RWE Renewables UK Dogger Bank South (West) Limited

RWE Renewables UK Dogger Bank South (East) Limited

Dogger Bank South Offshore Wind Farms

Environmental Statement

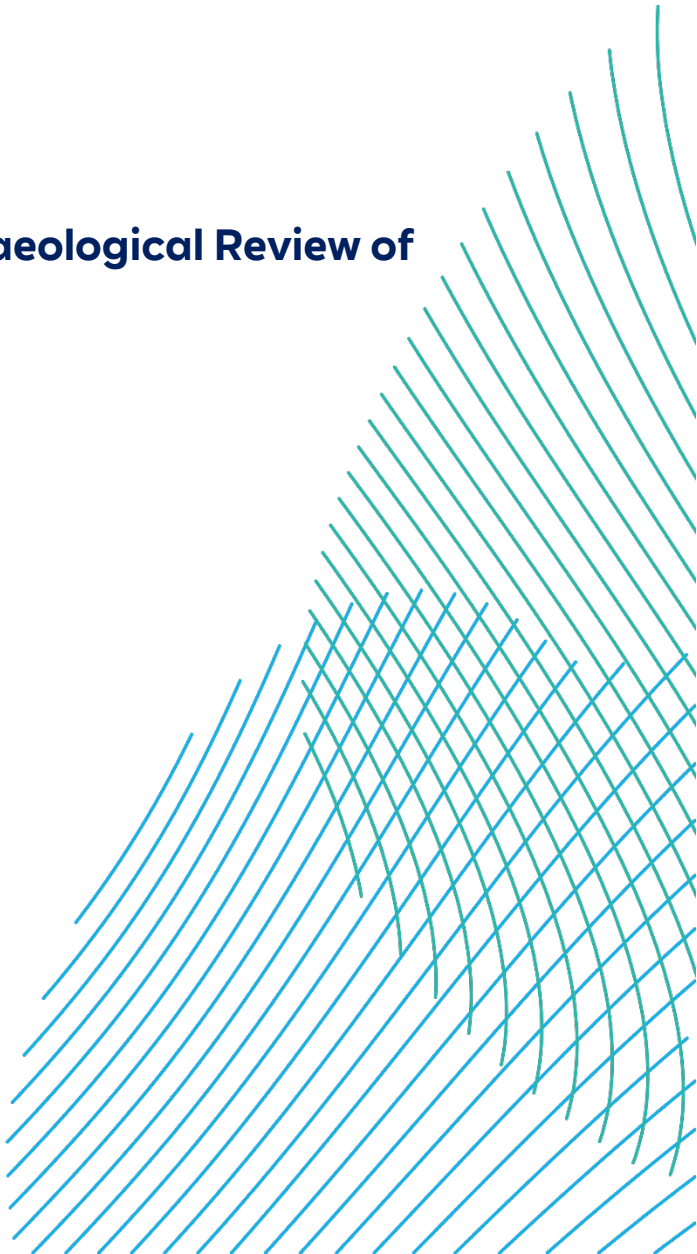
Appendix 17-4 – Stage 1 Geoarchaeological Review of Geotechnical Data

June 2024

Application Reference: 7.17.17.4

APFP Regulation: 5(2)(a)

Revision: 01



Unrestricted

Company:	**RWE Renewables UK Dogger Bank South (West) Limited and RWE Renewables UK Dogger Bank South (East) Limited**	Asset:	**Development**
Project:	**Dogger Bank South Offshore Wind Farms**	Sub Project/Package:	**Consents**
Document Title or Description:	Environmental Statement – Appendix 17-4 – Stage 1 Geoarchaeological Review of Geotechnical Data		
Document Number:	004300158-01	Contractor Reference Number:	PC2340-RHD-OF-ZZ-AX-Z-0072

Rev No.	Date	Status/Reason for Issue	Author	Checked by	Approved by
01	June 2024	Final for DCO Application	RHDHV	RWE	RWE

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Glossary

Term	Definition
Array Areas	The DBS East and DBS West offshore Array Areas, where the wind turbines, offshore platforms and array cables would be located. The Array Areas do not include the Offshore Export Cable Corridor or the Inter-Platform Cable Corridor within which no wind turbines are proposed. Each area is referred to separately as an Array Area.
Cretaceous	A geological period from 145 to 65 million years ago, the end of this 79 million year period marks the extinction of the dinosaurs and beginning of the tertiary period.
Eemian	The previous interglacial period from 130 to 115 thousand years ago, marking a typically short period of globally warmer conditions within the Quaternary period separating the last two glacial periods.
Epoch	A division of time within a geological period generally considered to last several million years, examples from the Quaternary Period include the Holocene and Pleistocene.
Eocene	A geological period 560 to 33.9 million years ago.
Geoarchaeology	The application of earth science principles and techniques to the understanding of the archaeological record. Includes the study of soils and sediments and of natural physical processes that affect archaeological sites such as geomorphology, the formation of sites through geological processes and the effects on buried sites and artefacts.
Glacial / Interglacial	A glacial period is a period of time within an ice age that is marked by colder temperatures and glacier advances. Interglacial correspond to periods of warmer climate between glacial periods. There are three main periods of glaciation within the last 1 million years, the Elsterian, the Saalian and the Weichselian which ended about 12,000 years ago. The Holocene period corresponds to the current interglacial.

Term	Definition
Holocene	The last 10,000 years of earth history.
Hominin	The group representing human species, including modern humans, extinct human species and immediate ancestors.
Inter-Platform Cable Corridor	The area where inter-platform cables would route between platforms within the DBS East and DBS West Array Areas, should both Projects be constructed.
Interstadial period	Relatively brief periods of milder climate within a glacial period, these are shorter than an interglacial, allowing some vegetation to develop and partial recession or halting of glacial movement.
Landfall	The point on the coastline at which the Offshore Export Cables are brought onshore, connecting to the onshore cables at the Transition Joint Bay (TJB) above mean high water.
Marine Isotope Stage	Marine isotope stages are alternating warm and cool periods in the Earth's paleoclimate, deduced from oxygen isotope data reflecting changes in temperature derived from data from deep sea core samples.
Mesolithic	10000 to 4000 BC The Middle Stone Age, falling between the Palaeolithic and Neolithic and marking the beginning of a move from a hunter gatherer society towards a food producing society.
Offshore Development Area	The Offshore Development Area for ES encompasses both the DBS East and West Array Areas, the Inter-Platform Cable Corridor, the Offshore Export Cable Corridor, plus the associated Construction Buffer Zones.
Offshore Export Cable Corridor	This is the area which will contain the offshore export cables (and potentially the ESP) between the Offshore Converter Platforms and Transition Joint Bays at the landfall.
Palaeochannel	Ancient channel(s) infilled or buried by younger sediments (usually partially consolidated), preserving the impression of rivers and other water systems that once support flowing water.

Term	Definition
Palaeoenvironmental Analysis	The study of sediments and the organic remains of plants and animals to reconstruct the environment of a past geological age.
Palaeolandscape	Ancient landscape infilled or buried by younger sediments, multiple aspects of Palaeoenvironmental Analysis are required to reconstruct the conditions of a location as it was at a specific point in history.
Palaeolithic	500000 to 10000 BC The Old Stone Age defined by the practice of hunting and gathering and the use of chipped flint tools. This period is usually divided into Lower, Middle and Upper Palaeolithic.
Pleistocene	2.58 to 0.0177 million years ago the first epoch of the Quaternary.
Quaternary period	The last 2 million years of earth history incorporating the Pleistocene ice ages and the post-glacial (Holocene) Period.
Saalian	Approximately 347 to 128 thousand years ago a glacial stage of the Pleistocene separated by the Holstein (earlier) and Eemian (later) interglacial periods.
Stadial period	A cold climate period as identified by Marine Isotope Stage, representing a period of glaciation.
Sub-epoch	A period of time dividing epochs into periods considered significant, spanning one or multiple ages, such as Early, Middle and late Pleistocene.
The Projects	DBS East and DBS West (collectively referred to as the Dogger Bank South Offshore Wind Farms).
Tunnel Valley	Generally U-shaped valley(s) of glacial origin eroded out of sediment through subglacial process including meltwater drainage.

Term	Definition
Weichselain	120 to 11.5 thousand years ago the last glacial period following the Eemian interglacial period and ending with the beginning of the Holocene.

