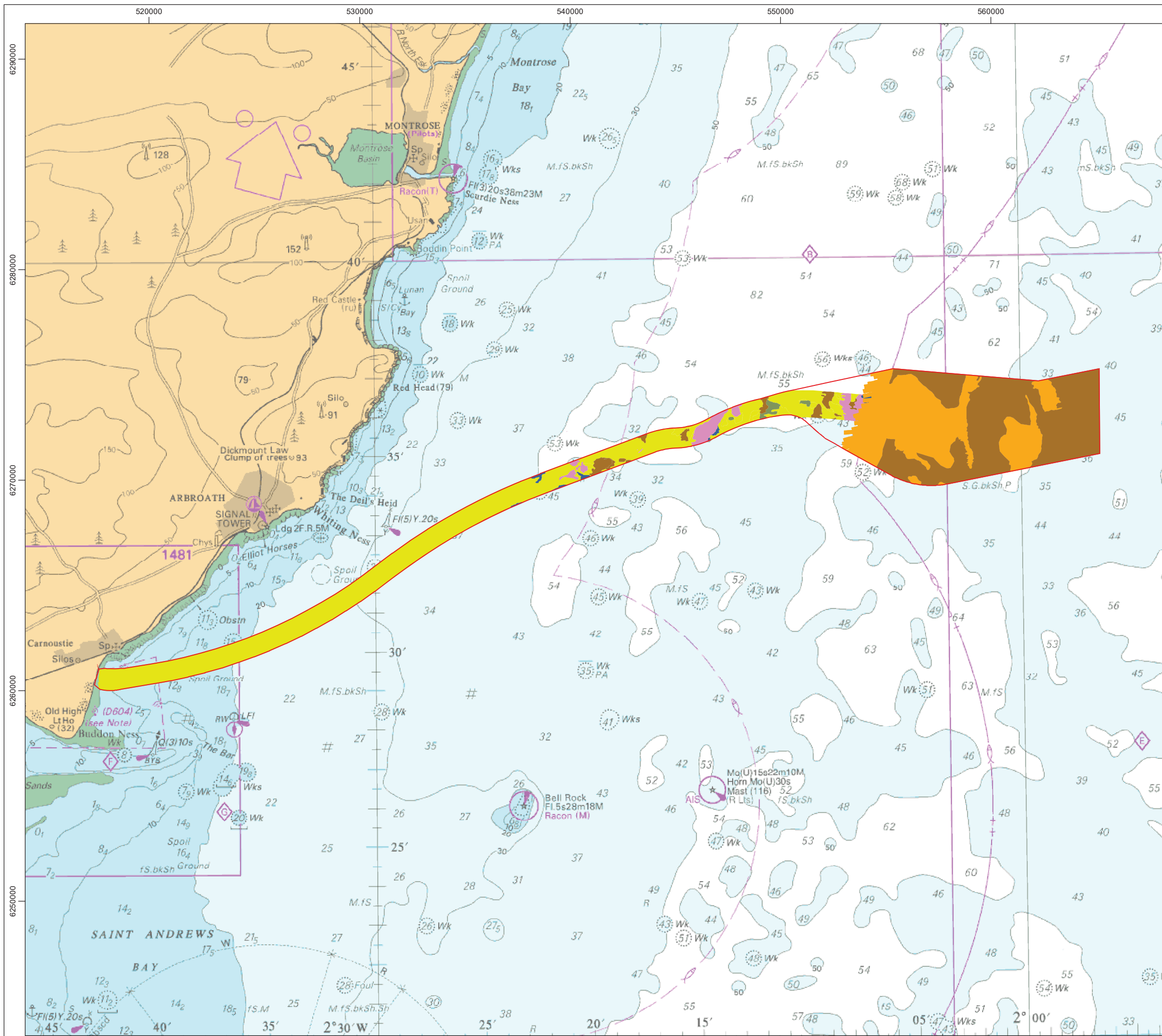
Rev	Date	Details	Status	Drwn	Rqst	Chkd	Appd
R1	09/01/20	First Issue	APPROVED FOR USE	CT	AJ	-	AJ
R2	-	-	-	-	-	-	-
R3	-	-	-	-	-	-	-
R4	-	-	-	-	-	-	-

