AQUIND Limited

AQUIND INTERCONNECTOR

Environmental Statement – Volume 3 - Appendix 6.5 Disposal Site Characterisation Report

The Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 – Regulation 5(2)(a)

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

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DOCUMENT

Document	6.3.6.5 Environmental Statement – Volume 3 – Appendix 6.5 Disposal Site Characterisation Report
Revision	001
Document Owner	Natural Power Consultants Ltd.
Prepared By	E. Toogood
Date	23 October 2019
Approved By	R. Hodson
Date	29 October 2019

CONTENTS

TABLES

1. INTRODUCTION

1.1. PROJECT BACKGROUND

1.1.1.1. AQUIND Interconnector is a proposed High Voltage Direct Current (‘HVDC’) marine and underground electric power transmission link between the south of England and Normandy in France with the capacity to transmit up to 2,000 MW of electricity.

1.1.1.2. AQUIND Interconnector is an electricity interconnector consisting of primarily four high voltage marine cables and four high voltage underground cables connecting HVDC converter stations in France and the UK. Converter stations transform electricity from alternating current (AC) to direct current (DC) when transmitting electricity and vice-versa when receiving electricity. Substations are required to connect to the National Grid (‘NG’) and Réseau de Transport d'Électricité (‘RTE’) electricity networks in order for the electricity to be transmitted through the grid in both countries.

1.1.1.3. The marine elements will comprise four submarine cables between the UK and France, which can be bundled in pairs, together smaller diameter fibre optics cables. The marine cable route can be divided into the following sections:

- Approximately 45 km within the UK territorial limit, i.e. 12 nautical miles (‘nmi’) from shore;
- Approximately 64 km from the UK territorial limit to the boundary of the Exclusive Economic Zone (EEZ);
- Approximately 58 km from the boundary of the EEZ to the French territorial limit;
- Approximately 29 km within the French territorial limit, i.e. 12 nmi from shore.

1.1.1.4. Within the UK marine area, the Proposed Development comprises the Marine Cable Corridor that encompasses the location of the Landfall and extends from Mean High Water Springs (‘MHWS’) at Eastney, out to the UK/France EEZ Boundary Line, see Figure 3.1 of the Environmental Statement Volume 2 (document reference 6.2.3.1).

1.1.1.5. As a result of the marine geophysical and geotechnical surveys undertaken, areas of mobile sediments (i.e. sandwaves and large ripples) are now known to be present along the Marine Cable Corridor.

1.1.1.6. Where possible, the marine cables will be routed within the Marine Cable Corridor to avoid mobile bedforms and therefore minimise the requirement for clearance. This will initially be undertaken at the preliminary route engineering stage, before the procurement process. However, as large ripples and sandwaves are mobile, particularly within the Channel which has a robust hydrodynamic regime which effects sediment transport, it is envisaged that there may be a requirement for additional re-routing of the marine cable after the pre-installation survey/s and prior to construction.

1.1.1.7. In areas where sandwaves and ripples are present and where re-routing of the marine cable to avoid such features is not possible, two clearance options are being considered to enable the cables to be buried to the required depth; use of a Mass Flow Excavator ('MFE') and use of a Trailing Suction Hopper Dredger ('TSHD').

1.1.1.8. Clearance of areas of sandwaves and large ripples is required to reduce excessive inclines, creating a flatter alignment for the installation equipment and enable burial in the more stable sediment below the bedforms, thereby reducing the risk of future exposure of the marine cables. The volumes of material to be cleared are detailed in Section 4.2 of this document. When using the TSHD, once fully loaded it is proposed that the dredged material will be deposited onto the seabed within the Marine Cable Corridor within the UK marine area, except within the nearshore areas between KP0 and KP 21, or at the location of the Atlantic Cable Crossing.

1.1.1.9. Following consultation with the Marine Management Organisation ('MMO'), it is understood that the deposition of the dredged material using a TSHD is considered a licensable activity and must be deposited in a designated disposal site. The MMO advised the use of a MFE was not classed as a dredge disposal activity.

1.2. PURPOSE OF DOCUMENT

1.2.1.1. The main purpose of this document is to designate a marine disposal site (within the Marine Cable Corridor) for the purpose of depositing dredged material generated during the construction (and operation) of the Proposed Development. Site characterisation reports are used by regulators in licensing processes to assess the suitability of the proposed site for the disposal of dredged material. MMO guidelines on site characterisation reports recommend such reports contain the following information:

- Assessment of the need for a new disposal site;
- Identification of suitable areas;
- The dredged material characteristics;
- Assessment of potential significant effects; and
- Comparison of candidate disposal sites.

1.2.1.2. Accordingly, this document has been prepared to provide the MMO and its consultees with sufficient information on which to base consideration of this activity in relation to dredge volumes and disposal locations, and to allow formal designation of a licensed disposal site for the purpose of construction (and operation) of the Proposed Development.

1.2.1.3. It is important to note, that the locations of bedforms and dredge volumes may change between now and the time when construction activities commence. The information contained within this document is the most up-to-date survey and assessment information however, the Applicant fully anticipates that this information may need to be updated once the results of further pre-installation surveys are known.

1.2.1.4. As such, the Applicant has committed to producing a disposal strategy document or method statement in consultation with the MMO and Natural England based upon the pre-installation survey data. This document will be produced after the Development Consent Order ('DCO') is granted.

1.2.1.5. The Applicant has also agreed to the request from the MMO that a post-disposal report is produced to compare the disposal strategy with the actual activities that were undertaken during construction which would reflect both where dredging has been undertaken and where it was disposed.

2. NEED FOR A DISPOSAL SITE

2.1.1.1. Sandwaves and large ripples are currently known to be present on the seabed along the cable route.

2.1.1.2. Based upon initial feasibility work, optioneering studies and marine surveys undertaken during the design of the Proposed Development, the most viable cable corridor has been identified. Further investigations and surveys prior to construction will further refine the route that the cables will take within this corridor. The consideration of physical bedforms, geology and coastal processes in the design were of particular relevance in relation to dredging and disposal proposals. Accordingly, as the cable route becomes more refined, every effort will be taken to avoid these features where possible.

2.1.1.3. These seabed features inhibit the operation of the burial equipment during cable installation if the gradients of the features are too steep to allow safe transit of the equipment along the seabed. Additionally, if the features are mobile (e.g. migrating along the seabed or oscillating around a stable sandbank) this can cause the cable system to become exposed and “free-spans” to occur where sections of cable are suspended between bedform features.

2.1.1.4. Where these features cannot be avoided through micro-routing of the cables, they will need to be cleared by dredging and/or MFE. This allows greater control of the burial of the cables and increases the likelihood that the cable remains buried following installation thereby reducing future seabed intervention during the operational phase of the project (i.e. reburial or use of cable protection).

2.1.1.5. In addition, clearance of these features acts to reduce the height of the mobile bedforms along the cable route to create a flatter path for the installation equipment to move along.

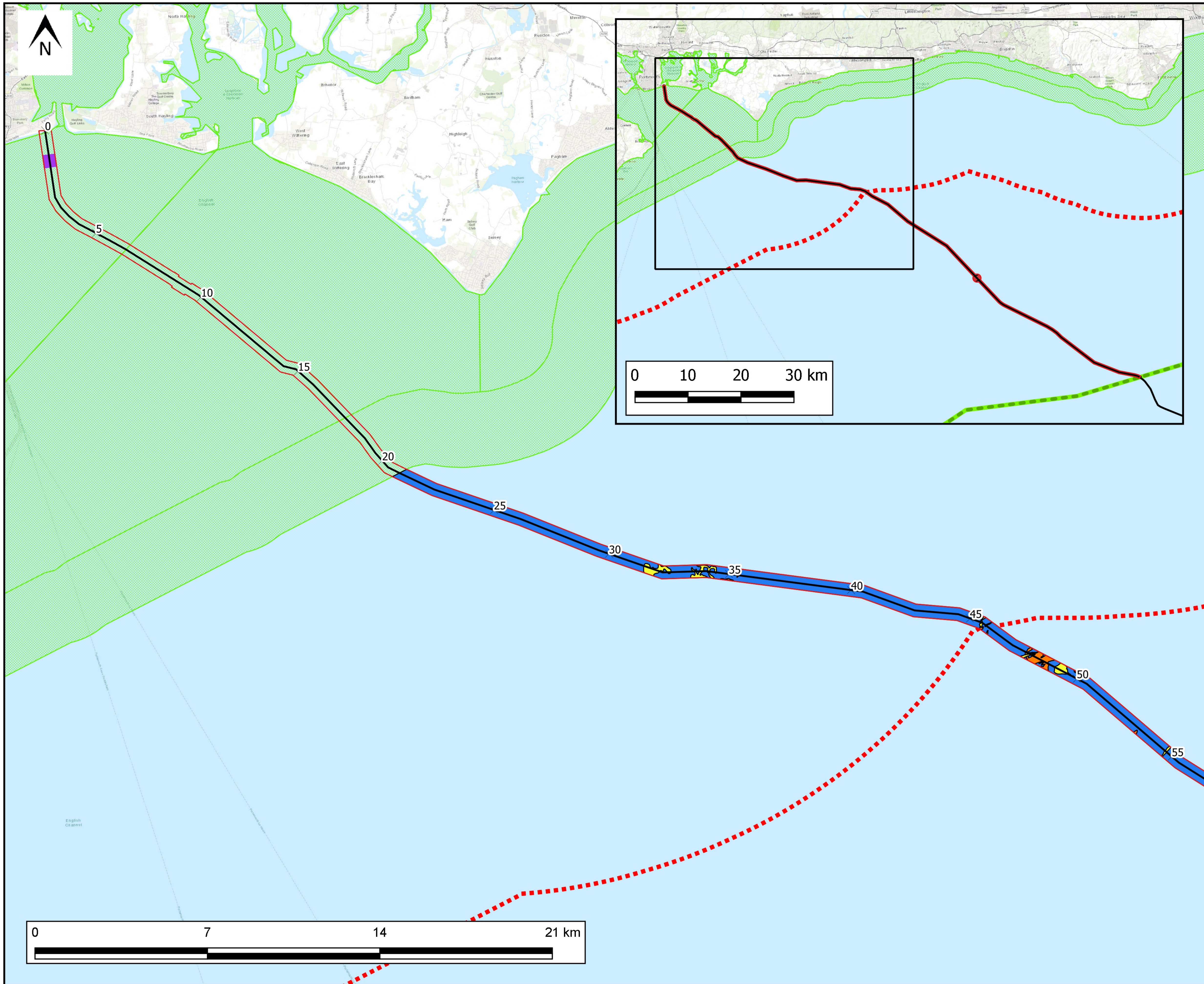
2.1.1.6. Typically, dredging will be undertaken just a few days to weeks in advance of cable lay operations to ensure that the dredged path remains open for the cable installation activities to take place.