Acronyms

Term	Definition
LAT	Lowest Astronomical Tide
mbsf	Meters below seafloor
MIS	Marine Isotope Stage
NSPRMF	North Sea Prehistory Research Management Framework

17.5 Introduction

17.5.1 Project Background

1. Royal HaskoningDHV (RHDHV) were commissioned by RWE to undertake a geoarchaeological assessment of the Dogger Bank South (DBS) Offshore Wind Farms, comprising the DBS East and DBS West ('the Projects'). The Offshore Development Area comprises the DBS Array Areas, located on Dogger Bank, Inter-Platform Cable Corridor that connect the DBS East and DBS West Array Areas and an Offshore Export Cable Corridor that makes landfall near Skipsea on the east coast of Yorkshire (**Volume 7, Figure 5-1 (application ref: 7.5.1)**).

17.5.2 Summary of Previous Works

2. There have been no previous geoarchaeological investigations undertaken within the Offshore Development Area. However, there have been a number of geoarchaeological and geophysical assessments undertaken to support the development of the Dogger Bank A, Dogger Bank B, Dogger Bank C and Sofia offshore wind farms and these can provide context on the types and preservation of palaeolandscape features and deposits potentially present within the Offshore Development Area.

3. A marine geophysical assessment of sub-bottom profiler data has been undertaken to support the environmental baseline of the ES (**Volume 7, Appendix 17-3 Palaeolandscapes Assessment of 2022 Marine Geophysical Data (application ref: 7.17.17.3)**). The results of the sub-bottom profiler assessment have been used to support this geoarchaeological review.

17.5.3 Aims and Objectives

4. The aim of this technical report is to outline the findings of a Stage 1 geoarchaeological review of geotechnical survey data acquired within the Offshore Development Area. This will provide a baseline understanding of the sequence and nature of deposits present, and their potential archaeological and palaeoenvironmental significance. The results of this geoarchaeological review will inform the scope of any further geoarchaeological investigations where necessary, as detailed in **Table 17-4-1**.

5. The above will be achieved by addressing the following objectives:

   - Review geotechnical borehole / vibrocore logs to identify deposits of potential archaeological interest, assigning high, medium and low priority status; and

- Make recommendations for Stage 2 geoarchaeological recording, where necessary.

Table 17-4-1 Staged Approach to Geoarchaeological Investigations

Stage	Description
Stage 1: Geoarchaeological review	Desk-based review of geotechnical and geological data. Establish likely presence/ absence/ distribution of archaeologically relevant deposits. Identify deposits or samples for Stage 2 works.
Stage 2: Geoarchaeological recording / monitoring	Target deposits or samples identified in Stage 1. Describe the sequences recovered and undertake deposit modelling (if suitable). Interpret depositional environment (if possible). Identify if suitable deposits are present for Stage 3 works.
Stage 3: Palaeoenvironmental assessment	Sub-sample deposits of archaeological interest for paleoenvironmental assessment (e.g. pollen, plant macrofossils, foraminifera, ostracod and diatoms) and associated scientific dating. Provide an outline interpretation of the archaeological and palaeoenvironmental context. Any recommendations for Stage 4 works will depend on the potential for further analysis and the project research objectives.
Stage 4: Palaeoenvironmental analysis	Full analysis of samples and additional scientific dating as specified in Stage 3, together with a detailed synthesis of the results, in their local, regional or wider archaeological and palaeoenvironmental context. Publication would usually follow from a Stage 4 report.
Stage 5: Publication	Publication of the results of Stage 1-4 works for submission in a peer reviewed journal, book or monograph, depending on the archaeological significance of the work. The scope and location of the final publication will be agreed in consultation with the client and regulatory bodies where appropriate.

17.5.4 Geoarchaeological Background

6. Geoarchaeological assessments are typically undertaken with reference to geological periods (e.g. Quaternary), epochs (e.g. Pleistocene) and sub-epochs (e.g. Devensian) that reflect major climate sea-level and / or environmental changes. Here we adopt European nomenclature correlated to the Marine Isotope Stage (MIS) record to distinguish between different climatic periods, with dates given in ka (thousands of years before present). Marine Isotope Stages are deduced from marine paleoclimatic records and reflect alternating warm (interglacial) and cold (glacial) periods throughout the Quaternary. Some Marine Isotope Stages can be subdivided into sub-stages reflecting relatively warmer (interstadial) or Cool (stadial) periods within a single stage.

7. The Projects' Array Areas are situated on Dogger Bank, located 125–290 km northeast of the Yorkshire coast in water depths ranging from 18 to 63m below Lowest Astronomical Tide (LAT). Dogger Bank lies in the northern part of an area known as 'Doggerland': an extensive terrestrial plain that formed during periods of lower sea level when the southern North Sea was subaerially exposed (Coles 1998). The Offshore Export Cable Corridor runs from the Array Areas to the east coast of Yorkshire, crossing an area of sand banks that transition into a relatively featureless area where bedrock or glacial deposits may be exposed at seabed.

8. Bedrock underlying the Offshore Development Area comprises Upper Cretaceous Chalk and Eocene Mudstone. Bedrock geology is unconformably overlain by Pleistocene and Holocene (MIS 1) sediments, dominated by marine sands and glacial diamict overlain by fluvial, semi-terrestrial and lacustrine sediments, and post-transgression marine sands (Cameron et al. 1992).

9. Dogger Bank is stratigraphically complex and has been shaped by fluctuations in global climate and sea level at the glacial-interglacial timescale. The lithostratigraphic framework for the Dogger Bank region was updated based on high resolution sub-bottom profiler data (Cotterill *et al.*, 2017), as summarised in see **Table 17-4-2**.

Table 17-4-2 Lithostratigraphy Framework for Deposits in the Dogger Bank Region, Modified From Cotterill et al. (2017)

Era	Formation[1]	Description/depositional environment	Archaeological potential
Holocene [MIS 1]	Bligh Bank	Modern mobile sands (marine)	Considered of low potential in itself, but possibly contains re-worked artefacts and can cover wreck sites and other cultural heritage
	Indefatigable Grounds	Gravelly sands and sandy gravel, lag deposit (marine)	
	Nieuw Zeeland Gronden Terschellinger Bank	Muddy fine-grained sand (marine)	
	Well Hole	Laminated sand and sandy mud, infills depressions (shallow marine)	
	Elbow	Muddy sand and interbedded clay, and basal peat (transitional terrestrial to shallow marine)	Potential to contain *in situ* and derived archaeological material, and palaeoenvironmental material
Weichselian [MIS 5d-2]	Botney Cut	Stiff to soft glaciomarine to glaciolacustrine muds (glacial)	Glaciomarine deposits considered to have low potential. Glaciolacustrine deposits have potential to contain *in situ* and derived archaeological material, and palaeoenvironmental material.
	Volans	Clay with variable silt, sand and gravel content (glacial)	Considered low but has potential to bury deposits of interest or to contain reworked material.
	Bolders Bank	Firm to stiff silty sandy gravelly clay (glacial)	

Era	Formation[1]	Description/depositional environment	Archaeological potential
	Dogger Bank	Very heterogenous deposits. Includes clay with variable silt, sand and gravel content (glacial) and dense sand in areas (aeolian or periglacial). Organic matter has been recorded indicating possible sub-aerial exposure. Can contain shell fragments.	Considered low but has potential to bury deposits of interest or to contain reworked material.
Eemian [MIS 5e]	Eem	Shelly sands, can be muddy in places (marine)	
Saalian [MIS 6]	Tea Kettle Hole	Fine-grained sand with organics (periglacial and aeolian)	Potential to contain *in situ* and derived archaeological material, and palaeoenvironmental material.
	Cleaver Bank	Laminated clays and/or fine-grained sand (marine to proglacial)	Considered low but has potential to bury deposits of interest or to contain reworked material
Holstenian [MIS 11?]	Egmond Ground	Gravelly sands interbedded with silt and clay (marine)	

10. The formation of Dogger Bank as a topographic high occurred during the last glacial period, at some point between the onset of glaciation in the region at 30 ka BP (Phillips *et al.* 2018; Roberts *et al.* 2018) and deglaciation which had occurred by 23 ka BP (Roberts *et al.* 2018; Emery *et al.* 2019a). During deglaciation, a series of thrust moraines developed allowing formation of a large proglacial lake (Phillips *et al.* 2018) which later filled with sediment before becoming subaerially exposed (Cotterill *et al.* 2017; Emery *et al.* 2019b).