Drawing Number
SEA-T-DES-0055-09

Scale	Plot Size	Datum	Projection
1:180,000	A3	WGS84	UTM30N

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Legend

Offshore Export Cable Corridor

Seabed Classification

Coarse Sand

Fine Sand

Gravelly Sand

Medium Sand

Rock

Rock with Veneer

Sandy Gravel

Slightly Gravelly Sand

01.536 nm

03.072 nm

04.608 nm

06.144 nm

07.680 nm

09.216 nm

10.752 nm

12.288 nm

13.824 nm

15.360 nm

16.896 nm

18.432 nm

19.968 nm

21.504 nm

23.040 nm

24.576 nm

26.112 nm

27.648 nm

29.184 nm

30.720 nm

32.256 nm

33.792 nm

35.328 nm

36.864 nm

38.400 nm

39.936 nm

41.472 nm

43.008 nm

44.544 nm

46.080 nm

47.616 nm

49.152 nm

50.688 nm

52.224 nm

53.760 nm

55.296 nm

56.832 nm

58.368 nm

59.904 nm

61.440 nm

62.976 nm

64.512 nm

66.048 nm

67.584 nm

69.120 nm

70.656 nm

72.192 nm

73.728 nm

75.264 nm

76.800 nm

78.336 nm

79.872 nm

81.408 nm

82.944 nm

84.480 nm

86.016 nm

87.552 nm

89.088 nm

90.624 nm

92.160 nm

93.696 nm

95.232 nm

96.768 nm

98.304 nm

99.840 nm

101.376 nm

102.912 nm

104.448 nm

105.984 nm

107.520 nm

109.056 nm

110.592 nm

112.128 nm

113.664 nm

115.200 nm

116.736 nm

118.272 nm

119.808 nm

121.344 nm

122.880 nm

124.416 nm

125.952 nm

127.488 nm

129.024 nm

130.560 nm

132.096 nm

133.632 nm

135.168 nm

136.704 nm

138.240 nm

139.776 nm

141.312 nm

142.848 nm

144.384 nm

145.920 nm

147.456 nm

148.992 nm

150.528 nm

152.064 nm

153.600 nm

155.136 nm

156.672 nm

158.208 nm

159.744 nm

161.280 nm

162.816 nm

164.352 nm

165.888 nm

167.424 nm

168.960 nm

170.496 nm

172.032 nm

173.568 nm

175.104 nm

176.640 nm

178.176 nm

179.712 nm

181.248 nm

182.784 nm

184.320 nm

185.856 nm

187.392 nm

188.928 nm

190.464 nm

192.000 nm

193.536 nm

195.072 nm

196.608 nm

198.144 nm

199.680 nm

201.216 nm

202.752 nm

204.288 nm

205.824 nm

207.360 nm

208.896 nm

210.432 nm

211.968 nm

213.504 nm

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222.720 nm

224.256 nm

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227.328 nm

228.864 nm

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231.936 nm

233.472 nm

235.008 nm

236.544 nm

238.080 nm

239.616 nm

241.152 nm

242.688 nm

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245.760 nm

247.296 nm

248.832 nm

250.368 nm

251.904 nm

253.440 nm

254.976 nm

256.512 nm

258.048 nm

259.584 nm

261.120 nm

262.656 nm

264.192 nm

265.728 nm

267.264 nm

268.800 nm

270.336 nm

271.872 nm

273.408 nm

274.944 nm

276.480 nm

278.016 nm

279.552 nm

281.088 nm

282.624 nm

284.160 nm

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287.232 nm

288.768 nm

290.304 nm

291.840 nm

293.376 nm

294.912 nm

296.448 nm

297.984 nm

299.520 nm

301.056 nm

302.592 nm

304.128 nm

305.664 nm

307.200 nm

308.736 nm

310.272 nm

311.808 nm

313.344 nm

314.880 nm

316.416 nm

317.952 nm

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324.096 nm

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331.776 nm

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337.920 nm

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362.496 nm

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365.568 nm

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368.640 nm

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371.712 nm

373.248 nm

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380.928 nm

382.464 nm

384.000 nm

385.536 nm

387.072 nm

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405.504 nm

407.040 nm

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413.184 nm

414.720 nm

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417.792 nm

419.328 nm

420.864 nm

422.400 nm

423.936 nm

425.472 nm

427.008 nm

428.544 nm

430.080 nm

431.616 nm

433.152 nm

434.688 nm

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437.760 nm