2.1.1.7. Localised dredging is likely to be undertaken using a TSHD vessel. Depending on the vessel the draghead is typically 4 – 5 m wide and able to penetrate 30 – 50 cm into the seabed. The width of the dredging footprint may vary between 80 m and 160 m (including batter slopes) and depends upon the spatial distribution of the bedform and the depth of dredging. It is anticipated that the total indicative area of dredging footprint will be approximately 672,000 m^2 (approx. 0.67 km^2)

2.1.1.8. In order to reduce the removal of seabed sediments and thereby decrease the amount of material which must be disposed of, bedform clearance will only occur where the undulations of those features and their level of mobility poses a challenge for maintaining cable burial. This should ensure the cable will be buried to a depth that will allow for minimal future seabed interventions such as reburial of the cable or the introduction of cable protection material to the seabed (e.g. rock placement or concrete mattressing).

2.1.1.9. The material dredged will require disposal. Figure 1.1 outlines the area proposed disposal area, which encompasses the Marine Cable Corridor extending from KP 21 to the EEZ boundary.

2.1.1.10. Where possible, the material is re-deposited within the same sediment system it has been dredged from. At locations where material will be excavated and used as backfill, the TSHD vessel will discharge the dredged material directly back to the seabed (either via bottom opening doors, side discharge or, preferably, fall-pipe approximately 4-6 m above the seabed) approximately 30 – 40 m from the dredged area, in a stockpile. At a later point in time in the construction process (perhaps weeks or months later), this material may then be dredged back into the TSHD vessel and deposited for use as backfill as part of the construction process. The need for using sediment for backfill and the potential locations can only be determined once the contractor has been appointed, however it should be noted that locations where this will be possible may be limited as stockpiled material may be redistributed by natural processes and will not be available for use.



KEY:

- Survey Centre Line
- Marine Cable Corridor
- Exclusive Economic Zone
- UK 12 Nautical Mile Limit
- Proposed Dredge Disposal Area

Constraints

- Large Ripples
- Sand Waves
- HDD Entry / Exit Locations
- Cable Crossings 500m Disposal Exclusion Zone
- WFD Water Bodies with 3 km buffer

NOTES:

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0.8	21/03/19	CP	DRAFT		CL

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CLIENT: AQUIND LTD

PROJECT: UK - FRANCE INTERCONNECTOR

TITLE: FIGURE 1.1 PROPOSED DREDGE DISPOSAL AREA MAP UK DRAWING 1 OF 2

SCALE @A3:	CHECKED:	APPROVED:
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QGIS FILE:	DRAWN: 21/03/19	DATE: 21/03/19

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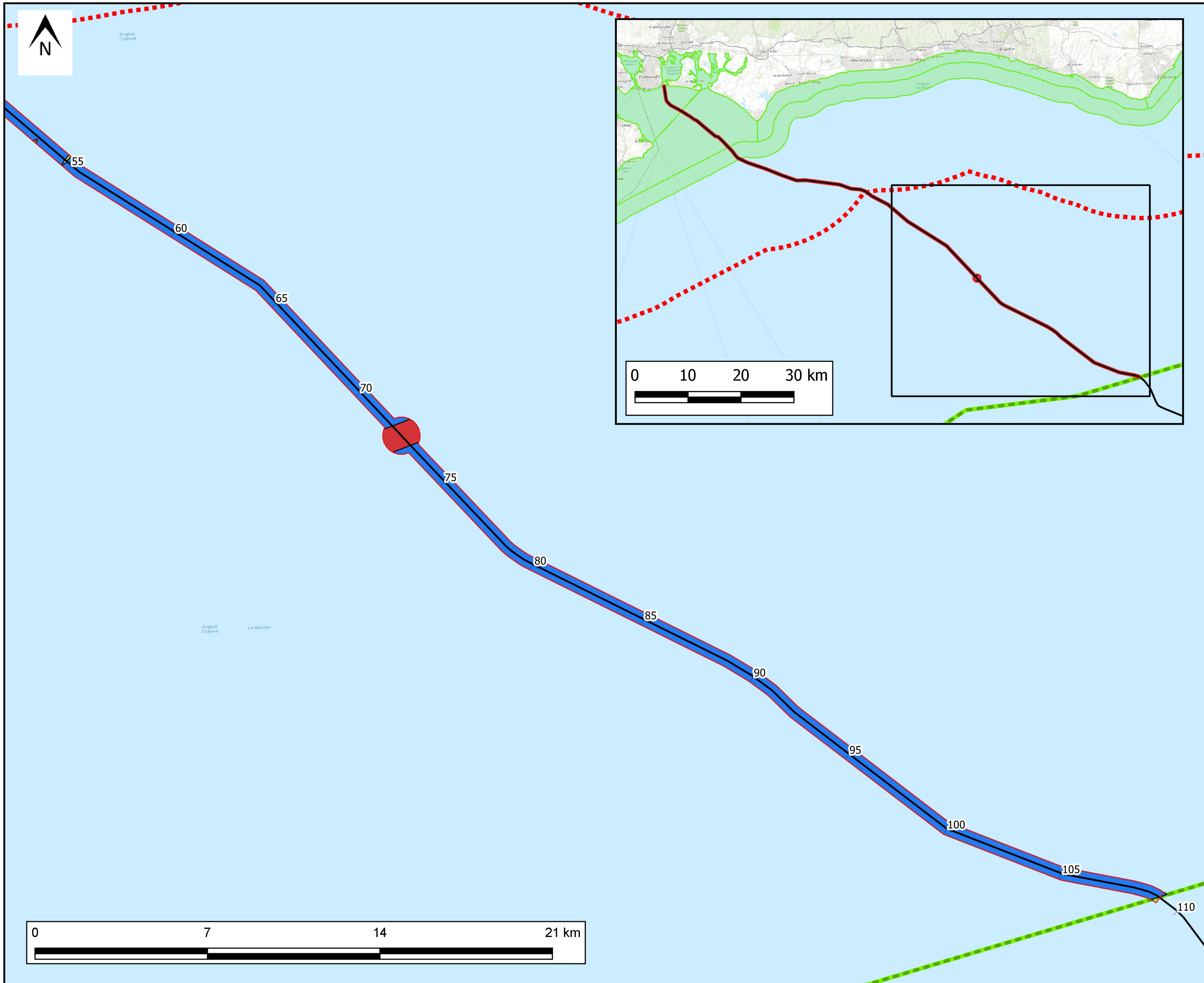

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PROJECT: UK - FRANCE INTERCONNECTOR

TITLE: FIGURE 1.1 PROPOSED DREDGE DISPOSAL AREA MAP
UK DRAWING 2 OF 2

SCALE @A3: 1:150,000	CHECKED:	APPROVED: CL
QGIS FILE:	DRAWN: 21/03/19	DATE: 21/03/19
PROJECT No: 62100616	DRAWING No:	REV: 0.8

3. CONSULTATION TO DATE

3.1.1.1. Following feedback from the MMO in the PINS Scoping Opinion in December 2018, which highlighted the requirement of site characterisation if the disposal of dredged material was required, the Applicant has liaised further with the MMO and Natural England on this matter to identify the level of information required. Feedback received during consultation on the disposal of dredged material is summarised in Table 1.1

Table 1.1 – Summary of consultation responses received relating to disposal site characterisation

Date	Consultee/Type of response	Summary of comments	Response to comments
December 2018	Marine Management Organisation ('MMO') PINS Scoping Response	If specific areas of the corridor are to be used as disposal sites, the MMO recommends that these are characterised within the ES (i.e. as a separate 'disposal site characterisation' chapter). It is possible that this may be carried out using the existing data collected in relation to sediment characterisation and hydrodynamics. If Mass Flow Excavation (MFE) is solely utilised, then no disposal sites would need designating (as the material is not being brought to the surface and re-deposited).	A combination of MFE and the use of a TSHD will be used to excavate sediment from the HDD entrance/exit locations and clear sandwaves along the Marine Cable Corridor. Therefore, this site characterisation report has been produced to characterise the areas for the disposal of this dredged material.
January 2019	Meeting with MMO	The MMO consider the use of a trailing suction hopper dredger where the material is removed from the marine environment and is then	As described in paragraph 2.1.1.9, the use of the dredged material as backfill is proposed where feasible. Opportunities

Date	Consultee/Type of response	Summary of comments	Response to comments
		deposited back on the seabed is based on the current information considered as disposal and will be a licensable activity (rather than exempt as part of laying an exempt cable). Suggestion that the deposited material may be used for construction (e.g. as backfill or infill), and therefore not be an act disposal was discussed. It is likely that any areas of disposal will need to have a characterisation report presented within the ES as a separate chapter or technical appendix. The characterisation report would not be required to be as in-depth as for a regular disposal site and should be proportional to the nature and scale of the project. AQUIND would be seeking for a closed disposal site that was only for use of the Project.	for this are only considered possible in areas where dredging occurs beyond KP 21. The exact instances and locations of this occurring can only be determined once the contractor has been appointed. This characterisation report has been produced to characterise areas along the Marine Cable Corridor for the disposal of dredged material, and to designate the area as a formal disposal site.
May 2019	MMO and Cefas feedback from consultation on 'Seabed Preparation and Deposit of Dredged Material Summary Note'	"Re-use of material" should be classified as a disposal. Beneficial use is covered under OSPAR and London Convention guidelines and should be recorded in the same manner as open sea disposal. Beneficial use areas (below mean water high springs) will require characterisation and an assessment of the perceived benefits. A disposal site for any beneficial use area must be registered, however it is marked as "beneficial	Re-use of the dredged material as backfill has been investigated and currently, opportunities for this are only considered possible in areas where dredging occurs beyond KP 21. Accordingly, the re-use of dredge material at the HDD exit/entry location pit/s is not being proposed as due to the strong wave action and hydrodynamic nature of

Date	Consultee/Type of response	Summary of comments	Response to comments
		use" rather than normal disposal and limited to operations which provide the desired benefits. There is a potential proposal to infill the HDD exit locations with dredge material. This HDD site would require registration as a disposal site and should be included in the disposal site characterisation report. This site should be designated as a separate location (with a separate disposal site code) to the main route corridor. The site characterisation report should clearly define the purpose of the disposal and the reason it is considered beneficial re-use. If the material being placed here is serving a specific purpose (e.g. construction or habitat restoration) and would otherwise be disposal of at sea, I would consider it would classify as beneficial use. It is reasonable to define a disposal site area which encompasses the wider cable route and to follow spatial restrictions at the time of disposal. A disposal methods statement (as suggested by the applicant) should determine the areas of avoidance. I would also recommend a post disposal report detailing the disposal locations and volumes is provided and compared against the method statement.	this nearshore area any disposed material in this location is unlikely to be present for backfill when it is needed (weeks or months later). In addition, there would be concerns of whether this infill/backfill would remain in place.