11. After deglaciation, a network of channels developed in a subaerial setting, incising into the underlying glacial deposits. Parts of this channel network were mapped during The North Sea Palaeolandscapes Project (Fitch *et al.* 2005; Gaffney *et al.* 2007, 2009) and have since been mapped in detail by others (Wessex Archaeology, 2012; 2013a; 2013b; Emery *et al.* 2020). The channel network formed at some point between deglaciation at 23 ka BP and final marine inundation of Dogger Bank at ca. 8 ka BP (Sturt *et al.* 2013).

12. Four radiocarbon dates were acquired from two boreholes (BH1026 and ABH1124A) located within palaeochannel features preserved within the Dogger Bank A offshore wind farm. The dates range from 9440±30 BP (SUERC-37341; 10750-10580 cal. BP) to 6190±30 (SUERC-37344; 7240-6980 cal. BP) (Wessex Archaeology, 2012) suggesting the channel network was active during the early Holocene (MIS 1). The pollen preserved in palaeochannel sediments suggests this early Holocene (MIS 1) landscape was characterised by mixed deciduous woodland with areas of heath and open ground (Wessex Archaeology, 2012).

13. There is also evidence for the preservation of peat deposits on Dogger Bank (Wessex Archaeology, 2013c; Russell & Stevens, 2014). Pollen preserved in peat deposits recovered during benthic trawling provide evidence for bog, wooded fen, reed marshland / fen, sedge marshland / fen and coastal habitats. In the absence of radiocarbon dated samples, these peat deposits are expected to have formed during the early Holocene (MIS 1), possibly in and around the margins of an extensive palaeochannel network.

14. Palaeoenvironmental assessment of deposits preserved in palaeochannels within the Dogger Bank A and B offshore wind farms suggests channels infilled with estuarine and shallow marine deposits as the Dogger Bank was inundated during the early Holocene sea-level rise (Wessex Archaeology, 2012).

15. The palaeochannel and wetland sediments preserved at Dogger Bank have the potential to preserve palaeoenvironmental material and are therefore of geoarchaeological interest. They also represent a significant period of sub aerial exposure when the landscape would have been suitable for hominin occupation. Understanding the palaeolandscape evolution of Dogger Bank in relation to potential pathways of hominin migration into Britain after the Last Glacial Maximum, is a key focus of national research agendas (English Heritage, 2008; Petters, 2009; Ransley *et al.* 2013; Historic England, 2024).

16. At present, the Offshore Development Area is located in a fully marine environment. Modern sediment supply is relatively low, with a large amount of the "recent" seabed sediment likely to have been derived from re-worked older deposits. Consequently, significant amounts of the identifiable bedforms are also likely to be relict, though some amount of superficial sediment movement is likely to occur.

17.5.5 Methodology

17.5.5.1 Coordinate System

17. All location information and figures are presented as projected coordinates in WGS UTM Zone 31N Eastings and Northings.

18. The vertical reference level is given as meters below sea floor (mbsf) which assumes the top of the vibrocore / borehole is equal to the level of the sea floor. Water depths are given as meters below LAT. A full list of vibrocore and borehole locations is shown on **Figures 17-4-1a-g** in Annex 17-4-1 and presented in Annex 17-4-2.

17.5.5.2 Geotechnical Coring/Drilling Strategy

19. A total of 122 vibrocores were acquired by Fugro within the Offshore Export Cable Corridor, five boreholes within the nearshore part of the Offshore Export Cable Corridor and five boreholes within the Projects' Array Areas during geotechnical surveys undertaken between 2022 and 2023.

20. One vibrocore was acquired for dedicated geoarchaeological purposes following an archaeological review of the draft DBS Seafloor and Shallow Geological Results Report (Fugro, 2023). Fugro (2023) identified amplitude anomalies in the sub-bottom profiler data that could indicate the presence of peat / organic rich sediments. These anomalies were located in the nearshore part of the Offshore Export Cable Corridor and as part of the geotechnical survey planning, provisions were made to acquire a vibrocore to ground truth these features, where they are present within 6m of the seabed (the maximum depth of the vibrocorer). During the survey, two attempts were made to recover a vibrocore, the first (DBS-A01-VC) terminated at 2.4mbsf so a repeat test was undertaken and the second (DBS-A02-VC) penetrated slightly deeper reaching 4.8mbsf.

21. Vibrocores were acquired using a high-performance corer to depths of 3-6mbsf. They were recovered in clear transparent liners, split into 1m sections offshore and transported to the laboratory where they were split open lengthways, photographed, and described in detail.

22. Boreholes within the Array Areas were acquired during a geotechnical survey in 2022 using a wireline push- sampler coring system which recovers cores in 0.9m metal tubes (shelby tubes) at intermittent depths downhole. Target depth was 60mbsf. Samples were retained and transported to the onshore laboratory for detailed description, core photographs and selected geotechnical testing.

23. Boreholes within the nearshore part of the Offshore Export Cable Corridor were acquired during a geotechnical survey in 2023 by cable percussion methods with follow on rotary drilling. Target depth was 30mbsf and samples from superficial deposits were recovered as either bulk disturbed samples (extruded into bags) or UT100 metal tubes. In bedrock, complete cores were recovered.

24. Geotechnical logs and core photographs from the vibrocore and borehole surveys were provided for geoarchaeological review and assessment.

25. The suitability of geotechnical samples for geoarchaeological purposes was assessed according to the drilling/coring strategy employed, using the criteria outlined in **Table 17-4-3**. Vibrocore samples used in this assessment have been assigned Category A, borehole samples in shelby or UT100 tubes are assigned Category B and any bulk samples are assigned Category D.

Table 17-4-3 Assessment Criteria for Suitability Of Geotechnical Samples for Geoarchaeological Purposes

Category	Description
A	Continuous record of deposits recovered with minimal disturbance. Structure and stratigraphy is largely intact. Can be a whole round core or the preserved half of a split core. Cores of this quality are typically recovered using vibrocore or continuous coring methods.
B	Discontinuous record of deposits recovered with minimal disturbance, usually due to a combination of open hole drilling with intermittent coring (e.g. shelby tube), structure and stratigraphy largely intact.
C	Continuous record of deposits recovered. Low recovery or disturbance related to the nature of the deposit (e.g. loose sediment), or due to cores being extruded into bags. Structure and stratigraphy typically not fully preserved.
D	Discontinuous record of deposits recovered resulting from a combination of open hole drilling with intermittent coring, low recovery or disturbance related to the nature of the deposit (e.g. loose sediment), or due to cores being extruded into bags. Structure and stratigraphy typically not fully preserved.

17.5.5.3 Review of Geotechnical Logs

26. Geoarchaeological review of vibrocores and boreholes was undertaken in two stages; the first stage included a review of preliminary vibrocore logs that were drafted on the vessel by describing the deposits through liner and inspecting the top and base of each 1m cut section. These preliminary logs were sent to the geoarchaeologist direct from the vessel and were used to flag vibrocores with the potential to contain deposits of archaeological interest, prior to scheduling engineering testing.

    A second stage of geoarchaeological review was undertaken using the detailed geotechnical core logs and photographs after cores / samples were split in the laboratory. The results of this review are presented in Annex 17-4-3. Deposits recovered in vibrocores and boreholes were assigned a high, medium or low priority status based on their perceived geoarchaeological significance, as shown on **Figures 17-4-2a-g** in Annex 17-4-1.

17.5.6 Results

27. A total of 122 vibrocore and 10 borehole logs were reviewed as part of the assessment, with the aim of identifying deposits of potential geoarchaeological interest. Outline descriptions based on geotechnical logs are presented in Annex 17-4-3, accompanied by an initial interpretation of the deposits.

28. Chalk bedrock was observed underlying Pleistocene sediments in all five nearshore boreholes and observed in one vibrocore (DBS_025_VC). Mudstone was observed at the base of three vibrocores (DBS_071_VC, DBS_072_VC, DBS_083_VC). The recovery of bedrock in vibrocores indicated Pleistocene sediments can be relatively thin (<6m) in places within the Offshore Export Cable Corridor.

29. Dense to very dense sand containing shell fragments and rare pockets of clay and / or black organic matter were recovered in boreholes within the Array Areas (DBSW-003-BH, DBSW-004-BH and DBSW-005-BH) at depths between 38.5 and 60mbsf. These sands are the lowermost Pleistocene deposits recovered in the Offshore Development Area.