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453.120 nm

454.656 nm

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491.472 nm

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497.616 nm

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503.760 nm

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509.904 nm

511.440 nm

512.976 nm

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516.048 nm

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519.120 nm

520.656 nm

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555.984 nm

557.520 nm

559.056 nm

560.592 nm

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563.664 nm

565.200 nm

566.736 nm

568.272 nm

569.808 nm

571.344 nm

572.880 nm

574.416 nm

575.952 nm

577.488 nm

579.024 nm

580.560 nm

582.096 nm

583.632 nm

585.168 nm

586.704 nm

588.240 nm

589.776 nm

591.312 nm

592.848 nm

594.384 nm

595.920 nm

597.456 nm

598.992 nm

600.528 nm

602.064 nm

603.600 nm

605.136 nm

606.672 nm

608.208 nm

609.744 nm

611.280 nm

612.816 nm

614.352 nm

615.888 nm

617.424 nm

618.960 nm

620.496 nm

622.032 nm

623.568 nm

625.104 nm

626.640 nm

628.176 nm

629.712 nm

631.248 nm

632.784 nm

634.320 nm

635.856 nm

637.392 nm

638.928 nm

640.464 nm

642.000 nm

643.536 nm

645.072 nm

646.608 nm

648.144 nm

649.680 nm

651.216 nm

652.752 nm

654.288 nm

655.824 nm

657.360 nm

658.896 nm

660.432 nm

661.968 nm

663.504 nm

665.040 nm

666.576 nm

668.112 nm

669.648 nm

671.184 nm

672.720 nm

674.256 nm

675.792 nm

677.328 nm

678.864 nm

680.400 nm

681.936 nm

683.472 nm

685.008 nm

686.544 nm

688.080 nm

689.616 nm

691.152 nm

692.688 nm

694.224 nm

695.760 nm

697.296 nm

698.832 nm

700.368 nm

701.904 nm

703.440 nm

704.976 nm

706.512 nm

708.048 nm

709.584 nm

711.120 nm

712.656 nm

714.192 nm

715.728 nm

717.264 nm

718.800 nm

720.336 nm

721.872 nm

723.408 nm

724.944 nm

726.480 nm

728.016 nm

729.552 nm

731.088 nm

732.624 nm

734.160 nm

735.696 nm

737.232 nm

738.768 nm

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741.840 nm

743.376 nm

744.912 nm

746.448 nm

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749.520 nm

751.056 nm

752.592 nm

754.128 nm

755.664 nm

757.200 nm

758.736 nm

760.272 nm

761.808 nm

763.344 nm

764.880 nm

766.416 nm

767.952 nm

769.488 nm

771.024 nm

772.560 nm

774.096 nm

775.632 nm

777.168 nm

778.704 nm

780.240 nm

781.776 nm

783.312 nm

784.848 nm

786.384 nm

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790.992 nm

792.528 nm

794.064 nm

795.600 nm

797.136 nm

798.672 nm

800.208 nm

801.744 nm

803.280 nm

804.816 nm

806.352 nm

807.888 nm

809.424 nm

810.960 nm

812.496 nm

814.032 nm

815.568 nm

817.104 nm

818.640 nm

820.176 nm

821.712 nm

823.248 nm

824.784 nm

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827.856 nm

829.392 nm

830.928 nm

832.464 nm

834.000 nm

835.536 nm

837.072 nm

838.608 nm

840.144 nm

841.680 nm

843.216 nm

844.752 nm

846.288 nm

847.824 nm

849.360 nm

850.896 nm

852.432 nm

853.968 nm

855.504 nm

857.040 nm

858.576 nm

860.112 nm

861.648 nm

863.184 nm

864.720 nm

866.256 nm

867.792 nm

869.328 nm

870.864 nm

872.400 nm

873.936 nm

875.472 nm

877.008 nm

878.544 nm

880.080 nm

881.616 nm

883.152 nm

884.688 nm

886.224 nm

887.760 nm

889.296 nm

890.832 nm

892.368 nm

893.904 nm

895.440 nm

896.976 nm

898.512 nm

900.048 nm

901.584 nm

903.120 nm

904.656 nm

906.192 nm

907.728 nm

909.264 nm

910.800 nm

912.336 nm

913.872 nm

915.408 nm

916.944 nm

918.480 nm

919.968 nm

921.504 nm

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924.576 nm

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930.720 nm

932.256 nm

933.792 nm

935.328 nm

936.864 nm

938.400 nm

939.936 nm

941.472 nm

943.008 nm

944.544 nm

946.080 nm

947.616 nm

949.152 nm

950.688 nm

952.224 nm

953.760 nm