Date	Consultee/Type of response	Summary of comments	Response to comments
		The sample data the applicant has already collected and presented in the PEIR appear, in my opinion, to be sufficient to characterise the dredging and disposal activities. I would note however that I have not been able to determine the survey dates for the benthic survey reported in the PEIR. The survey dates should be indicted in the disposal characterisation report so the timeliness of the data can be confirmed. Repeat samples to confirm the characteristics of the dredge material may be required if dredging does not complete within 3 years of the original samples being collected. While the number of chemistry samples is limited and confined to the nearshore area, there is a considerable number of samples for particle size long the route (appears to be 22 samples). The PEIR report described the PSA data as mostly Sandy Gravel. These sediments have a low risk of chemical contamination and therefore I would not expect further chemical analysis to support the disposal site designation. Depending on the timeliness of dredging works samples may be required post-consent to confirm the continued acceptability of material to be disposed at sea.	At locations where material will be excavated and used as backfill, the TSHD vessel will discharge the dredged material directly back to the seabed, in a stockpile. At a later point in time in the construction process (perhaps weeks or months later), this material may then be dredged back into the TSHD vessel and deposited for use as backfill. The instances and locations of this occurring can only be determined once the contractor has been appointed, however, at this time it is anticipated that the locations where this might occur would be limited as it easier to back fill cable joints with rock protection and much of the deposited material may well have shifted in time and may not be available for use. However, we do not consider the use of material for backfilling is a form of disposal but as part of the construction methodology (similarly to side casting and backfill during trenching / cable installation). Section 2 of this characterisation report highlights the commitment of the

Date	Consultee/Type of response	Summary of comments	Response to comments
		This only applies however if the surface samples collected are deemed representative of the material to be dredged. The dredge depth (i.e. depth of sediment removal) has not been specifically stated, however in table 2 of the summary note, sandwave heights are quoted up to 15 m. Typically surface samples are acceptable to characterise up to 1 m of dredge depth, with core samples required for deeper dredges. The applicant should confirm the dredging depth and present justification that the samples are representative of the horizontal and vertical area.	Applicant to produce a disposal method statement/strategy document and undertake appropriate reporting of disposal quantities. The relevance of the Particle Size Distribution data collected is discussed in Section 6 of this report.
May 2019	Natural England/JNCC feedback on 'Seabed Preparation and Deposit of Dredged Material Summary Note'	NE generally content with the approach taken to define the disposal area along the Marine Cable Corridor. NE welcome the commitment to production of a post-consent method statement for dredge and disposal. In the assessments it is important to ensure that the worst-case scenarios are captured adequately in relation to designated sites and not only to assessing robustly the potential impacts for disposal but also dredging activity itself. NE request that the deposition of dredged material occurs as close to the area of dredging	Comments noted. Disposal locations and approach to using sediments as backfill during construction is discussed further in this Disposal Site Characterisation Report.

Date	Consultee/Type of response	Summary of comments	Response to comments
		as is practicable and ideally should be upstream of extraction to enable quickest recovery. Also request that deposition of dredged material occurs on the seabed that possesses a similar grain particle size. JNCC advise that they recommend the use of a fall pipe for disposal activities and that they prefer the use of backfill techniques rather than rock protection where practicable.	

4. PREDICTED SOURCES & VOLUMES OF DREDGED MATERIAL

4.1. SOURCES OF DREDGED MATERIAL

4.1.1.1. The locations of the HDD entry/exit pits where material will be excavated, as well as the identified bedforms which require levelling, are shown in Figure 1.1. It should be noted that sandwaves and large ripples are mobile features, and locations requiring dredging may need updating following the results of the pre-installation survey. Updated information will be provided to relevant consultees as part of deemed marine licence requirements e.g. approval of method statements, to be produced following the pre-installation survey and prior to construction.

4.1.1.2. It is proposed that disposal of material excavated from the locations shown in Figure 1.1 will occur within the Marine Cable Corridor within the UK marine area, except within the nearshore areas between KP 0 and KP 21, or at the location of the Atlantic Crossing cable crossing. As such, where material will be dredged/excavated for the HDD entry/exit pit location, this will be deposited beyond KP 21. It is anticipated that the deposit of dredged material will most likely take place between KP 21 to KP 80, however the majority of the Marine Cable Corridor is proposed to be designated as a disposal site to allow for the potential movement of bedforms prior to construction.

4.1.1.3. Sediment plume modelling and the relevant ecological impact assessments (e.g. benthic ecology) has been undertaken in a way that if disposal was subsequently required to occur between KP 80 and KP 109, then the worst-case scenarios for physical and ecological assessments will already have been considered.

4.2. VOLUMES OF DREDGED MATERIAL

4.2.1.1. The proposed volumes of dredge material are based upon our current understanding of location, size and scale of sandwaves and ripples within the Marine Cable Corridor. The locations of sandwave and large ripple bedforms based upon the most up-to-date information are illustrated in Figure 1.1.

4.2.1.2. As part of the Cable Burial Risk Assessment ('CBRA') process a stable seabed level was assessed, below which sediment mobility is not anticipated. This identifies the level, in regions of mobile sediment, below which the cable would be buried, and above which any large ripples or sandwaves would be cleared to enable the burial process.

4.2.1.3. Using the stable seabed level as the new lower datum for bedform volumes for clearance, dredged volumes were calculated and are presented in Table 2.1. Realistic volumes are presented however, based on the uncertainties arising from the stable seabed level assessment, uncertainty levels of an additional 1 m depth in UK waters has also been determined for worst case volumes.

4.2.1.4. These calculations assume excavation batter slopes of 18 degrees and a bulking factor of 1:3.

Table 1.2 – Profile of bedforms and dredged volumes

KP Start	KP End	Section length (m)	Category	Wavelength (m)	Wave height (m)	Realistic volume (m^3)	Worst case volume (m^3)
31.49	32.17	680	Sandwaves	65-400	2-4	133,300	208,900
32.50	32.65	150	Sandwaves	65-300	1-2.5	24,000	40,500
33.67	34.5	830	Sandwaves	60-800	0.5-1.5	33,700	74,200
35.37	35.42	50	Sandwaves	40-100	1	12,000	15,700
45.35	46.05	700	Sandwaves	50-350	1-8.5	236,800	311,000
47.75	48.00	250	Sandwaves	250	3-15	27,100	54,200
47.99	48.69	700	Large Ripples	700-800	0.6-1.2	75,700	151,400
49.00	49.80	800	Sandwaves	250-800	2.5-10	789,400	895,500
					SubTotal	**1,332,000**	**1,751,400**
			HDD Pit			2,700	2,700
					Total	**1,334,700**	**1,754,100**

Note: Volume values have been rounded up to the nearest 100 m^3.

4.3. CONSIDERATION OF ALTERNATIVES TO DISPOSAL

4.3.1. WASTE HIERARCHY

4.3.1.1. The disposal of dredged material at sea is controlled by the Oslo-Paris (OSPAR) Convention 1992. When considering applications to dispose of dredged material at sea, regulators apply the waste hierarchy set out in the European Union (EU) Waste Framework Directive 2008/98/EC. The waste hierarchy sets out the order of preference for the management of waste, listed below in order of priority (MMO, 2019):

1. Prevention;
2. Re-use;
3. Prevention;
4. Re-use;
5. Recycling;
6. Other recovery; and
7. Disposal.

Prevention

4.3.1.2. The waste hierarchy places a strong emphasis on the prevention of the production of waste. However, the clearance of areas of sandwaves and other bedforms is required to reduce excessive inclines, creating a flatter alignment for installation equipment and enabling burial in a more stable sediment, subsequently reducing the risk of future exposure of the marine cables. Therefore, for this development, the production of waste in the form of dredged material is unavoidable. However, as discussed in paragraph 2.1.1.8, the Applicant has sought to reduce the amount of dredged material produced by restricting dredging activities to areas of bedforms which in their current state would prevent successful installation of the cable.

Re-use

4.3.1.3. Where prevention is not possible, the waste hierarchy identifies the next step of the process as identifying opportunities for the re-use of dredged material. The South Marine Plan Dredge and Disposal Policy S-DD-2 highlights the importance of the consideration of re-use opportunities in proposals:

> *"Proposals must identify, where possible, alternative opportunities to minimise the use of dredged waste disposal sites by pursuing re-use opportunities through matching of spoil to suitable sites."*

4.3.1.4. Theoretically, alternative solutions to disposal offshore include using the dredged material in beach nourishment schemes, intertidal recharge schemes, subtidal deposition, and land reclamation schemes (MMO, 2014). Some schemes are currently ongoing along the UK coastline, the closest appearing to be at South Hayling. This scheme involves recharge the beach at with shingle. As such, it is unlikely that the dredged material would be compatible with such a beach recharge scheme as the dredged material will predominantly consist of sands and gravelly sands. Additionally, the transport of material to shore would increase the timescales for the dredging work, result in increased fuel emissions and the level of shipping traffic associated with the pre-installation works of the project, as well as preventing the material from being retained in the existing sediment system.

Recycle

4.3.1.5. The recycling of waste such as dredged material often involves using the waste product to create high grade products (MMO, 2019). This may involve transporting the dredged material to land, which as described above would increase the duration and the carbon footprint of dredging activities when compared to disposing of the dredged material in the vicinity of the works.

Other Recovery

4.3.1.6. Other recovery can involve the treatment of dredged material to alter the physical nature of the dredged material. Few examples of this practice have been identified and no opportunities have been identified for the proposed dredge and disposal activities.