30. Overlying the sands, a high strength clay unit with sand laminae were observed in two boreholes (DBSW-004-BH and DBSE-010-BH) within the Array Areas reaching thicknesses up to 20m. The laminated and fine-grained nature of the deposit suggests deposition in a quiet water environment (e.g. lake, pond or sheltered marine environment).

31. Medium to high strength silty, gravelly and sandy clay was recovered in 39 vibrocores, and nine boreholes. This deposit can reach thicknesses up to 50m (DBSE-009) and is occasionally fissured or comprises inclined laminations indicating deformation or reworking. The high shear strength and heterogenous nature of this clay suggests it was deposited in a glacial environment. These high strength clays are widespread across the Offshore Development Area and overly bedrock, the lower sands and the laminated clays.

32. The high strength clay is interbedded with dense, silty sand, which can include rare organic matter, laminations of clay and on rare occasions, shell fragments, particularly in the nearshore boreholes. Individual beds of sand range in thickness from 0.35 to 10.95m and they are present within 0.5m of the seabed reaching depths up to 45mbsf.

33. In three vibrocores (DBS_132_VC, DBS_133_VC and DBS_164_VC) a very sandy silt is recorded. Low strength clay was observed in two vibrocores (DBS_164_VC and DBS_066_VC) and one boreholes (DBSW-005-BH). This deposit overlies high strength clay in DBS_066_VC, whereas in DBS_164_VC, it overlies silt. The low strength clay is described as containing organic matter within DBSW-005-BH where it is underlain by dense sand comprising clay laminations and rare wood fragments. These low strength clays and silt were deposited after the high strength clays and may be of a post-glacial age.

34. Silty sand comprising shell fragments was recovered in 79 vibrocores and two boreholes within the Array Areas. The presence of shell in these deposits suggests deposition in a shallow marine environment.

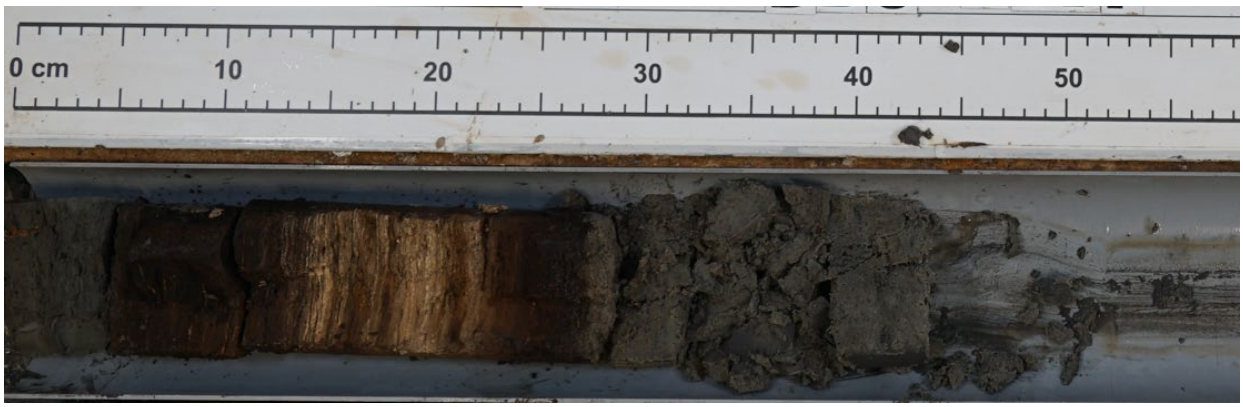
35. Shallow and surficial gravel deposits were observed in seven vibrocores (DBS_013_VC, DBS_015A_VC, DBS_016_VC, DBS_018A_VC, DBS_043_VC, DBS_054_VC, DBS_139_VC), comprising subrounded to subangular gravels of various lithologies, with variable sand and shell fragment content. These deposits overlay high strength clay and are typically present below surficial sediment at the seabed.

36. The uppermost deposits recovered in vibrocores comprise silty sand or gravelly sand with shell fragments. Lithologically, these deposits often cannot be distinguished from underlying sand or gravel deposits. However, they are present at seabed, and they comprise shell fragments and occasional whole shells so are interpreted as seabed sediments.

37. No peat deposits were recorded in cores. However, pockets of organic matter have been described on occasion within the lowermost sands, the sands interbedded with high strength clay, shallow marine sands and seabed sediments. They have also been noted as inclusions in the low strength clay. Pockets or inclusions of organic matter are typically reworked into a deposit so their context is unknown, and they may be much older than the deposit itself.

38. In DBSW_005_BH wood fragments and laminations of organic matter are described which may potentially indicate in-situ deposition of organic material. A review of the core photographs shows the deposit comprises discrete beds of potentially organic clay (or possible peat) and an entire wooden branch or root has potentially been sampled by the core (**Plate 17-5-1**).

Plate 17-5-1 Core photograph of sample recovered at 18.0 mbsf in DBSW-005-BH



39. During the 2023 vibrocore survey, two dedicated geoarchaeological vibrocores were recovered from a single location to ground truth potential organic deposits in the nearshore that were identified in the geological interpretation of sub-bottom profiler data (Fugro, 2023). Vibrocore DBS-A01-VC recovered 0.2m of dark olive brown silty sand with shell fragments overlying high to very high strength silty sandy gravelly clay with shell fragments. At 0.2mbsf, a thick lamina of black sandy clay with organic matter was recorded and a hydrogen sulphide odour was noted when describing the core.

40. Vibrocore DBS-A02-VC recovered slightly silty gravelly sand with shell fragments between 0.00 and 3.05mbsf, overlying a very high strength gravelly silty clay. There was no evidence of organics within this vibrocore. To corroborate geotechnical logs, core photographs were reviewed and there is no visual evidence of organics or peat. The images show the high strength clay contains frequent clasts of chalk which is characteristic of glacial till (diamict) deposits on the east Yorkshire coast.

17.5.7 Discussion

17.5.7.1 Introduction

41. The stratigraphy of deposits recovered in vibrocores and boreholes within the Offshore Development Area are summarised in **Table 17-4-4**. Where possible, deposits were assigned to the stratigraphic units detailed in **Table 17-4-2**.

Table 17-4-4 Stratigraphy of Deposits within the Offshore Development Area

Unit Name	Description	Epoch	Formation[1]
Seabed Sediments	Silty sand with frequent shell fragments, occasionally gravelly	Late-Holocene	Bligh Bank
Gravel Lag	Sandy gravel of various lithologies with shell fragments	Early to mid-Holocene	Indefatigable Grounds
Shallow Marine Sand	Silty sand with shell fragments, occasionally gravelly	Late-Holocene	Nieuw Zeeland Gronden Terschellinger Bank or Well Hole
Alluvium	Silty clay and sandy silt, may contain laminae of organic matter, rare shell fragments and rare wood fragments	Early Holocene	Elbow
Diamict and Glacial Sand	Firm to stiff silty sandy gravelly clay or dense sand	Weichselian	Bolders Bank or Dogger Bank
Laminated Clay	Very high strength clay with sand laminae	Saalian	Cleaver Bank

Unit Name	Description	Epoch	Formation[1]
Pre-Glacial Sand	Dense fine silty sand with occasional shell fragments or clay beds	Holstenian to Eemian	Egmond Ground, Cleaver Bank, Tea Kettle Hole or Eem

[1] Based on lithostratigraphic Framework of Cotterill et al. (2017).

17.5.7.2 Pre-Glacial Sand

42. The lowermost deposits recovered in boreholes comprise sand and silty sand with occasional shell fragments and thin beds of clay and silt. These deposits are overlain by glacial sediments providing a stratigraphic context and they have been grouped together as Pre-Glacial Sand.

43. A number of sand-rich formations are present in the Dogger Bank region representing deposition in marine, terrestrial, periglacial and intertidal environments (Egmond Ground Formation, Cleaver Bank Formation, Tea Kettle Hole Formation and Eem Formation). Of these, Cleaver Bank Formation and Tea Kettle Hole Formation are of archaeological interest as they were deposited during the Saalian (MIS 6) when sea levels were lower, and the southern North Sea was sub-aerially exposed, although there is potential for ice to be present at times during this period. These formations represent deposition in a periglacial or aeolian environment during the Middle Palaeolithic, a period of known hominin occupation in Britain and the southern North Sea (e.g. Bicket & Tizzard 2015).