955.296 nm

956.832 nm

958.368 nm

959.904 nm

961.440 nm

962.976 nm

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969.120 nm

970.656 nm

972.192 nm

973.728 nm

975.264 nm

976.800 nm

978.336 nm

979.872 nm

981.408 nm

982.944 nm

984.480 nm

986.016 nm

987.552 nm

989.088 nm

990.624 nm

992.160 nm

993.696 nm

995.232 nm

996.768 nm

998.304 nm

1000.000 nm

01.536 nm

03.072 nm

04.608 nm

06.144 nm

07.680 nm

09.216 nm

10.752 nm

12.288 nm

13.824 nm

15.360 nm

16.896 nm

18.432 nm

19.968 nm

21.504 nm

23.040 nm

24.576 nm

26.112 nm

27.648 nm

29.184 nm

30.720 nm

32.256 nm

33.792 nm

35.328 nm

36.864 nm

38.400 nm

39.936 nm

41.472 nm

43.008 nm

44.544 nm

46.080 nm

47.616 nm

49.152 nm

50.688 nm

52.224 nm

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59.904 nm

61.440 nm

62.976 nm

64.512 nm

66.048 nm

67.584 nm

69.120 nm

70.656 nm

72.192 nm

73.728 nm

75.264 nm

76.800 nm

78.336 nm

79.872 nm

81.408 nm

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84.480 nm

86.016 nm

87.552 nm

89.088 nm

90.624 nm

92.160 nm

93.696 nm

95.232 nm

96.768 nm

98.304 nm

99.840 nm

101.376 nm

102.912 nm

104.448 nm

105.984 nm

107.520 nm

109.056 nm

110.592 nm

112.128 nm

113.664 nm

115.200 nm

116.736 nm

118.272 nm

119.808 nm

121.344 nm

122.880 nm

124.416 nm

125.952 nm

127.488 nm

129.024 nm

130.560 nm

132.096 nm

133.632 nm

135.168 nm

136.704 nm

138.240 nm

139.776 nm

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142.848 nm

144.384 nm

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148.992 nm

150.528 nm

152.064 nm

153.600 nm

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156.672 nm

158.208 nm

159.744 nm

161.280 nm

162.816 nm

164.352 nm

165.888 nm

167.424 nm

168.960 nm

170.496 nm

172.032 nm

173.568 nm

175.104 nm

176.640 nm

178.176 nm

179.712 nm

181.248 nm

182.784 nm

184.320 nm

185.856 nm

187.392 nm

188.928 nm

190.464 nm

191.968 nm

193.504 nm

195.040 nm

196.576 nm

198.112 nm

199.648 nm

201.184 nm

202.720 nm

204.256 nm

205.792 nm

207.328 nm

208.864 nm

210.400 nm

211.936 nm

213.472 nm

215.008 nm

216.544 nm

218.080 nm

219.616 nm

221.152 nm

222.688 nm

224.224 nm

225.760 nm

227.296 nm

228.832 nm

230.368 nm

231.904 nm

233.440 nm

234.976 nm

236.512 nm

238.048 nm

239.584 nm

241.120 nm

242.656 nm

244.192 nm

245.728 nm

247.264 nm

248.800 nm

250.336 nm

251.872 nm

253.408 nm

254.944 nm

256.480 nm

258.016 nm

259.552 nm

261.088 nm

262.624 nm

264.160 nm

265.696 nm

267.232 nm

268.768 nm

270.304 nm

271.840 nm

273.376 nm

274.912 nm

276.448 nm

277.984 nm

279.520 nm

281.056 nm

282.592 nm

284.128 nm

285.664 nm

287.200 nm

288.736 nm

290.272 nm

291.808 nm

293.344 nm

294.880 nm

296.416 nm

297.952 nm

299.488 nm

301.024 nm

302.560 nm

304.096 nm

305.632 nm

307.168 nm

308.704 nm

310.240 nm

311.776 nm

313.312 nm

314.848 nm

316.384 nm

317.920 nm

319.456 nm

320.992 nm

322.528 nm

324.064 nm

325.600 nm

327.136 nm

328.672 nm

330.208 nm

331.744 nm

333.280 nm

334.816 nm

336.352 nm

337.888 nm

339.424 nm

340.960 nm

342.496 nm

344.032 nm

345.568 nm

347.104 nm

348.640 nm

350.176 nm

351.712 nm

353.248 nm

354.784 nm

356.320 nm

357.856 nm

359.392 nm

360.928 nm

362.464 nm

363.968 nm

365.504 nm

367.040 nm

368.576 nm

370.112 nm

371.648 nm

373.184 nm

374.720 nm

376.256 nm

377.792 nm

379.328 nm

380.864 nm

382.400 nm

383.936 nm

385.472 nm

387.008 nm

388.544 nm

390.080 nm

391.616 nm

393.152 nm

394.688 nm

396.224 nm

397.760 nm

399.296 nm

400.832 nm

402.368 nm

403.904 nm

405.440 nm

406.976 nm

408.512 nm

409.968 nm

411.504 nm

413.040 nm

414.576 nm

416.112 nm

417.648 nm

419.184 nm

420.720 nm

422.256 nm

423.792 nm

425.328 nm

426.864 nm

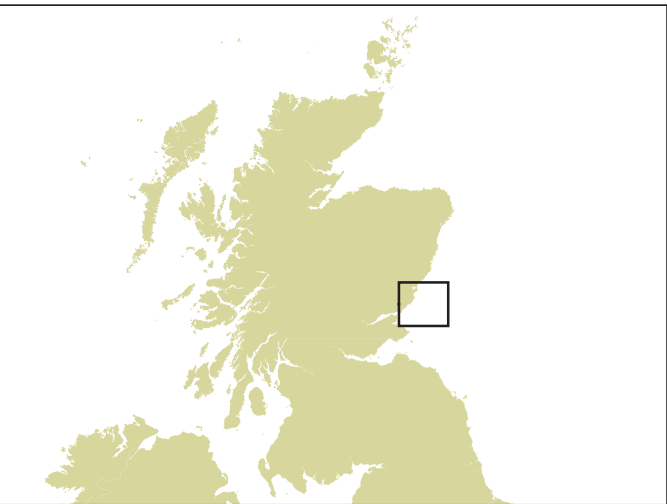
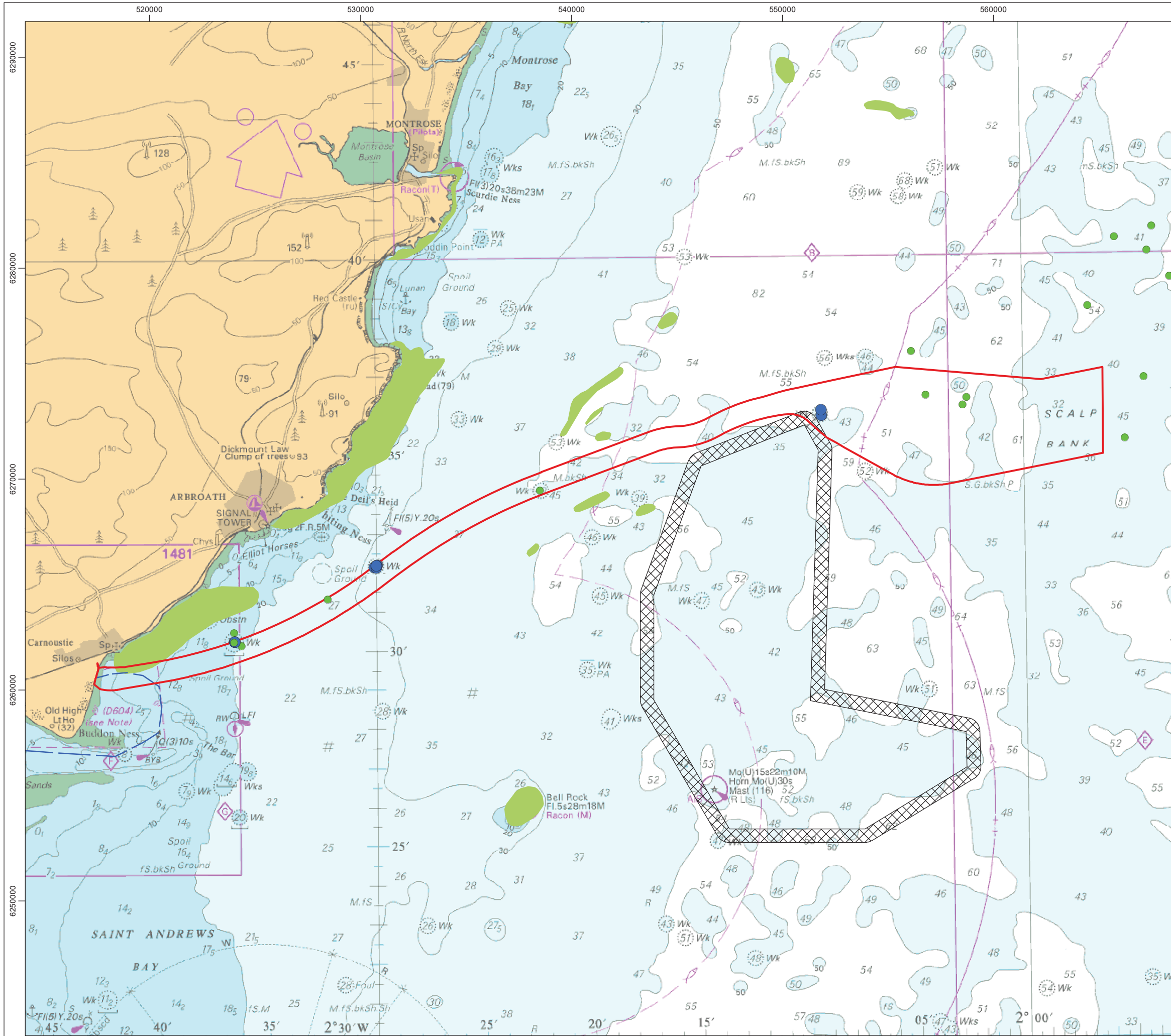
428.400 nm