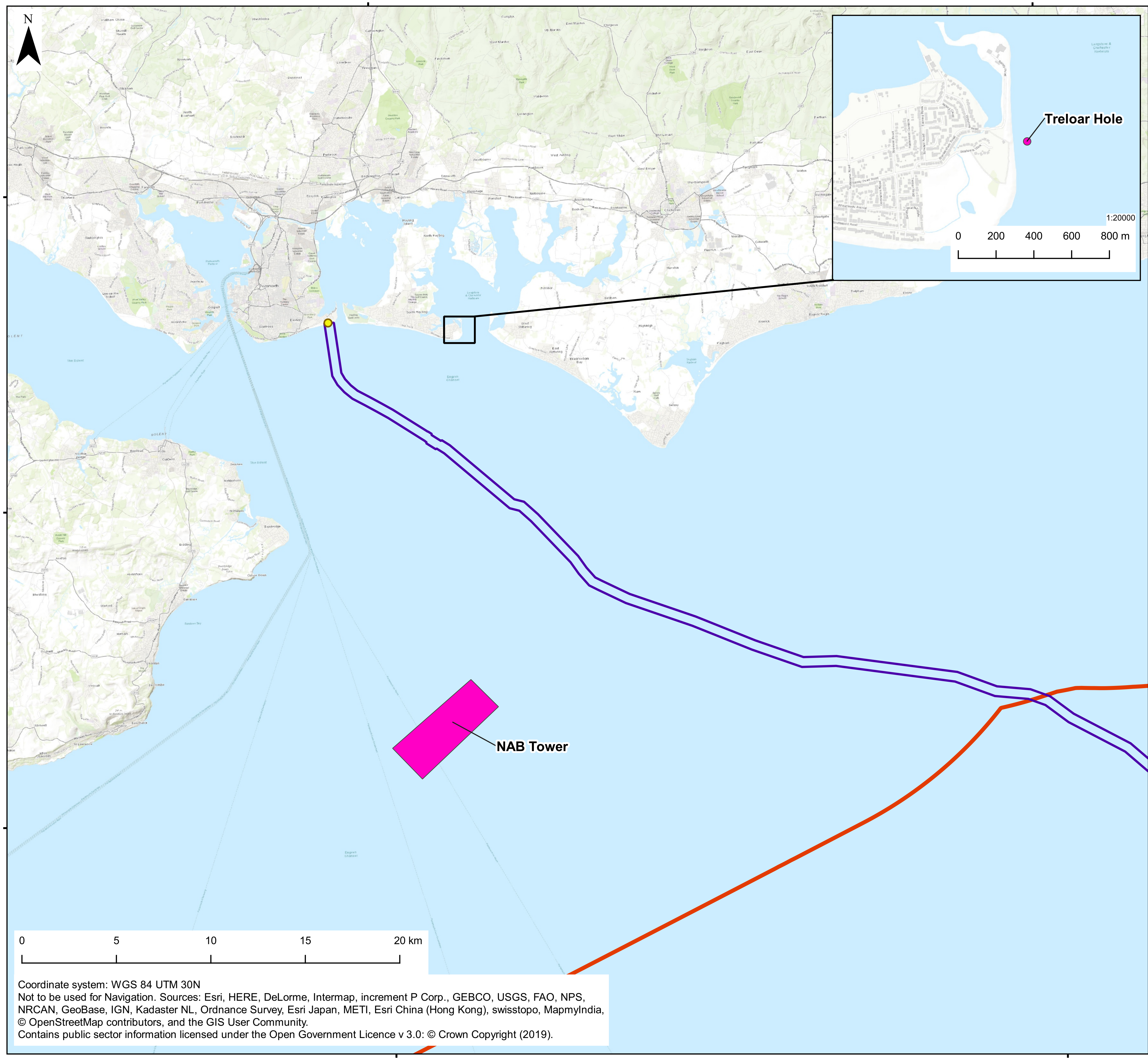
4.3.2. CONSIDERATION OF OTHER DISPOSAL SITES

4.3.2.1. Figure 1.2 shows disposal sites currently licensed for disposal of dredged material in the vicinity of the Marine Cable Corridor. The closest open disposal sites to the cable route that are large enough to accommodate the dredge volumes for the Proposed Development is NAB Tower. NAB Tower is a highly used disposal site which is the recipient of high volumes of material from maintenance and capital dredging activities from ports, harbours, berths and navigational channels in the Portsmouth, Southampton and Isle of Wight area (Cefas, 2016). Treloar Hole disposal site is located to the east of Hayling Island (see Figure 1.2), however this is a small inshore disposal site which is largely used by local marinas. Due to the size and location, over 20 km from the locations of identified bedforms along the Marine Cable Corridor, this site is not considered suitable to meet the requirements of disposal activities for the Proposed Development.

4.3.2.2. Disposal of the dredged material in other disposal sites such as NAB Tower has been considered and although there are sites currently “open”, disposing of the material from the Proposed Development works at pre-existing licensed sites has a number of drawbacks, including:

- Extending the duration of dredging operations, with long periods of travel for the dredger between operational area and disposal site (the NAB Tower disposal site is located approximately 20 km from the locations of identified seabed forms along the Marine Cable Corridor);
- decreasing the dredging efficiency whilst increasing overflow requirements to fill the hopper adequately for travel to disposal sites;
- increasing the carbon footprint of the dredging operation by increasing the travelling distances;
- the high volumes of dredged material currently being disposed of at NAB Tower from port and harbour dredging activities in the region (therefore, increasing possible navigation issues, and reducing disposal capacity required by other port and harbours); and
- removing the sediments from the local sedimentary systems.

4.3.2.3. It is therefore proposed that sediment arising from dredging activities should be disposed in the vicinity of the dredging works. This allows the sediment to remain within the local sedimentary budget, increases the dredging efficiency and reduces the carbon footprint of the dredging operation, and allows capacity to existing disposal sites to be utilised local ports and harbours.



AQUIND Interconnector

- Landfall location
- Marine Cable Corridor
- 12 nautical mile limit
- Existing licensed disposal sites (data from MMO, July 2019)

Coordinate system: WGS 84 UTM 30N
Not to be used for Navigation. Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community.
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The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017.

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5. DISPOSAL SITE CHARACTERISTICS

5.1. PHYSICAL ENVIRONMENT

5.1.1. BATHYMETRY

5.1.1.1. The Marine Cable Corridor runs through the eastern Channel, extending from a north-south line between the Isle of Wight and Cherbourg, east to the Dover Strait. The seabed has a maximum depth of 60-70 m in the centre channel, rising gently to the east to a depth of >40 m and to the UK and French coastlines. See Chapter 6 (Physical Processes) of the ES Volume 1 (document reference 6.1.6) for more detailed information.

5.1.2. PHYSICAL OCEANOGRAPHIC REGIME

5.1.2.1. Tidal variation is driven by the passage of a tidal wave propagating broadly north-eastward (during flood tide) up the Channel and entering the southern North Sea. The funnel effect of the Channel amplifies the tidal range from less than a metre at sea to > 6m in the Channel Islands, Cotentin Peninsula and northern Brittany). A time difference of about six hours exists between high water at the eastern and western limits of the Channel.

5.1.2.2. Along the Marine Cable Corridor, wave heights increase offshore with a highest predicted wave being 2.5 m at inshore areas rising to 7.29 m offshore. There is also a marked difference in the predominant wave direction from inshore to offshore along the Marine Cable Corridor. For inshore areas the predominant wave direction is from the south, whereas for offshore it is from the west-south-west.

5.1.3. SEDIMENT TRANSPORT REGIME

5.1.3.1. The seabed sediment across the area can be divided into two categories; 1) a coarse lag deposit that is not mobile under tidal flow which occurs over the majority of the area; and, 2) a suite of finer grained sediment, including sandwaves and sandbanks which are mobile under the forcing of tidal flows observed, overlying the lag deposit. Where sediments are mobile, they have generally formed bedforms.

5.1.3.2. Typical suspended sediment concentration in coastal waters along, or near, the Marine Cable Corridor range from 2 – 25 mg l^{-1} in UK waters in the central and eastern regions of the Channel. Turbidity significantly increases in coastal areas and in higher energy events such as storms.

5.2. BIOLOGICAL ENVIRONMENT

5.2.1. BENTHIC ECOLOGY

5.2.1.1. Intertidal habitats present at the Landfall location include shingle banks, sedimentary habitats, rocky shore habitats and vegetated shingle. Subtidal habitats present within the Marine Cable Corridor include mobile fine sands, mixed sediments, coarse sediments and subtidal rock.

5.2.1.2. A single area of potential Annex I habitat was identified near to the EEZ boundary line, although the habitat is not within any designated or proposed protected areas. See Chapter 8 (Intertidal and Benthic Habitats) of ES Volume 1 (document reference 6.1.8) for more detailed information.

5.2.2. FISH AND SHELLFISH ECOLOGY

5.2.2.1. Fish and shellfish species vary within the Channel. Langstone Harbour and the surrounding area is important for oysters and juvenile fish, especially bass. The areas further offshore within the UK marine area include important spawning grounds for herring.

5.2.2.2. A number of fish and shellfish of conservation importance to the UK are also presenting within the UK marine area which include salmon, black bream, sea horses, European eel, sea lamprey and both allis and twaite shad. See Chapter 9 (Fish and Shellfish Ecology) of the ES Volume 1 (document reference 6.1.9) for more detailed information.

5.2.3. MARINE MAMMALS

5.2.3.1. In comparison with the rest of the UK, marine megafauna species richness and abundance in the eastern Channel is low. The main species present include harbour porpoise, bottlenose dolphin, common dolphin, minke whale, grey seal and harbour seal. SCANS-III density estimates are available for harbour porpoise and minke whale. See Chapter 10 (Marine Mammals and Basking Sharks) of the ES Volume 1 (document reference 6.1.10) for more detailed information.

5.2.4. DESIGNATED SITES

5.2.4.1. The Proposed Development passes through the Solent Maritime SAC, designated for benthic habitats. It is also located approximately 0.1 km from the Chichester and Langstone Harbours Ramsar site. Several other protected areas lie within 50 km of the Proposed Development. See Chapter 8 (Intertidal and Benthic Habitats) for more detailed information.

5.2.4.2. There are a number of SAC and MCZs designated for fish and shellfish species within the vicinity of the Proposed Development, these include migratory fish as well as other species of fish and shellfish. See Chapter 9 (Fish and Shellfish) for more detailed information.

5.2.4.3. There are no designated sites in UK waters which have cetacean or pinniped species as a primary reason for site selection within foraging range of the Proposed Development. Therefore, it is unlikely that any cetacean or pinniped features of a UK SAC will forage or be present within the Proposed Development. See Chapter 10 (Marine Mammals and Basking Sharks) for more detailed information.

5.3. HUMAN ENVIRONMENT

5.3.1. COMMERCIAL FISHERIES

5.3.1.1. Fishing practices vary considerably within the footprint and vicinity of the Marine Cable Corridor. Inshore areas are dominated by potting for crab, lobster and whelk. These vessels are small with a limited operational range and operate a range of gear types including potting, longlining and netting.

5.3.1.2. The offshore area is fished by several nationalities including French, Belgian and Dutch vessels. These vessels use a range of gear types including dredges, seine nets and demersal trawls targeting a number fish species such as scallops, herring and flatfish. See Chapter 12 (Commerical Fisheries) of the ES Volume 1 (document reference 6.1.12) for more detailed information.

5.3.2. AGGREGATES

5.3.2.1. There are several operational marine aggregate areas in proximity to the Marine Cable Corridor however no sites intersect the Corridor. The two closest areas approximately 1.3 nmi to the west of the Corridor boundary. See Chapter 13 (Shipping, Navigation and Other Marine Users) of the ES Volume 1 (document reference 6.1.13) for more detailed information.

5.3.3. CABLES & PIPELINES

5.3.3.1. One subsea telecom cable, operated by Atlantic Crossing, intersects the Marine Cable Corridor. This cable connects the United States of America to three European countries. See Chapter 13 (Shipping, Navigation and Other Marine Users) of the ES Volume 1 (document reference 6.1.13) for more detailed information.