44. If the Pre-Glacial Sand recovered in boreholes correlates to the Cleaver Bank or Tea Kettle Hole formations, they have the potential to contain in situ and derived archaeological material. However, the Pre-Glacial Sand also show characteristics of Egmond Ground and Eem formations which were laid down during interglacial periods when the southern North Sea was submerged, and thus have low archaeological potential.

45. An archaeological review of sub-bottom profiler data identified a seismic unit (Unit 3) that was correlated to Eem Formation laid down during the Eemian (MIS 5e) interglacial period when sea levels were high and Dogger Bank was a marine environment (**Volume 7, Appendix 17-3 Palaeolandscapes Assessment of 2022 Marine Geophysical Data (application ref: 7.17.17.3)**). However, the top of this seismic unit was incised by a number of channels which likely formed as sea levels fell at the start of the last glacial period. Therefore, while Eem Formation is traditionally considered to have low archaeological potential, the upper channelised unit is of interest.

46. Considering the uncertainty in formation history, the Pre-Glacial Sand unit has been assigned medium archaeological potential.

17.5.7.3 Laminated Clay

47. Within the Array Areas, two boreholes recovered a very high strength laminated clay. These clays were likely deposited in a quiet water environment and their high strength is likely the result of compaction either during or post-deposition. There is potential for these clays to have formed in a proglacial environment. Their stratigraphic position below diamict indicates this would have occurred during one of the glacial periods preceding the Weichselian (MIS 5d to MIS 2), most likely during the Saalian (MIS 6). If correct, this deposit would correlate to the Cleaver Bank Formation which is of potential archaeological interest, depending on depositional history. However, an archaeological review of sub-bottom profiler data identified deep channel forms below the glacial complex of Dogger Bank were interpreted as a tunnel valley complex (**Volume 7, Appendix 17-3 Palaeolandscapes Assessment of 2022 Marine Geophysical Data (application ref: 7.17.17.3)**). The laminated clays may represent the infill of these tunnel valleys and if so, they have low archaeological potential if they were laid down at or close to an ice sheet margin during a glacial period.

17.5.7.4 Diamict and Glacial Sand

48. High strength heterogenous clays were recovered in 39 vibrocores and nine boreholes (Annex 17-4-3). Given their high strength nature, and the presence of fissures and deformation, these clays are interpreted to have formed in a glacial environment and are grouped as Diamict. The Diamict may be interbedded with dense sand which also represent deposition in a glacial environment, likely meltwater below or in front of the ice. These interbedded sands have been grouped together as Glacial Sand.

49. The evolution of Dogger Bank is closely linked to ice sheet fluctuations during the last glaciation (Weichselian) resulting in the deposition of the Dogger Bank Formation and Bolders Bank Formation, which are characterised by heterogenous clay and dense sand (**Table 17-4-4**). Based on British Geological Survey regional mapping (Cameron *et al.* 1992), the Diamict and Glacial Sand unit recovered in vibrocores and boreholes are expected to correlate to the Dogger Bank Formation. These deposits have low geoarchaeological potential as they were deposited by ice during the Weichselian, at a time when the North Sea would have been unsuitable for hominin occupation.

17.5.7.5 Alluvium

50. Low strength silty, sandy, laminated clays and sandy silt were recovered in four vibrocores (DBS_066_VC, DBS_132_VC, DBS_133_VC, DBS_164_VC) and one borehole (DBSW-005_BH). These deposits differ from the Laminated Clay and Diamict as their strength is lower and they also contain organic and wood fragments which may suggest deposition in a sub-aerially exposed North Sea. The laminated nature indicated a quiet water environment and these deposits are interpreted as Alluvium, laid down in a river floodplain or intertidal setting. Their stratigraphic position above the Diamict and Glacial Sand indicates they may be of late Weichselain to early Holocene (MIS 1) age and if so, they would correlate to the Elbow Formation (**Table 17-4-4**).

51. The archaeological assessment of sub-bottom profiler data (**Volume 7, Appendix 17-3 Palaeolandscapes Assessment of 2022 Marine Geophysical Data (application ref: 7.17.17.3)**) identified channel forms that incise into the upper surface of the Dogger Bank Formation. These channels have variable infill that represent laminated and / or organic sediments. These channels could represent former rivers that flowed over Dogger Bank once ice sheets retreated. They may also be tidal channels in a coastal setting as sea levels flooded Dogger Bank. If the Alluvium deposits correlate to the channel features they would provide a record of a semi-terrestrial landscape that may have been inhabited during the early Holocene (MIS 1).

52. Alluvium deposits are of archaeological interest as they have the potential to preserve palaeoenvironmental material and document changing environmental conditions in coastal and riverine landscapes that are known for their potential to preserve archaeological material. Therefore, Alluvium has been assigned medium geoarchaeological potential.

53. The Alluvium recovered in DBSW_005_BH potentially comprises organic clay or peat as well as wood fragments. Previous geoarchaeological assessments have recovered peat deposits from Dogger Bank (Wessex Archaeology 2013c; Russell and Stevens 2014). Radiocarbon dating of sandy peat and organic clay recovered from what is now the Sofia offshore wind farm returned dates between 14890-14010cal. BP and 13810-13480cal. BP suggesting formation during the late Weichselian (MIS 2) with pollen assemblages capturing a transition from cold-climate woodland to more temperate woodland during the early Holocene (Wessex Archaeology 2013c). This highlights that peat and organic clay from the wider Dogger Bank has high potential to preserve palaeoenvironmental material and as such the Alluvium in DBSW_005_BH has been assigned high geoarchaeological potential.

17.5.7.6 Shallow Marine Sands and Gravel Lag

54. Many of the vibrocores and boreholes comprise silty sand or sand that is interpreted to have formed in a shallow marine environment due to the presence of shell fragments. Under the influence of rising sea levels during the early Holocene (MIS 1), the southern North Sea flooded but water depths on Dogger Bank remained shallow as it was a topographic high. During this time, considerable volumes of shallow marine sands were deposited burying the early Holocene terrestrial landscape. These shallow marine sands are correlated to the Nieuw Zeeland Gronden Terschellinger Bank Formation or Well Hole Formation and are considered to have low archaeological potential, although they may contain reworked artefacts.

55. Overlying Shallow Marine Sand is a sandy gravel deposit that likely formed as sea level transgressed over the Dogger Bank and this deposit is correlated to Indefatigable Grounds Formation (**Table 17-4-4**). As a marine deposit, this unit has been assigned low geoarchaeological potential.

17.5.7.7 Seabed Sediments

56. As sea levels stabilised during the middle Holocene (MIS 1), marine processes began to rework the uppermost deposits forming the slightly gravelly, silty sands with frequent shell fragments that are observed in a number of vibrocores and boreholes. These are interpreted as Seabed Sediments and are correlated to the Bligh Bank Formation. While there is potential for these deposits to comprise reworked archaeology or bury palaeolandscape features, their geoarchaeological potential is considered low.

17.5.8 Recommendations

17.5.8.1 Introduction

57. A lithostratigraphic framework representing the deposits recovered from boreholes and vibrocores within the Offshore Development Area is defined in **Table 17-4-4**. Of these, Pre-Glacial Sand has medium geoarchaeological potential and Alluvium has medium to high geoarchaeological potential, depending on if organic clay or peat is preserved.

58. The following units have low geoarchaeological potential: Laminated Clay (Cleaver Bank Formation), Diamict and Glacial Sand (Dogger Bank Formation), Shallow Marine Sand (Nieuw Zeeland Gronden Terschellinger Bank Formation or Well Hole Formation), Gravel Lag (Indefatigable Grounds Formation) and Seabed Sediments (Bligh Bank Formation). No further palaeoenvironmental assessment of these deposits is recommended.

17.5.8.2 Pre-Glacial Sand

59. The expected age of the Pre-Glacial Sand unit spans from 424ka (MIS 11) to 123ka (MIS 5e) which is beyond the maximum age range of radiocarbon dating. Luminescence dating would be the most appropriate dating technique although, if the deposits are of Holstenian age, they are likely at the limit of conventional quartz optical stimulated luminescence (OSL) dating and infrared stimulated luminescence (IRSL) dating of feldspar may be better suited as IRSL has the potential to date much older sediments.

60. The Pre-Glacial Sand unit was only encountered in boreholes which were drilled using a combination of open hole and wireline push sampling methods. The push samples were recovered in opaque metal tubes that would have preserved deposits in darkness which is a requirement for luminescence dating. However, the in-cohesive nature of the Pre-Glacial Sand meant push samples from this unit were extruded into bags offshore making them unsuitable for luminescence dating.