429.936 nm

431.472 nm

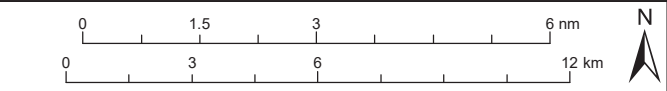
433.008 nm

43



Legend

- Offshore Export Cable Corridor
- Inch Cape 650m Clearance Agreement
- Potential Annex 1 Reef Habitat
- Archaeology Feature 50m Exclusion Zone
- Archaeology Feature 100m Exclusion Zone
- Existing Barry Links Firing Range Complex
- Range controlled Sea Danger Area



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Project Name

SEAGREEN OFFSHORE WIND FARM

Drawing Title
FIGURE 4.4 - KEY CONSTRAINTS

Rev	Date	Details	Status	Drwn	Rqst	Chkd	Appd
R1	09/01/20	First Issue	APPROVED FOR USE	CT	AJ	-	AJ
R2	-	-	-	-	-	-	-
R3	-	-	-	-	-	-	-
R4	-	-	-	-	-	-	-

Drawing Number
SEA-T-DES-0055-08

Scale	Plot Size	Datum	Projection
1:180,000	A3	WGS84	UTM30N

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5. Development Specification and Layout – Offshore Transmission Asset – OSPs Interconnector Cable

5.1 Introduction

This section of the DSLP details the OTA development specification and layout of the OSPs Interconnector Cable.

5.2 Arrangement and Length

A single OSPs Interconnector Cable will connect the two OSPs and allow routing of power from one OSP to the other. The OSP interconnector will enable transmission of the entire Wind Farm generated power, up to the maximum capacity of a single export cable or the circuit components.

The total length of the OSPs Interconnector Cable will be approximately 3.05km (see Table 5.1 below for cable start and end point and length data).

Table 5.1 OSPs Interconnector Cable arrangements and length

Layout			Start Point		End Point		Approximate Length (km)
String	Start	End	Latitude (ddm) WGS84	Longitude (ddm) WGS84	Latitude (ddm) WGS84	Longitude (ddm) WGS84	
OSPs Interconnector Cable	SN-K15	SN-H13	56° 35.094' N	1° 45.537' W	56° 34.353' N	1° 48.126' W	3.05

The arrangement of the OSPs Interconnector Cable is shown in Figure 3.1 above. The final location of the OSPs Interconnector Cable remains subject to possible further micro-siting during installation, which will be carried out within the previously assessed limits as reported in the Application.

5.3 Bathymetry and Seabed Conditions

The water depth across the OWF site, varies between 39.77m below LAT to a maximum depth of 64.82m. Further details on bathymetry and seabed conditions are provided in section 3.4 and Figures 3.2 and 3.3 above.

5.4 Key Constraints

Key constraints are identified in Figure 3.4 above. No key constraints have been identified within the interconnector cable vicinity.