5.3.4. MARINE ARCHAEOLOGY

5.3.4.1. A number of palaeogeographic features of archaeological potential for seabed history have been identified within the Proposed Development. The shallow geology within the area can largely be described as predominantly clay bedrock with localised channel systems and palaeovalleys cut into its surface which have the potential to contain in situ and derived archaeological material and palaeoenvironmental material.

5.3.4.2. A total of 387 seabed features have been identified in the area. Two features have been identified as records of wreck sites, whilst another two features may be of anthropogenic origin. The two wrecks consist of steamship Corbet Woodwall and a broken up unidentified steamship.

5.3.4.3. A total of 125 Recorded Losses have been documented within 2 km of the Marine Cable Corridor. These losses correspond to wrecks which are known to have been lost or are associated with locations named locations and navigational hazards, such as Dean and Horse Sand. There are also 21 Recorded Losses of aircraft casualties, comprising a variety of British fighters. See Chapter 14 (Marine Archaeology) of the ES Volume 1 (document reference 6.1.14) for more detailed information.

6. CHARACTERISTICS OF DREDGED MATERIAL

6.1. PROPERTIES OF DREDGED MATERIAL

6.1.1. TYPE OF MATERIAL TO BE DISPOSED

Particle Size Distribution

6.1.1.1. During the benthic surveys, samples were collected from 22 sampling stations along the Marine Cable Corridor, the locations of the sampling stations can be found in Figure 8.6 of the ES Volume 2 (document reference 6.2.8.6). Further details of the methods used in the benthic survey campaign can be found in Appendix 8.1 (Benthic Ecology Survey Report) of the ES Volume 3 (document reference 6.3.8.1).

6.1.1.2. Results of the Particle Size Distribution ('PSD') data show that sediments in nearshore habitats are predominantly sandy, whereas further from landfall out to the UK/France EEZ boundary, samples contained coarser sediments with a mixed composition of sand and gravel. The results of the PSD data are detailed in Annex A of this report.

6.1.1.3. In addition to the samples collected as part of the benthic survey campaign, vibrocore samples were also collected during ground investigation works which provide further insight into sediment composition in proximity of the proposed dredge locations.

Vibrocore Sample Analysis

6.1.1.4. During ground investigation works undertaken between 2017 – 2018 (MMT, 2018), 101 sediment cores were collected at 88 locations along the Marine Cable Corridor. These samples have been used to inform both plume dispersion modelling for disposal found in Appendix 6.2 (Modelling Technical Report) of the ES Volume 3 (document reference 6.3.6.2), as well as for PSD analysis. Table 1.3 identifies the locations of the sandwaves which will require dredging, the potential dredge depths at these sandwaves and the closest vibrocore sample to the sandwaves.

Table 1.3 – Vibrocore samples identified closest to sandwaves

KP Start	KP End	Depth of dredging required	Vibrocore sample
31.5	32.2	Up to 3.0 m	(none)
32.5	32.7	Up to 2.0 m	VC34

KP Start	KP End	Depth of dredging required	Vibrocore sample
33.7	34.5	Up to 2.0 m	(none)
35.4	35.4	Up to 3.6 m	VC36
45.4	46.1	Up to 8.6 m (average 3.1 m)	VC46 & VC47
47.8	48.7	Up to 1.0 m	VC50
49.0	49.8	Up to 12.1 (average 7.9 m)	VC51

6.1.1.5. Sediment fractions from vibrocore samples collected within and near proposed dredge sites are detailed in Table 1.4, in addition to sample taken from known sandwaves and large ripples which were used to inform sediment plume modelling. It should be noted that not all of the samples listed in Table 1.4 were taken from areas that are likely to be dredged as part of seabed preparation activities. However, these samples provide useful context for the nature of the sediments in the wider area.

Table 1.4 – PSD data from cores identified near seabed features. Samples located near proposed dredge sites are in bold

Sample	Expected to contribute to sediment disposal volumes?	Depth (Top) (m)	Depth (Base) (m)	% Clay	% Silt (<0.063 µm)	% Total fines	Sand (<2 nm)	% Gravel	% Cobbles
735-VC-B01-005	(HDD)	0.73	1.56			4	85	11	
		1.75	3.00				99	1	
735-VC-B01-006 (Core depth 4.31 m)	(HDD)	0.00	0.86	16	14	30	70		
		1.00	1.5	17	19	36	64		
735-VC-B02-022	No	0.00	1.00			1	30	69	
		1.00	2.00			3	34	63	
		2.60	3.54			5	44	51	
735-VC-B02-034 (Core depth 4 m)	**Yes**	**0.00**	**0.80**			**4**	**18**	**78**	
		0.80	**2.00**			**8**	**38**	**54**	
735-VC-B02-036 (Core depth 4 m)	**Yes**	**1.00**	**2.00**			**9**	**43**	**48**	
735-VC-B02-046 (Core depth 4.68 m)	**Yes**	**0.42**	**1.00**	**46**	**52**	**98**	**2**		
		2.68	**3.17**	**28**	**60**	**88**	**12**		
735-VC-B03-047 (Core depth 3.05 m)	**Yes**	**0.00**	**1.00**	**11**	**18**	**29**	**69**	**2**	
		2.00	**3.05**	**4**	**21**	**25**	**72**	**3**	
735-VC-B03-050 (Core depth 2.78)	**Yes**	**0.00**	**0.95**			**5**	**87**	**8**	
		0.95	**2.00**			**3**	**45**	**52**	

Sample	Expected to contribute to sediment disposal volumes?	Depth (Top) (m)	Depth (Base) (m)	% Clay	% Silt (<0.063 µm)	% Total fines	Sand (<2 nm)	% Gravel	% Cobbles
735-VC-B03-051 (Core depth 4.31 m)	**Yes**	**1.00**	**2.00**			**3**	**89**	**8**	
		2.73	**3.58**	**17**	**21**	**38**	**49**	**13**	
735-VC-B05-172	No (France)	1.00	2.49			1	39	60	
		2.49	3.54			6	28	66	
735-VC-B06-182	No (France)	0.00	1.00			5	95		
735-VC-B06-182A	No (France)	0.46	1.25			5	95		
		1.25	2.00			5	93	2	

6.1.1.6. Core samples which were located in proximity to seabed features show that sediments in these areas are comprised of predominantly coarser material, i.e. sand and gravel, with the exception of one sample (735-VC-B02-046), which comprised of 98% fines.

6.1.1.7. An explanation for this anomaly could be that this sample is located within an identified paleo-channel. These deposits are likely to represent a river channel that became abandoned allowing peat to form. The peat deposits and shells in the shallower clay sections suggest deposition in a coastal marsh environment during the Mesolithic age (see Appendix 14.1 (Marine Archaeology Technical Report) of the ES Volume 3 (document reference 6.3.14.1) for more detail). The location of this sample in a paleochannel suggests that this sample is not representative of sediment composition of the wider area.

6.1.1.8. The maximum average dredge depths are expected to be 3 - 4 m in shallower waters, with a maximum average of 8 m between KP 45 - 50. The core samples taken in the vicinity of proposed dredge locations were taken to depths of between 2 and 4 m and are therefore representative of the material to be dredged in most locations. However, the limitations of the data collected to inform dredging between KP 45 - 50, where dredge depths are expected to be 8 m, are acknowledged.

6.1.2. SEDIMENT CONTAMINATION ANALYSIS

6.1.2.1. A total of ten sampling stations were used for the contaminated sediment survey, these stations were spaced along the benthic survey area, 500 m either side of the Marine Cable Corridor. Two of the samples were in proximity to the proposed HDD entry/exit locations.

6.1.2.2. Results from the contaminated sediment survey indicate that sediments in the area of the HDD entry/exit locations do not have contaminant concentrations of concern (above Cefas action level 1 (AL1)). Annex B of this report details the results of the sample analysis undertaken.

6.1.2.3. Out of the ten sampling stations tested, two stations had contaminant levels above Cefas AL1 for Arsenic however neither of these stations were located in the Marine Cable Corridor so are unlikely to be disturbed. The remaining eight sampling stations had contaminant levels either below the level of detection or below Cefas AL1. See Appendix 7.3 (Contaminated Sediment Survey Report) of the ES Volume 3 (document reference 6.3.7.3) for more details.

6.1.2.4. Sampling was concentrated in the nearshore area where sediments are typically finer and exposed to a higher concentration of potential sources of contamination (such as from land run off and vessel activity). However, previously consented infrastructure projects in the area can also provide insight into levels of contaminated sediments in the area.

6.1.2.5. Based on the results of surveys undertaken for IFA 2 (RSK, 2016) and Rampion Offshore Wind Farm ('OWF') (RSK, 2012) (0.4 km and 6.9 km from the Proposed Development respectively), levels of contaminants in sediments in deeper water in the Channel are generally low or below detection levels.

6.1.2.6. PSD data obtained over the cable route (Annex A) shows that the seabed sediments are composed primarily of sand and gravel, which has a limited affinity for the sorption of chemical contaminants (Sheahan *et al*., 2011; McNiven and Gilchrist, 2016). Results from vibrocore samples collected in the vicinity of proposed dredge locations, detailed in Table 1.4, show that sediments in these locations are comprised of coarser sediments and are therefore unlikely to accumulate chemical contaminants.

6.1.2.7. Data from IFA2 (RSK, 2016) also indicated that sediments were predominantly sandy gravel (12 out of 40 stations), followed by muddy sandy gravel (8 out of 40 stations) and finally gravelly sand, slightly gravelly sand and slightly gravelly muddy sand made up the remainder of the stations (RSK, 2016). The deep-water area of the Channel was almost entirely characterised by sandy gravel.

6.1.2.8. PSD data from Rampion OWF indicated that sediments were generally comprised of sands and gravelly sands, with several areas of sandy gravels as well as some stations with a significant silt component (13 stations, mean 10 %) (RSK, 2012).

6.1.2.9. PSD data collected for the Proposed Development as well as other infrastructure projects in the area indicate that sediments within and around the Marine Cable

Corridor are comprised of coarse sediments. Therefore, there are not expected to be high levels of contaminants in these sediments.

6.2. DREDGE & DISPOSAL METHODS

6.2.1.1. Localised dredging will likely be undertaken using a TSHD vessel. At the location where dredging is required, the TSHD will reduce its sailing speed and lower its suction pipe and draghead to the seabed. Depending on the vessel, the draghead is typically 4 – 5 m wide and able to penetrate 30 – 50 cm into the seabed. Once the draghead reaches the seabed, it is trailed along the seabed and suction pumps are used to suck up the dredged material, typically a mixture of sand and seawater. The dredged material is vertically loaded into the ‘hopper’ or hold of the vessel. Once fully loaded, there are several options for the discharge of the material from the vessel. These include, deposit of the material onto the seabed via bottom opening doors or release of the material using a fall pipe below the sea surface.

6.2.1.2. At locations where material will be excavated and used as backfill (e.g. at cable joints), the TSHD vessel will discharge the dredged material directly back to the seabed approximately 30 – 40 m from the dredged area, in a stockpile. Once operations are complete, the stockpiled material will be dredged back into the TSHD vessel and deposited into the cable joint pit.