61. It is recommended that provisions are made during future geotechnical borehole surveys within the Array Areas to retain samples from the Pre-Glacial Sand unit in metal shelby tubes to secure samples suitable for luminescence dating.

17.5.8.3 Alluvium

62. Alluvium was recovered in four vibrocores (DBS_066_BH, DBS_132_VC, DBS_164_VC and DBS_164_VC). Geoarchaeological recording of these samples is recommended to confirm the descriptions from geotechnical logs and provide further lithological details that can be used to understand depositional environment.

63. It is recommended samples from the Alluvium recovered in DBSW_005_BH are also retained for geoarchaeological recording and sub-sampling to secure material for further palaeoenvironmental assessment.

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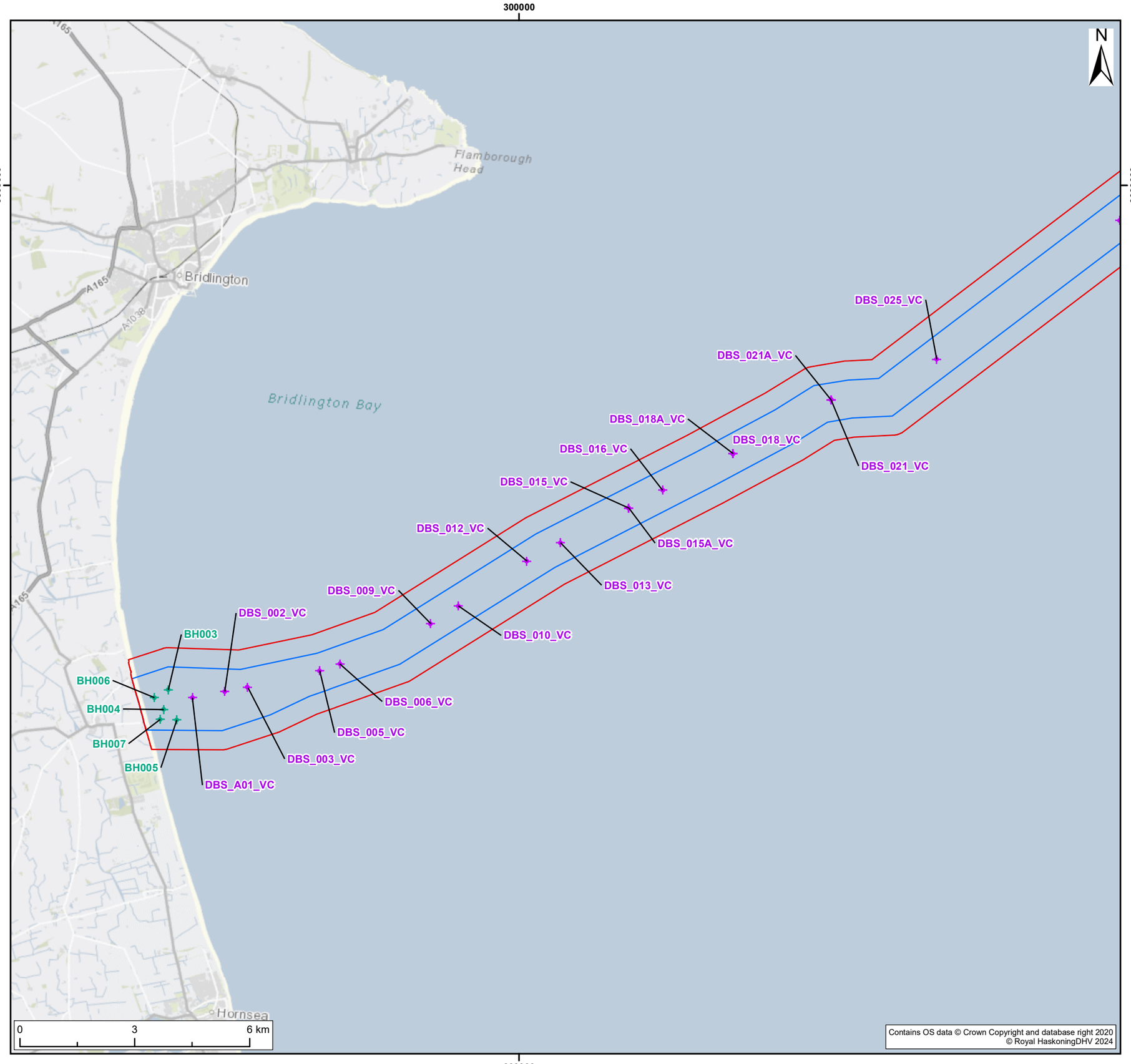
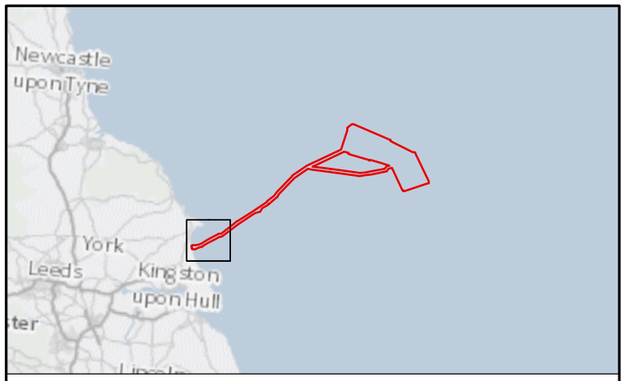
Annex 17-4-1 Figures

Figure 17-4-1a-g Location of Geotechnical Boreholes and Vibrocores

Figure 17-4-2a-g Geoarchaeological Priority Status





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- Offshore Export Cable Corridor
- DBS East Array Area
- DBS West Array Area
- Inter-Platform Cable Corridor

Survey

- Array Area Borehole 2022
- Nearshore Borehole 2023
- Vibrocore 2023

S2	P01	13/02/2024	Suitable for Information	JH	SB	CM
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

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Location of Geotechnical Boreholes and Vibrocores

Figure: 17-4-1 a | Drawing No: PC2340-RHD-OF-ZZ-DR-Z-0713

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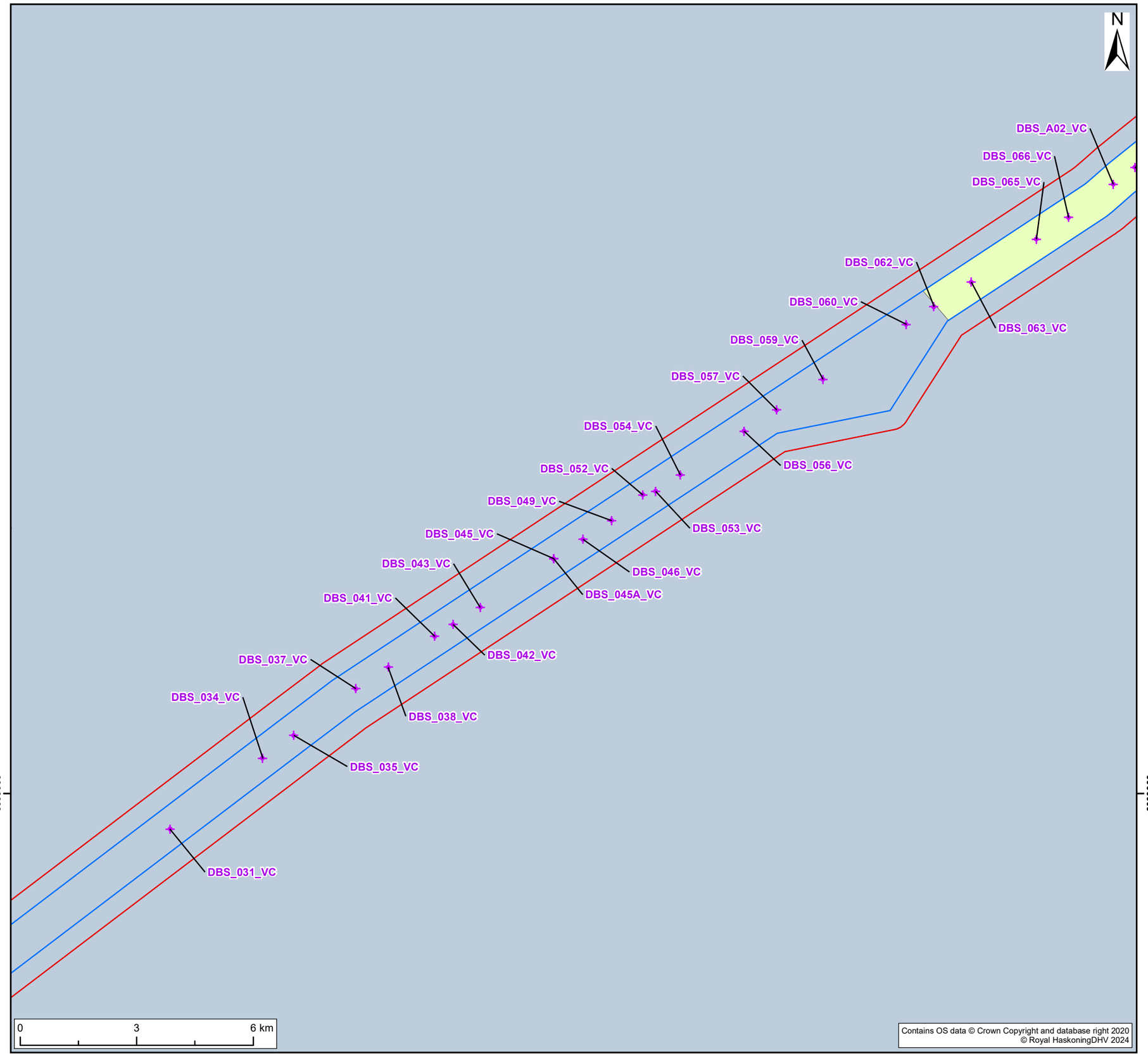