6. Compliance with the ES, the ES Addendum and the Cable Landfall ER

The relevant conditions of the OTA Marine Licence require that the Seagreen Project be constructed in accordance with the methods assessed in the Application. Section 6 sets out information from the ES and ES Addendum with regard to:

- Compliance with the construction methods assessed; and
- Construction related mitigation and management.

6.1 Compliance with Construction Methods Assessed in the ES and ES Addendum

The ES and ES Addendum for the Seagreen Project described the range of methods that could be applied during the construction of the Development. This was presented as a 'Design Envelope' incorporating a variety of options in relation to the development design and the approach to installation. In each case, the worst case design option was assessed in respect of each impact.

Since the grant of the consents for the Seagreen Project, the design of the Project and the approach to installation has been substantially refined, as set out within this OTA DSLP and which has informed the approach to this OTA DSLP. To demonstrate compliance with those methods assessed within the ES and ES Addendum, Appendix D provides a tabulated comparison of project construction parameters and methodologies as presented in the ES and ES Addendum with this OTA DSLP.

6.2 Delivery of Construction-related Mitigation Proposed in the ES and ES Addendum

The ES and ES Addendum for the Seagreen Project detailed a number of mitigation commitments specific to construction and installation activities. Appendix E presents the commitments made by Seagreen in the ES and ES Addendum for mitigation measures relative to construction methods and processes set out in this OTA DSLP. The table provides details of the commitments and a cross-reference to where each commitment is implemented.

7. References

Table 7.1 sets out those documents relevant to this OTA DSLP for the Seagreen Project in relation to either Consent Plans or other reference documents.

Table 7.1 Seagreen Document References

SWEL Document Number	Title
LF000009-CST-OF-PLN-0002	Marine Archaeological Written Scheme of Investigation & Protocol for Archaeological Discoveries
LF000009-CST-OF-PLN-0003	Offshore Transmission Asset Piling Strategy
LF000009-CST-OF-PLN-0004	Offshore Wind Farm Development Specification and Layout Plan
LF000009-CST-OF-PLN-0009	Offshore Transmission Asset Cable Plan
LF000009-CST-OF-PLN-0013	Offshore Design Statement
LF000009-CST-OF-PLN-0014	Offshore Construction Environmental Management Plan
LF000009-CST-OF-MST-0002	Offshore Transmission Asset Construction Method Statement
LF000009-CST-OF-PRG-0002	Offshore Construction Programme CoP

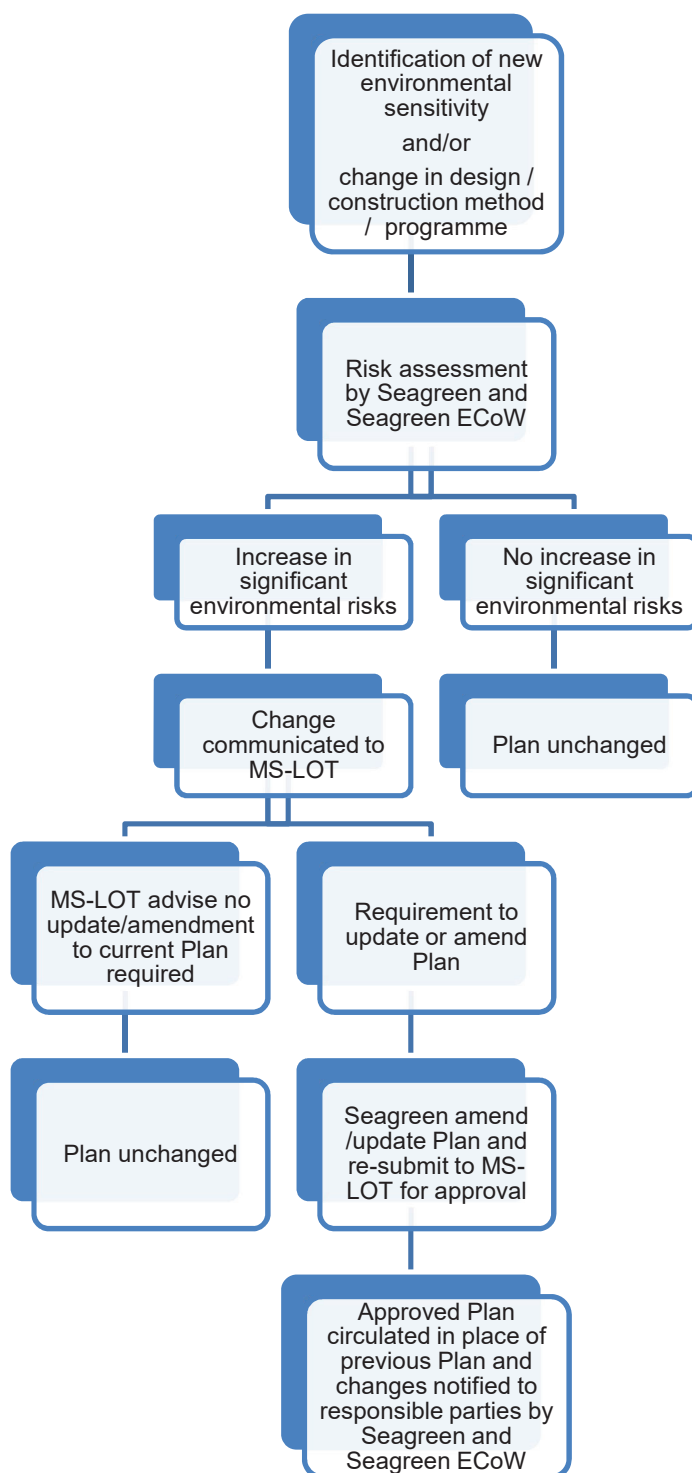
Appendix A – OTA DSLP List of Abbreviations and Definitions