7. ASSESSMENT OF POTENTIAL IMPACTS

7.1.1.1. This section of the report provides an overview of the findings of the AQUIND Environmental Impact Assessment relevant to dredge and disposal activities during construction. The AQUIND ES provides detailed impact assessments for dredge and disposal activities on a range of sensitive receptors including benthic ecology, fish and shellfish, marine mammals, marine ornithology, commercial fisheries, shipping and navigation, marine archaeology and other marine users.

7.1.1.2. Impact assessments reported in the ES concluded the significance of the effect of these impacts for each receptor. Table 1.5 summarises the conclusions of these impact assessments including the potential impacts from dredge and disposal activities on receptors and the significance of these impacts.

Table 1.5 – Summary of impacts from proposed dredge and disposal activities and ES conclusions

Potential Impact	Relevant ES Chapter	Significance of Effect
Physical Processes		
Increased suspended sediment concentrations (Nearshore KP 0-21)	Chapter 6 – Physical Processes	**Not significant** The possible effects only result from dredge activities (i.e. excavation around HDD exit / entry pits), as disposal of material will take place outside KP21. It is predicted that peak SSCs of up to 200 mg /l may be observed locally (i.e. within 2 km of HDD pit) and these concentrations could potentially persist for several hours following completion of construction activities. Sediment plumes are also likely to be transported up to 5 km away from the pit at which point concentrations of 5 to 10 mg/l are predicted; SSC is expected to return to background levels within a few days following completion of these activities. Deposition is not predicted to be significant - any coarse material mobilised will deposit rapidly (i.e. within several hundred metres of the cable trench). Finer sediment will be dispersed across a greater spatial extent, transiently depositing throughout the tidal cycle. However, due to the volumes of sediment likely to be liberated into the water column and significant dispersion of fine sediment, it is considered that deposition will be negligible with sediments quickly resuspended and redistributed under the forcing of tidal flows.

Increased suspended sediment concentrations (outside KP 21)	Chapter 6 – Physical Processes	**Not significant** Disposal of dredge material will result in peak SSC of 1000 mg / l within 1 km from the release point but coarser sediment expected to deposit quickly (almost immediately) with significant reductions of SSC within hours of disposal at each location. Beyond 1 km from release, the passive plume which is transported beyond this is likely to generate SSC in the region of approximately 20 mg / l, transported in the direction of the prevailing flow out to a WCS distance of up to 25km. SSC is predicted to reduce to background levels (<1 – 6 mg/l) within the timeframe of a few days following completion of these activities. Sediment deposition from disposal activities will be local to the point of release (i.e. within 1000 m), with deposits of coarser sediments potentially observed to depths of between 10 mm and 1.5 m, with greatest deposition observed across an area of a few hundred metres, elongated in the direction of the prevailing flow at the time of release, relative to the release site. Finer sediments will be redistributed and any deposition outside the Marine Cable Corridor will be transient and negligible, with any settled material being quickly redistributed under the forcing of tidal flows.
Marine Water and Sediment Quality		
Temporary increase in suspended sediment concentration	Chapter 7 – Marine Water and Sediment Quality	**Not significant** It is predicted that increases in turbidity as a result of construction (including dredge disposal) activities may exceed levels observed during

		storm events, however levels are expected to return to background levels in short space of time. It is therefore considered that the marine water and sediments of the Channel demonstrate high recoverability to this impact, and while the sediment plume may extend over a large area, its magnitude (degree of change from the baseline) is predicted to be low and the impact will be temporary.
Resuspension of contaminated sediment	Chapter 7 – Marine Water and Sediment Quality	**Not significant** Sediment sampling indicated that levels of contaminants in the area of the Marine Cable Corridor are low. Two samples (outside of the Marine Cable Corridor) contained levels of arsenic above Cefas AL 1. Should construction activities lead to disturbance and release of sediments contaminated with low levels of arsenic will have negative effects on marine water and sediment quality, these will be temporary and low in magnitude (degree of change above baseline). However, it should be noted that none of the samples analysed from within the Marine Cable Corridor itself contained levels of arsenic over Cefas AL 1 and are therefore unlikely to be disturbed.
Intertidal and Benthic Habitats		
Direct seabed disturbance	Chapter 8 – Intertidal and Benthic Habitats	**Not significant** Overall, the dredge and disposal activities will only affect a small proportion of available habitat in any one location. Direct disturbance as a result of the activity will be short term and localised and the recovery of species is expected to be rapid. Given the relatively small area affected by direct disturbance, the activities are not considered to impact the wider functioning of the remaining habitat in the area.

Temporary increase in suspended sediment	Chapter 8 – Intertidal and Benthic Habitats	**Not significant** The habitats present within and adjacent to the Marine Cable Corridor have limited sensitivity to short term increases in suspended sediment concentrations such as those expected during construction. Impacts are likely to be restricted to increased energetic costs and any loss of abundance is expected to be in line with natural processes. No effects to the functioning of any habitats are predicted.
Deposition of sediment (smothering)	Chapter 8 – Intertidal and Benthic Habitats	**Not significant** Habitat areas affected by the deposition of dredged material are likely to be very small. There may be some loss of abundance in these areas, however given the wider availability of similar habitat in the area, recovery is expected in the short-term.
Resuspension of contaminated sediment	Chapter 8 – Intertidal and Benthic Habitats	**Not significant** Results from the contaminated sediment survey show indicated that sediments within the Marine Cable Corridor do not contain significantly elevated levels of contaminants, with no records of contaminants exceeding Cefas AL 2. The lack of contamination indicates that there is a very low risk of contaminants being resuspended in the water column.

Fish and Shellfish		
Temporary habitat disturbance/loss	Chapter 9 – Fish and Shellfish	**Not significant** Dredging and disposal activities may lead to temporary habitat disturbance and loss for fish and shellfish species. However, due to the mobile nature of several of these species, it is not anticipated that high numbers of individuals will be impacted by these activities and species are expected to recolonise/recover relatively quickly. In addition, the area of habitat which will be impacted by dredge and disposal activities is only a small proportion of the wider available habitat in the area. Spawning habitats for substrate spawning species such as herring have been identified in the region. However, it should be noted that the area impacted by dredge and disposal activities will be very small compared to the wider available habitat and the works will be temporary in nature. Therefore, no significant impacts have been identified.
Temporary increases in suspended sediment (and smothering)	Chapter 9 – Fish and Shellfish	**Not significant** The effect of temporary increase in suspended sediment and smothering could therefore potentially effect fish and shellfish receptors. However, given the mobile nature of most fish and some shellfish it is recognised that these species will be able to avoid the affected area. In addition, most fish and shellfish are able to tolerate a degree of suspended sediment owing to frequent exposure to storm induced fluctuations in sediment concentrations.

Marine Mammals and Basking Sharks		
Indirect effects as a consequence of prey disturbance and/or habitat loss	Chapter 10 – Marine Mammals and Basking Sharks	**Not significant** No significant impacts to marine mammal receptors have been identified. As described in Chapter 8 (Benthic and Intertidal Habitats) and Chapter 9 (Fish and Shellfish), whilst there may be some short-term impacts to benthic, fish and shellfish receptors as a result of dredge and disposal activities, these impacts are anticipated to be highly localised and there are alternative areas of equivalent foraging habitat in the area.
Marine Ornithology		
Indirect effects as a consequence of prey disturbance and/or habitat loss	Chapter 11 – Marine Ornithology	**Not significant** As described in Chapter 8 (Benthic and Intertidal Habitats) and Chapter 9 (Fish and Shellfish), there may be some short-term impacts to benthic, fish and shellfish habitats as a result of dredge and disposal activities. However, these impacts are anticipated to be highly localised and there are alternative areas of equivalent foraging habitat for bird species in the area.
Marine Archaeology		
Damage to known and unknown assets from direct impacts	Chapter 14 – Marine Archaeology	**Not significant** Cable burial depths are anticipated to be between 1 and 3 m, and therefore too shallow to penetrate the depths within the sediment at which submerged landscapes may be present. In addition, should potential seabed prehistoric features be impacted, the footprint of a linear installation such as the Proposed Development on these extensive

		landscape features will be minimal, and therefore the magnitude of direct impacts on such resources are considered not to be significant.
Damage to known and unknown assets from indirect impacts	Chapter 14 – Marine Archaeology	**Not significant** The magnitude of effect of indirect impacts to marine archaeological receptors during construction is expected to be low. Following an assessment of the impacts of dredging and the disposal of dredged material on the hydrodynamic and sediment transport regime, it is concluded that impacts on heritage features from increased suspended sediment concentrations are not considered to be significant.

8. CONCLUSIONS

8.1.1.1. This report presents the findings of the site characterisation for the proposed disposal of dredged material along the Marine Cable Corridor between KP 21 and KP 109. Alongside the Environmental Statement, this report will inform the designation of the area as a disposal site, and authorisation of disposal activities in the Deemed Marine Licence and enable the MMO to consider any relevant conditions covering the disposal activity.

8.1.1.2. This report provides a summary of the baseline conditions along the Marine Cable Corridor as well as a summary of potential impacts of dredge and disposal activities on receptors. However, this document should be read alongside the Environmental Statement which provides a more detailed assessment of these impacts.

8.1.1.3. The source of material to be disposed within the proposed disposal site will be sediment dredged during seabed preparation activities included the levelling of sandwaves and large ripples present along the Marine Cable Corridor. The disposal of up to 1,754,100 m^3 is anticipated as part of seabed preparation works.

8.1.1.4. Based on PSD data, the sediments that will be disposed of are predominantly coarse including sand and gravel. Results of sediment sampling undertaken within the Marine Cable Corridor did not show levels of contaminants above Cefas AL1. PSD data shows that the sediments in the area are predominantly coarse sediments which are unlikely to accumulate contaminants.

8.1.1.5. The impacts of dredge and disposal activities have been fully assessed within the Environmental Statement and no significant effects have been identified as a result of these activities.

8.1.1.6. In conclusion, based on the proposals for disposal of up to *c*.1,754,100 m^3 within the proposed disposal site (which covers the full width of the Marine Cable Corridor between KP 21 and the UK / France EEZ boundary line (KP 109), the nature of the material to be disposed of and the receiving environment and the predictions of the Environmental Statement on the impact of these activities on physical, biological and human receptors, no significant effects impacts are predicted.