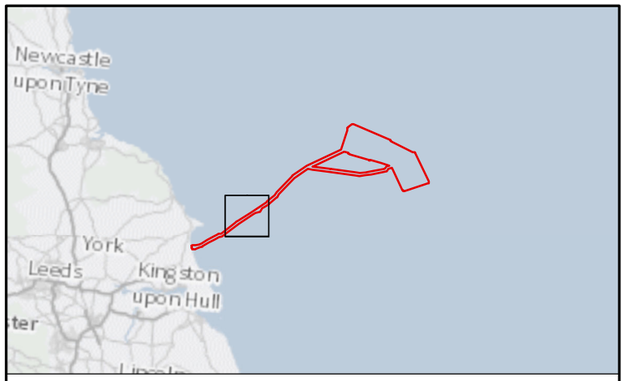

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Survey

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Location of Geotechnical Boreholes and Vibrocores

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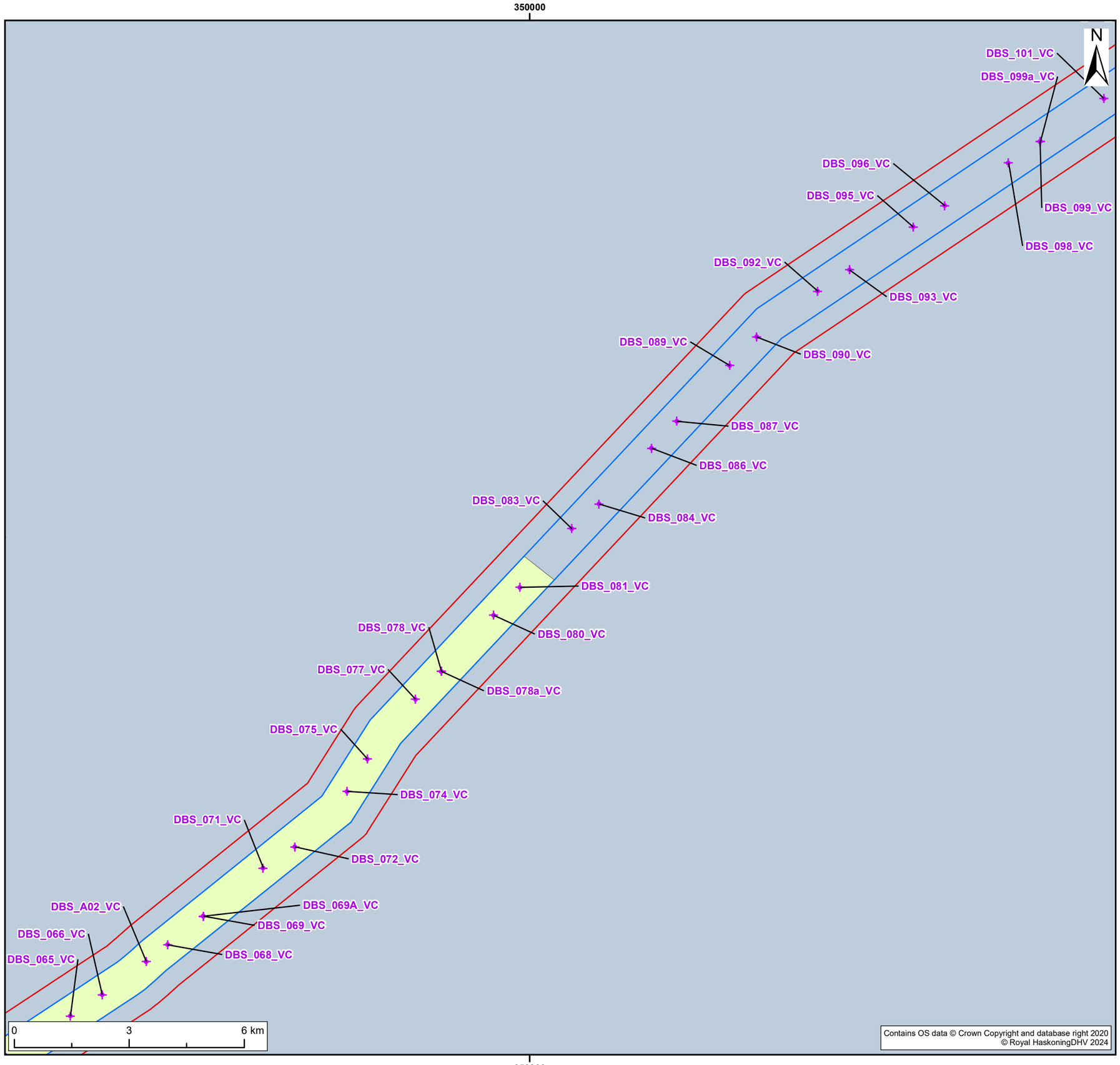

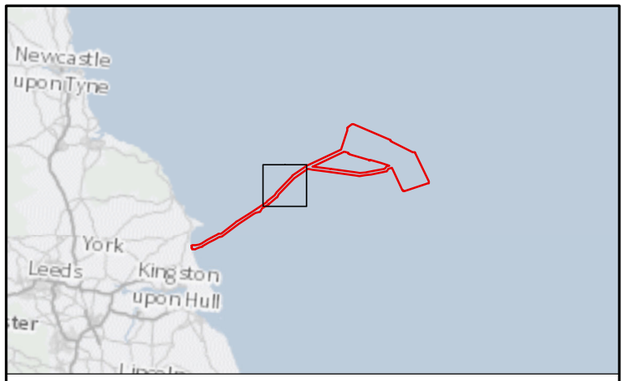

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Survey

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Location of Geotechnical Boreholes and Vibrocores