Term	Description
Alpha Marine Licence	Marine licence granted by the Scottish Ministers under the Marine (Scotland) Act 2010 and the Marine and Coastal Access Act 2009 in respect of Seagreen Alpha Wind Farm on 10 October 2014 as amended by the revised marine licence granted by the Scottish Ministers on 28 August 2018 (reference 04676/18/0) and subsequently varied on 12 December 2019 (reference 04676/19/0).
Bravo Marine Licence	Marine licence granted by the Scottish Ministers under the Marine (Scotland) Act 2010 and the Marine and Coastal Access Act 2009 in respect of Seagreen Bravo Wind Farm on 10 October 2014 as amended by the revised marine licence granted by the Scottish Ministers on 28 August 2018 (reference 04677/18/0) and subsequently varied on 12 December 2019 (reference 04677/19/0).
Cable Landfall ER	Cable Landfall Environmental Report
CAA	Civil Aviation Authority
commitments register	A register that sets out all commitments to manage and mitigate potential environmental impacts made by SWEL
(the) consents	Collective term used to describe the Section 36 consents and Marine Licences issued to SAWEL, SBWEL and SWEL
Contractor	A contractor as appointed by SWEL
CoP	The Construction Programme (CoP) (LF000009-CST-OF-PRG-0002) as required under Condition 3.2.2.3 of the OTA Marine Licence
CoS	Chamber of Shipping
DS	Design Statement as required under OTA Marine Licence Condition 3.2.2.7
ECow	Ecological Clerk of Works as required under OTA Marine Licence Condition 3.2.2.12.
EIA	Environmental Impact Assessment
ES	Environmental Statement
ES Addendum	Environmental Statement Addendum
GIS	Geographic Information System
HVAC	High Voltage Alternating Current
IAC	Inter-Array Cable. The electrical cables that connect the WTGs to the OSPs
JNCC	Joint Nature Conservation Committee
Landfall site	The point above MHWS where the OTA export cables connects to the OnTW
LAT	Lowest Astronomical Tide (LAT)
Licencing Authority	Marine Scotland acting on behalf of the Scottish Ministers

Term	Description
Licensee	SAWEL and SBWEL
Marine Licences	The three marine licences for the Seagreen Project, comprising the Alpha Marine Licence, the Bravo Marine Licence, the OTA Marine Licence as granted by the Scottish Ministers under the Marine (Scotland) Act 2010 and the Marine and coastal access Act 2009 on 10 October 2014, and as subsequently varied, in the case of the Seagreen Alpha Offshore Wind Farm Marine Licence and the Seagreen Bravo Offshore Wind Farm Marine Licence, on 29 August 2018, 12 December 2019 and subsequently on 6 March 2019 and in respect of the OTA Marine Licence as varied under the Marine (Scotland) Act 2010 on 6 March 2019
MCA	Maritime and Coastguard Agency
MHWS	Mean High Water Springs
MS-LOT	Marine Scotland Licensing and Operations Team
NLB	Northern Lighthouse Board
Offshore CEMP	Offshore Environmental Management Plan as required under OTA Marine Licence Condition 3.2.1.2
OnTW	Onshore Transmission Works, from landfall consisting of onshore buried export cables and new transmission substation
OSP	Offshore Substation Platform means an alternating current Offshore substation platform which is a standalone modular unit that utilises the same substructure and foundation design as a wind turbine generator
OTA	Offshore Transmission Asset, comprising the OSPs and the transmission cable required to connect the Wind Farm Assets to the OnTW from the OSPs to the MHWS at the landfall at Carnoustie
OTA CaP	Cable Plan as required under the Offshore Transmission Assets Marine Licence Condition 3.2.2.10
OTA CMS	Construction Method Statement as required under the Offshore Transmission Asset Marine Licence Condition 3.2.2.4
OTA DSLP	Development Specification and Layout Plan as required under the Offshore Transmission Asset Marine Licence Condition 3.2.2.6
OTA Marine Licence	Marine licence granted by the Scottish Ministers under the Marine (Scotland) Act 2010 and the Marine and Coastal Access Act 2009 in respect of the Seagreen Offshore Transmission Asset on 10 October 2014 as amended by the revised marine licence granted by the Scottish Ministers under the Marine (Scotland) Act 2010 on 6 March 2019 (reference 04678/19/0)
OTA PS	Piling Strategy, as required for approval under Condition 3.2.2.5 of the Marine Licence
OWF Site	Collective term used to describe the Wind Farm Assets
OWF DSLP	Development Specification and Layout Plan as required under Alpha and Bravo Section 36 Condition 12
S36 Consents	Consent under section 36 of the Electricity Act 1989 granted by the Scottish Ministers on 10 October 2014 in respect of the Seagreen Alpha and Seagreen Bravo offshore