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ANNEX A – PARTICLE SIZE DISTRIBUTION DATA

Table A1 – PSD data from samples collected along the Marine Cable Corridor

Sampling station	Approx. KP point	Textural Group	% very coarse gravel	% coarse gravel	% medium gravel	% fine gravel	% very fine gravel	% very coarse sand	% coarse sand	% medium sand	% fine sand	% very fine sand	% silt	% clay
1	1.0	Very Fine Gravel	0.000	8.779	14.352	16.799	11.258	6.022	2.892	18.039	18.691	1.017	1.514	0.638
2	2.2	Fine Sand	0.000	0.000	1.281	0.183	0.402	0.498	0.417	36.301	59.000	1.919	0.000	0.000
3	5.0	Very Fine Sand	0.000	0.000	6.005	10.792	3.307	1.267	12.274	0.000	1.033	4.968	50.376	9.978
4	8.1	Very Fine Gravel	26.090	24.436	8.234	1.534	1.338	1.617	1.683	1.153	9.857	6.687	13.627	3.745
5	15.0	Coarse Sand	0.000	11.455	19.791	8.118	3.267	2.834	1.899	10.363	20.252	6.771	11.278	3.972

Sampling station	Approx. KP point	Textural Group	% very coarse gravel	% coarse gravel	% medium gravel	% fine gravel	% very fine gravel	% very coarse sand	% coarse sand	% medium sand	% fine sand	% very fine sand	% silt	% clay
6	21.0	Very Fine Gravel	0.000	6.121	27.290	20.524	14.148	5.547	11.433	10.757	1.465	0.582	1.820	0.313
7	29.5	Very Fine Gravel	0.000	0.000	27.201	29.220	10.441	5.804	3.292	9.541	9.573	1.615	2.603	0.710
8	No Data													
9	39.5	Very Fine Gravel	0.000	13.424	9.595	15.573	10.491	5.011	5.121	21.871	13.755	0.513	3.291	1.354
10	42.2	Very Fine Gravel	0.000	0.000	28.056	18.422	8.950	8.901	5.847	11.430	9.483	2.161	5.295	1.454
11	47.8	Coarse Sand	0.000	0.000	3.611	9.309	5.114	2.770	6.032	39.764	17.623	2.057	11.208	2.513
12	56.0	Very Coarse Sand	0.000	0.000	4.672	17.367	14.914	12.050	18.398	25.758	4.589	0.033	1.757	0.462

Sampling station	Approx. KP point	Textural Group	% very coarse gravel	% coarse gravel	% medium gravel	% fine gravel	% very fine gravel	% very coarse sand	% coarse sand	% medium sand	% fine sand	% very fine sand	% silt	% clay
13	66.0	Very Fine Gravel	0.000	8.391	10.520	21.515	10.825	9.328	15.201	15.322	4.792	0.633	2.648	0.824
14	72.0	Very Coarse Sand	0.000	0.000	3.082	24.431	14.120	10.543	21.839	19.320	2.879	0.731	2.386	0.668
15	75.0	Very Coarse Sand	0.000	0.000	5.280	17.794	12.191	7.792	15.960	28.718	4.821	0.196	5.039	2.210
16	79.2	Very Coarse Sand	0.000	0.000	3.982	22.960	10.224	8.776	12.692	28.505	7.135	0.242	3.866	1.620
17	83.3	Very Coarse Sand	2.297	6.229	6.165	12.250	11.872	9.989	21.223	20.198	4.107	2.026	2.838	0.807
18	86.8	Very Coarse Sand	1.820	0.963	7.403	21.821	13.238	10.619	20.763	18.902	2.536	0.781	0.850	0.303

Sampling station	Approx. KP point	Textural Group	% very coarse gravel	% coarse gravel	% medium gravel	% fine gravel	% very fine gravel	% very coarse sand	% coarse sand	% medium sand	% fine sand	% very fine sand	% silt	% clay
19	92.0	Very Coarse Sand	0.000	2.416	5.194	17.140	12.994	11.991	23.096	21.332	2.962	0.928	1.464	0.485
20	98.0	Very Coarse Sand	0.000	5.534	11.612	16.429	10.258	9.982	21.300	20.454	2.501	0.634	0.941	0.354
21	110.5	Very Fine Gravel	2.792	0.000	6.977	24.826	15.229	11.042	18.838	16.068	2.014	0.889	1.005	0.320
22	No Data													

Note – No sample was collected at station 8 due to the presence of rocky substrate. In addition, no sample was taken at station 22 due to the identification of potential Annex I reef.

ANNEX B – SEDIMENT SAMPLE ANALYSIS RESULTS

This Annex is presented as an Excel spreadsheet (MMO Template).

Applicant Information

Instructions:

1. All applicants and laboratories should refer to the most recent guidance on sediment analysis in support of marine licence applications
   Sediment analysis guidance
2. Full information must be provided under each relevant sheet of the workbook. Grey highlighted cells indicate where information can be entered
3. Where information cannot be provided, the applicant should consult with the MMO prior to submission.
4. Worksheets are protected to prevent accidental amendments to calculated values. If amendments are required please consult with the MMO.
5. Sample IDs used through the data output worksheets should correspond to Sample IDs provided on this worksheet.
6 Where more than 6 dredge areas or 30 samples are required, please contact MMO.
7. Macros must be enabled to use this workbook

Marine licence applicant information:

Applicant:	AQUIND Limited
Application number:	EN020022-000030
Application title:	AQUIND Interconnector
Date sampled:	08/08/2018
Sampling location:	Marine Cable Corridor

Dredge area tonnages:

Dredge Area	Dredging tonnages	% total dredged material	Total dredged material
Area i			0
Area ii			
Area iii			
Area iv			
Area v			
Area vi			

MMO use only

Sample numbers and locations

Sample ID	Excluded sample (MMO use)	Sample location (decimal degrees, WGS84)		Location name (as per sampling plan)	Sampling depth (m)	Dredge area
		Position latitude	Position longitude			
5		50.702650	-0.886800	Cable Route	0	
6		50.716800	-0.875683	Cable Route	0	
7		50.728900	-0.865217	Cable Route	0	
26		50.713417	-0.915350	Cable Route	0.02	
25		50.722550	-0.945017	Cable Route	0.3	
4		50.728517	-0.974517	Cable Route	0.02	
3		50.738617	-1.016350	Cable Route	0	
24		50.754200	-1.030583	Cable Route	0.3	
2		50.769717	-1.033950	Cable Route	0	
1		50.777617	-1.035317	Cable Route	0.02	
CRM 1941b (% Recovery)						
QC Blank						

Physical characteristics data

Instructions:

1. Record the laboratory/contractor responsible for analysis
2. Record the date the samples were analysed.
3. Enter full dataset for each sample in the analysis results table
4. Where copying and pasting entries please use paste values only
5. Where entering multiple Sample IDs please use the pop-up form
   IDs should be separated by a comma

Analysis information:

Laboratory/contractor:	Socotec
Date of analysis:	

Physical characteristics analysis outputs:

Laboratory sample number	Dredge Area	Sample ID(s)	Visual appearance*	Exempt from chemical analysis◦	Total Solids (% total sediments)	Organic matter (total organic carbon)	-5.5	-5.0	-4.5	-4.0	-3.5
							45mm	31.5mm	22.4mm	16mm	11.2mm
5			Sandy mud/shell								
6			Fine sand								
7			Fine sand								
26											
25											
4			Shell, Fine sand								
3			Mud								
24			Pebbles, fine sand								
2			Sand								
1			Sand, pebbles								
CRM 1941b (% Recovery)											
QC Blank											

* **Visual appearance**: Incude a description of what the material looks like and what it contains, e.g. sandy material containing brick fragments, or black silt, or foreign man made matter caught in the sample.

◦ **Exempt from chemical analysis:** enter 'y' where sediment samples contain glacial material or are too coarse and thus exempt from chemical analysis.

Particle size distribution (% at 0.5 phi intervals)

-3.0	-2.5	-2.0	-1.5	-1.0	-0.5	0.0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0
8mm	5.6mm	4mm	2.8mm	2mm	1.4mm	1mm	707µm	500µm	353.6µm	250µm	176.8µm	125µm	88.39µm	63µm	44.2µm	31.3µm	22.1µm	15.6µm

6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5	14.0	14.5	>14.5
11µm	7.8µm	5.5µm	3.9µm	2.75µm	1.95µm	1.38µm	0.98µm	0.69µm	0.49µm	0.34µm	0.24µm	0.17µm	0.12µm	0.09µm	0.06µm	0.04µm	<0.04µm

Trace metal data

Instructions:

1. Record the laboratory/contractor responsible for trace metal analysis
2. Record the date the samples were analysed.
3. Enter full dataset for each sample in the analysis results table
4. Trace metal analysis results should be reported in mg/kg (ppm) dry weight
5. Enter methdological limit of detection for each trace metal prior to inputting raw data
6. Where analysis outputs are less than the limits of detection please enter text "<LOD"
7. Where copying and pasting entries please use paste values only
8. Where entering multiple Sample IDs please use the pop-up form
   IDs should be separated by a comma

Analysis information:

Laboratory/contractor:	Socotec
Date of analysis:	

Determinand analysis outputs:

Laboratory sample number	Dredge Area	Sample ID(s)	Total solids (%)	Metals as mg/kg dry weight							
				Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Copper (Cu)	Mercury (Hg)	Nickel (Ni)	Lead (Pb)	Zinc (Zn)
5				44.8	0.13	18.2	11.9	0.06	12.7	12.2	36.8
6				19.2	0.11	21.4	10.9	0.04	9.1	9.4	28.4
7				16.8	0.1	18.4	12.4	0.02	11.7	9	39.3
26				22.3	0.14	20.6	16.7	0.03	18.5	11.4	43.8
25				17	0.11	18.8	10.8	0.06	9.4	10	32.7
4				16.2	0.11	14.2	10.6	0.03	9	6.8	25.8
3				10.4	0.09	18.1	11	0.05	7.4	7.7	24.3
24				8.8	0.05	21.1	10.7	0.02	14.9	4.5	18.3
2				5	0.06	13.3	10.4	0.01	7.8	3.6	12.7
1				5.6	0.06	14.1	12	0.04	8.6	5.4	19.6
CRM 1941b (% Recovery)				100	104	97	101	100	100	100	102
QC Blank				<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
Limits of detection (mg/kg dry weight):											

Organotin data

Instructions:

1. Record the laboratory/contractor responsible for organotin analysis
2. Record the date the samples were analysed.
3. Enter full dataset for each sample in the analysis results table
4. Organotin analysis results should be reported in mg/kg (ppm) dry weight
5. Enter methdological limit of detection for each organotin prior to inputting raw data
6. Where analysis outputs are less than the limits of detection please enter text "<LOD"
7. Where copying and pasting entries please use paste values only
8. Where entering multiple Sample IDs please use the pop-up form
   IDs should be separated by a comma

Analysis information:

Laboratory/contractor:	Socotec
Date of analysis:	19/09/2018

determinand analysis outputs:

Laboratory sample number	Dredge Area	Sample ID(s)	Total solids (%)	Organotins as mg/kg dry weight	
				Dibutyltine (DBT)	Tributyltin (TBT)
5				<LOD	<LOD
6				<LOD	<LOD
7				<LOD	<LOD
26				<LOD	<LOD
25				<LOD	<LOD
4				<LOD	<LOD
3				<LOD	<LOD
24				<LOD	<LOD
2				<LOD	<LOD
1				<LOD	<LOD
CRM 1941b (% Recovery)				111	95
QC Blank				<LOD	<LOD
			Limits of detection (mg/kg dry weight):		

Polyaromatic hydrocarbon data

Instructions:

1. Record the laboratory/contractor responsible for PAH analysis
2. Record the date the samples were analysed.
3. Enter full dataset for each sample in the analysis results table
4. Analysis results for individual PAHs should be reported in µg/kg (ppb) dry weight.
   THC should be reported as mg/kg (ppm)
5. Enter methdological limit of detection for each PAH prior to inputting raw data
6. Where analysis outputs are less than the limits of detection please enter text "<LOD"
7. Where copying and pasting entries please use paste values only
8. Where entering multiple Sample IDs please use the pop-up form
   IDs should be separated by a comma

Analysis information:

Laboratory/contractor: Socotec
Date of analysis: 05/09/2018

determinand analysis outputs:

Laboratory sample number	Dredge Area	Sample ID(s)	Total Solids (%)	Acenapthene	Acenapthylene	Anthracene	Benz[a]anthracene	Benzo[a]pyrene	Benzo[b]fluoranthene	Benzo[g,h,i]perylene
5				<LOD	<LOD	<LOD	2.44	3.18	3.75	2.47
6				<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
7				<LOD	<LOD	<LOD	<LOD	1.22	1.35	1.35
26				<LOD	<LOD	<LOD	2.35	4.52	5.17	4.40
25				<LOD	<LOD	1.28	2.69	4.07	4.62	3.75
4				<LOD	<LOD	<LOD	1.28	2.09	2.75	2.25
3				<LOD	<LOD	<LOD	2.50	3.61	3.77	3.19
24				<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
2				<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1				<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
CRM 1941b (% Recovery)				103	93	67	70	65	99	77
QC Blank				<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
Limits of detection (µg/kg dry weight):										

PAHs as dry weight (µg/kg dry weight)

Benzo[e]pyrene	Benzo[k]fluoranthene	C1-Napthalenes	C1-Phenanthrenes	C2-Napthalenes	C3-Napthalenes	Chrysene	Dibenz[a,h]anthracene	Fluoranthene	Fluorene	Indeno[123-c,d]pyrene	Napthalene	Perylene
2.64	1.63	<LOD	1.84	1.13	<LOD	3.10	<LOD	4.32	<LOD	2.71	<LOD	1.60
<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1.28	<LOD	2.74	1.34	2.18	1.49	1.41	<LOD	1.41	<LOD	1.54	<LOD	1.36
4.33	2.68	1.78	2.56	3.53	2.02	3.30	<LOD	4.37	<LOD	4.75	1.01	4.05
3.93	2.42	1.62	1.81	2.82	1.96	3.47	<LOD	5.48	<LOD	4.50	<LOD	3.95
2.15	1.23	1.18	1.38	2.45	2.44	1.72	<LOD	2.51	<LOD	2.50	<LOD	2.40
3.09	1.94	1.18	2.28	2.74	1.77	2.95	<LOD	5.45	<LOD	3.67	<LOD	3.96
<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	1.08	<LOD	<LOD	<LOD	<LOD
<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
100	90	80	79	117	122	92	104	79	53	76	67	70
<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD

Phenanthrene	Pyrene	Total hydrocarbon content (mg/kg)
1.84	3.59	36.24
<LOD	<LOD	0.00
<LOD	1.39	20.06
2.56	4.13	57.51
3.09	5.13	56.59
<LOD	2.57	30.90
2.28	4.98	49.36
<LOD	<LOD	1.08
<LOD	<LOD	0.00
<LOD	<LOD	0.00
75	70	1848.00
<LOD	<LOD	0.00

Polychlorinated biphenyl data

Instructions:

1. Record the laboratory/contractor responsible for PCB analysis
2. Record the date the samples were analysed.
3. Enter full dataset for each sample in the analysis results table
4. Analysis results should be reported in mg/kg (ppm) dry weight.
5. Enter methdological limit of detection for each PCB prior to inputting raw data
6. Where analysis outputs are less than the limits of detection please enter text "<LOD"
7. ICES 7 PCBs are highlighted in bold
8. Where copying and pasting entries please use paste values only
9. Where entering multiple Sample IDs please use the pop-up form
   IDs should be separated by a comma

Analysis information:

Laboratory/contractor:	Socotec
Date of analysis:	14/09/2018

determinand analysis outputs:

Laboratory sample number	Dredge Area	Sample ID(s)	Total Solids (%)	2,2',4,5,5'-Pentachlorobiphenyl CB101	2,3,3',4,4'-Pentachlorobiphenyl CB105	2,3,3',4',6-Pentachlorobiphenyl CB110	2,3',4,4',5-Pentachlorobiphenyl CB118	2,2',3,3',4,4'-Hexachlorobiphenyl CB128	2,2',3,4,4',5'-Hexachlorobiphenyl CB138	2,2',3,4,5,5'-Hexachlorobiphenyl CB141
5				<LOD			<LOD		<LOD	
6				<LOD			<LOD		<LOD	
7				<LOD			<LOD		<LOD	
26				0.13			<LOD		0.09	
25				<LOD			<LOD		<LOD	
4				0.16			<LOD		0.17	
3				<LOD			<LOD		<LOD	
24				0.10			<LOD		<LOD	
2				<LOD			<LOD		<LOD	
1				<LOD			<LOD		<LOD	
CRM 1941b (% Recovery)				102			91		100	
QC Blank				<LOD			<LOD		<LOD	
Limits of detection (mg/kg dry weight):										

PCBs as mg/kg dry weight

2,2',3,4',5',6-Hexachlorobiphenyl CB149	2,2',3,5,5',6-Hexachlorobiphenyl CB151	2,2',4,4',5,5'-Hexachlorobiphenyl CB153	2,3,3',4,4',5-Hexachlorobiphenyl CB156	2,3,3',4,4',6-Hexachlorobiphenyl CB158	2,2',3,3',4,4',5-Heptachlorobiphenyl CB170	2,2',5- Trichlorobiphenyl CB18	2,2',3,4,4',5,5'-Heptachlorobiphenyl CB180	2,2',3,4,4',5',6-Heptachlorobiphenyl CB183	2,2',3,4',5,5',6-Heptachlorobiphenyl CB187	2,2',3,3',4,4',5,5'-Octachlorobiphenyl CB194	2,4,4'-Trichlorobiphenyl CB28	2,4',5-Trichlorobiphenyl CB31
		<LOD					<LOD				0.19	
		<LOD					<LOD				0.22	
		<LOD					<LOD				0.11	
		0.11					<LOD				0.29	
		<LOD					<LOD				0.15	
		0.23					0.18				0.22	
		<LOD					<LOD				0.20	
		<LOD					<LOD				0.26	
		<LOD					<LOD				0.11	
		<LOD					<LOD				0.16	
		100					91				105	
		<LOD					<LOD				<LOD	

2,2',3,5'-Tetrachlorobiphenyl CB44	2,2',4,4'-Tetrachlorobiphenyl CB47	2,2',4,5'-Tetrachlorobiphenyl CB49	2,2',5,5'-Tetrachlorobiphenyl CB52	2,3',4,4'-Tetrachlorobiphenyl CB66
			0.15	
			0.17	
			0.09	
			0.27	
			0.11	
			0.22	
			0.16	
			0.22	
			0.08	
			0.13	
			95	
			<LOD	

Organochlorine data

Instructions:

1. Record the laboratory/contractor responsible for analysis
2. Record the date the samples were analysed.
3. Enter full dataset for each sample in the analysis results table
4. Analysis results should be reported in mg/kg (ppm) dry weight.
5. Enter methdological limit of detection for each Organochlorine prior to inputting raw data
6. Where analysis outputs are less than the limits of detection please enter text "<LOD"
7. Where copying and pasting entries please use paste values only
8. Where entering multiple Sample IDs please use the pop-up form
   IDs should be separated by a comma

Analysis information:

Laboratory/contractor:	
Date of analysis:	

determinand analysis outputs:

Laboratory sample number	Dredge Area	Sample ID(s)	Total Solids (%)	Organochlorine pesticides as mg/kg dry weight						
				alpha-hexachlorocyclohexane (AHCH)	beta-hexachlorocyclohexane (BHCH)	gamma-hexachlorocyclohexane (GHCH)	Dieldrin	Hexachlorobenzene (HCB)	1,1-Dichloro-2,2-bis(p-chlorophenyl) ethylene (PPDDE)	Dichlorodiphenyltrichloroethane (PPDDT)
5										
6										
7										
26										
25										
4										
3										
24										
2										
1										
CRM 1941b (% Recovery)										
QC Blank										
Limits of detection (mg/kg dry weight):										

1,1-dichloro-2,2-bis(p-chlorophenyl)ethane (PPTDE)

Brominated flame retardant data

Instructions:

1. Record the laboratory/contractor responsible for analysis
2. Record the date the samples were analysed.
3. Enter full dataset for each sample in the analysis results table
4. Analysis results should be reported in mg/kg (ppm) dry weight.
5. Enter methdological limit of detection for each BDE prior to inputting raw data
6. Where analysis outputs are less than the limits of detection please enter text "<LOD"
7. Where copying and pasting entries please use paste values only
8. Where entering multiple Sample IDs please use the pop-up form
   IDs should be separated by a comma

Analysis information:

Laboratory/contractor:	
Date of analysis:	

determinand analysis outputs:

Laboratory sample number	Dredge Area	Sample ID(s)	Total Solids (%)	Brominated flame retardants as mg/kg dry weight						
				2,2′,4,4′,6-penta-bromodiphenyl ether (BDE100)	Hexabromodiphenyl ether (BDE138)	2,2′,4,4′,5,5′-hexa-bromodiphenyl ether (BDE153)	2,2′,4,4′,5,6′-hexa-bromodiphenyl ether (BDE154)	2,2´,4-tri-bromodiphenylether (BDE17)	2,2′,3,4,4′,5′,6-heptabromodiphenyl ether (BDE183)	2,2',3,3',4,4',5,5',6,6'-decabrominated diphenyl ether (BDE 209)
5										
6										
7										
26										
25										
4										
3										
24										
2										
1										
CRM 1941b (% Recovery)										
QC Blank										
Limits of detection (mg/kg dry weight):										

2,4,4'-tribromodiphenyl ether (BDE28)	2,2',4,4'-Tetrabromodiphenyl ether (BDE47)	2,3',4,4'-Tetrabromodiphenyl ether (BDE66)	2,2',3,4,4'-Pentabromodiphenyl ether (BDE85)	2,2',4,4',5-pentabromodiphenyl ether (BDE99)