Term	Description
	wind farms, both as varied by the Scottish Ministers by decision letter issued pursuant to an application under section 36C of the Electricity Act 1989 on 28 August 2018 and, in respect of the Seagreen Bravo S36 Consent, as assigned, with the consent of the Scottish Ministers from SBWEL to SAWEL by assignation dated 22 November 2019 and intimated to the Scottish Ministers by intimation dated 27 November 2019.
SAWEL	Seagreen Alpha Wind Energy Limited, a company with registered number 07185533 and having its registered office at No1 Forbury Place, 43 Forbury Road, Reading, United Kingdom RG1 3JH
SBWEL	Seagreen Bravo Wind Energy Limited, a company with registered number 07185543 and having its registered office at No1 Forbury Place, 43 Forbury Road, Reading, United Kingdom RG1 3JH
SFF	Scottish Fishermen's Federation
Site	The area outlined in red in both Figure 1 attached to the S36 consent Annex 1 and the figure contained in Part 4 of the Marine Licences 04676/19/0, 04677/19/0 and 04678/19/0
SNH	Scottish Natural Heritage
SSE	Scottish and Southern Energy
Seagreen	Seagreen Wind Energy Limited (SWEL), the parent company of Seagreen Alpha Wind Energy Ltd (SAWEL) and Seagreen Bravo Wind Energy Ltd (SBWEL), (company number 06873902) and having its registered office at No.1 Forbury Place, 43 Forbury Road, Reading, United Kingdom, RG1 3JH
SWEL	Seagreen Wind Energy Ltd
UKHO	United Kingdom Hydrographic Office
WFA	Wind Farm Assets, the Offshore array development as assessed in the ES including wind turbine generators, their substructures and foundations, and associated inter-array cabling
WGS84	World Geodetic System 1984
WSI/PAD	Marine Archaeological Written Scheme of Investigation & Protocol for Archaeological Discoveries as required under OTA Marine Licence Condition 3.2.1.2
WTG	Wind Turbine Generator

Appendix B – The OTA DSLP Change Management Procedure



Appendix C – GIS information to Support the OTA DSLP

Provided as a separate accompanying ZIP file containing a shapefile. This a geographic information system (“GIS”) shape file using World Geodetic System 1984 (“WGS84”) format, and details latitude and longitude coordinates accurate to three decimal places of minutes of arc for each OSP.

Appendix D – Compliance with ES parameters and processes

Key Parameter	ES/ES Addendum/ Alternative Cable Landfall ER	OTA DSLP
<i>OSPs, substructures and foundations</i>		
Number of OSPs	≤ 5	2
Design options	<ul style="list-style-type: none"> Tubular pin pile Suction pile Gravity base foundations 	Tubular pin pile
Maximum number of piles	≤ 72 (scenario 1)	24
OSP Dimensions , per OSP	Max length: 40 – 100m Max width: 40 – 60m Max height: 45 – 60m	Length: 52m Width: 35m Height: Topside 45m above LAT
<i>Export Cables</i>		
Export cable voltage	HVAC 275 kV or HVDC 220 kV	HVAC 225 kV
Number of export cables	Original Application ≤ 6 Alternative cable landfall - 3	3
Cable separation distance	Alternative cable landfall ER 5-10m (through rock revetement) Up to 25m (intertidal and subtidal)	10m (through rock revetment) Up to 25m (intertidal and subtidal)
Maximum total length	Original application - 530km	63.2km, 63.2km and 63.4km (total of 189.8km)
Export cable corridor route width	1 – 4.5km	1 – 4.5km
Cable burial depth	Between 0.5 - 3m	Targeted minimum depth of 1m and maximum depth of 3m.
<i>Interconnector OSPs Cable</i>		
Inter-OSP cable voltage	Circa 220kV or above	Circa 220kV or above
Cable burial depth	Between 0.5 - 3m	Minimum 1m and Maximum 1.5m

Appendix E – Summary of other mitigation commitments (out with Appendix D)

Source	Reference (ES Chapter and Paragraph)	Details of commitment	Implementation
ES	Chapter 5: Project Description, paragraph 5.21.	Final build plans of Project's Alpha, Bravo and Transmission Asset, to be sent to Marine Scotland, following consent approval and final detailed design.	This document alongside the separate OWF DSLP document.
ES	Chapter 17: Archaeology and Cultural Heritage, paragraph 17.90	<p>Where cultural heritage assets may potentially be subject to direct effects, infrastructure will be micro-sited/ re-routed and temporary exclusion zones will be implemented to prevent invasive activities, such as OSP and cable installation, and anchoring or deployment of jack-up legs.</p> <p>OTA exclusion zones of at least 100m will be established around those of high sensitivity HA10, HA12, HA18, HA19, HA28, HA35, HA47, HA60 and HA62. OTA exclusion zones of at least 50m will be established around those of medium sensitivity HA6, HA9, HA26, HA29, HA30, HA31, HA32, HA34, HA36-HA38, HA56, HA57, HA61, HA65, HA306, HA340 and HA345.</p>	<p>Refer to approved Marine Archaeology Written Scheme of Investigation and Protocol for Archaeological Discoveries (WSI/PAD)(LF000009-PLN-0002).</p> <p>See also OTA constraints set out in Figure 3.4 and Figure 4.4 of this OTA DSLP which show relevant archaeological AEZs in relation to the OSPs installation, Export Cable and OSPs Interconnector Cable routing.</p>