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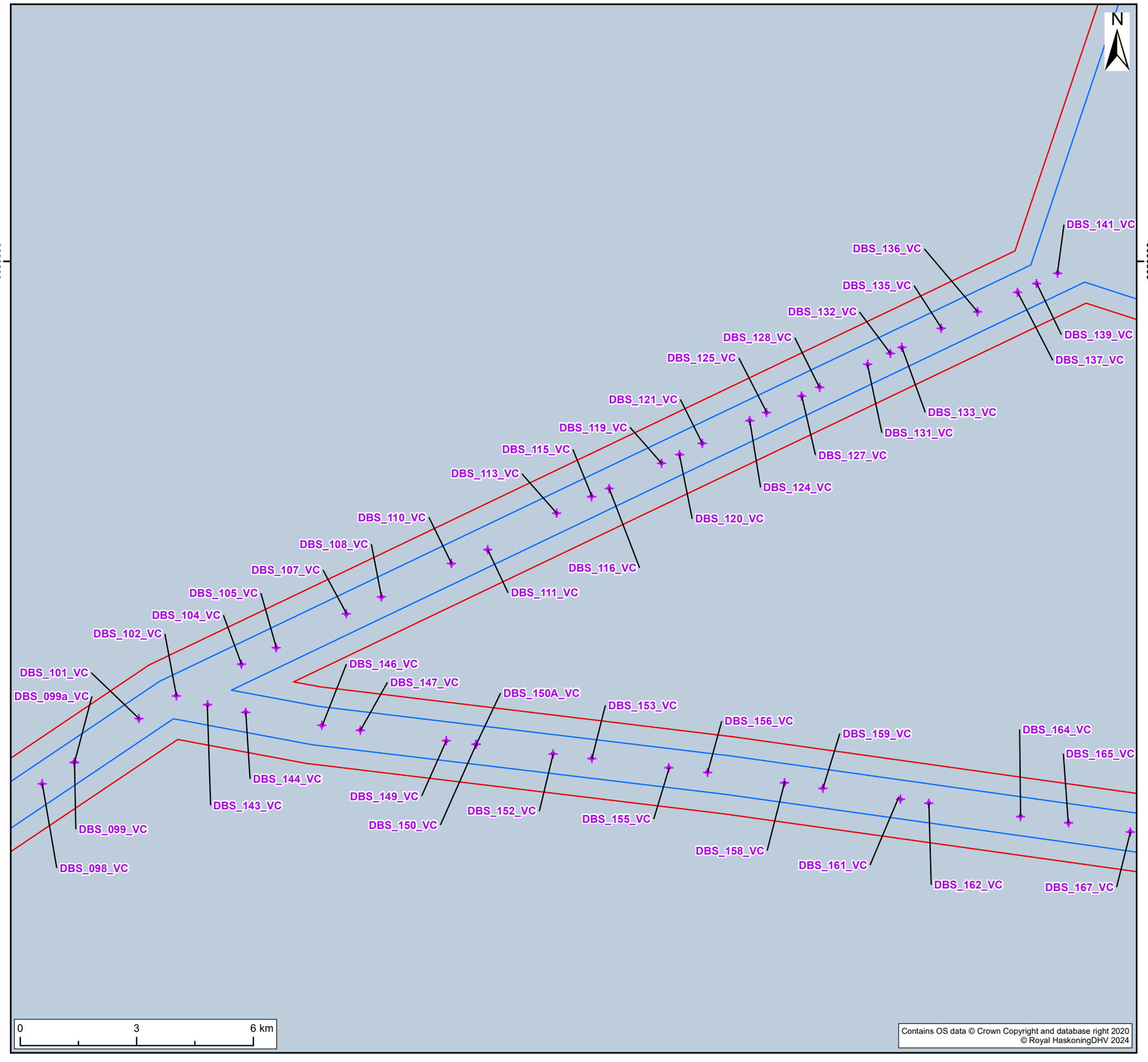

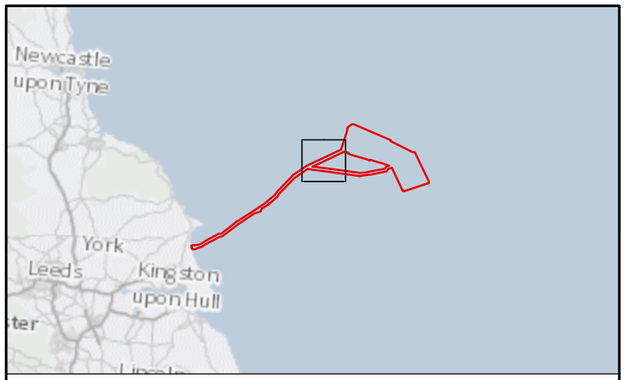

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Survey

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Location of Geotechnical Boreholes and Vibrocores

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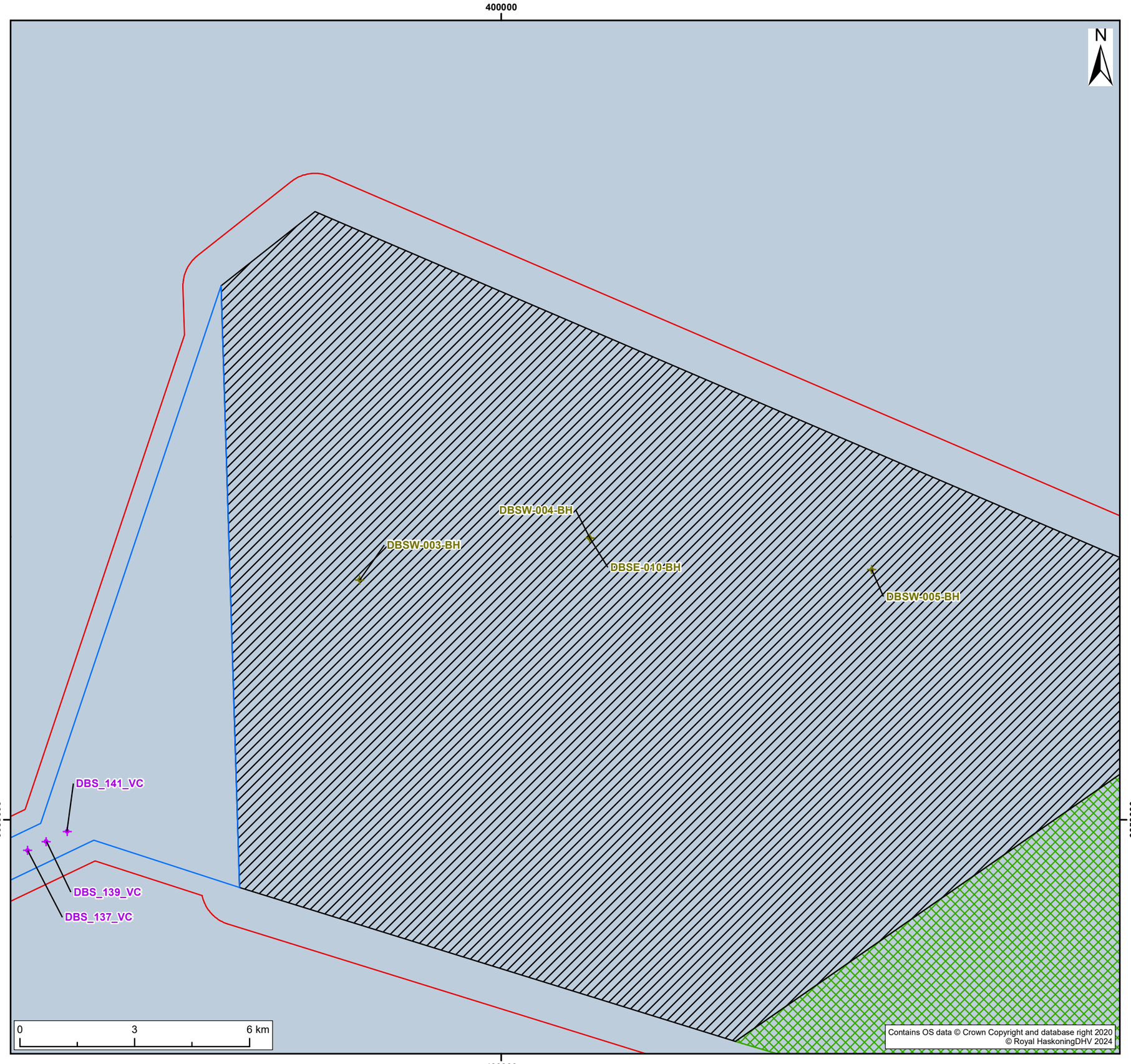

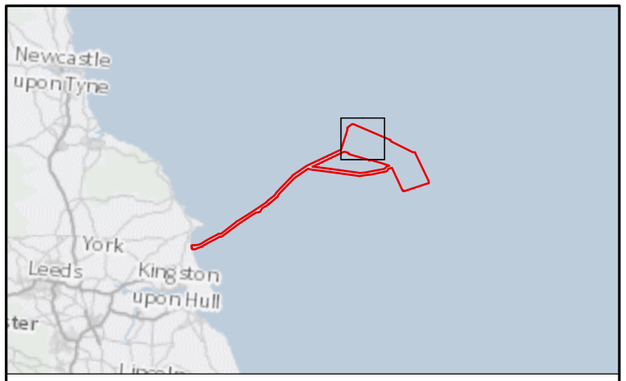

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Survey

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Location of Geotechnical Boreholes and Vibrocores

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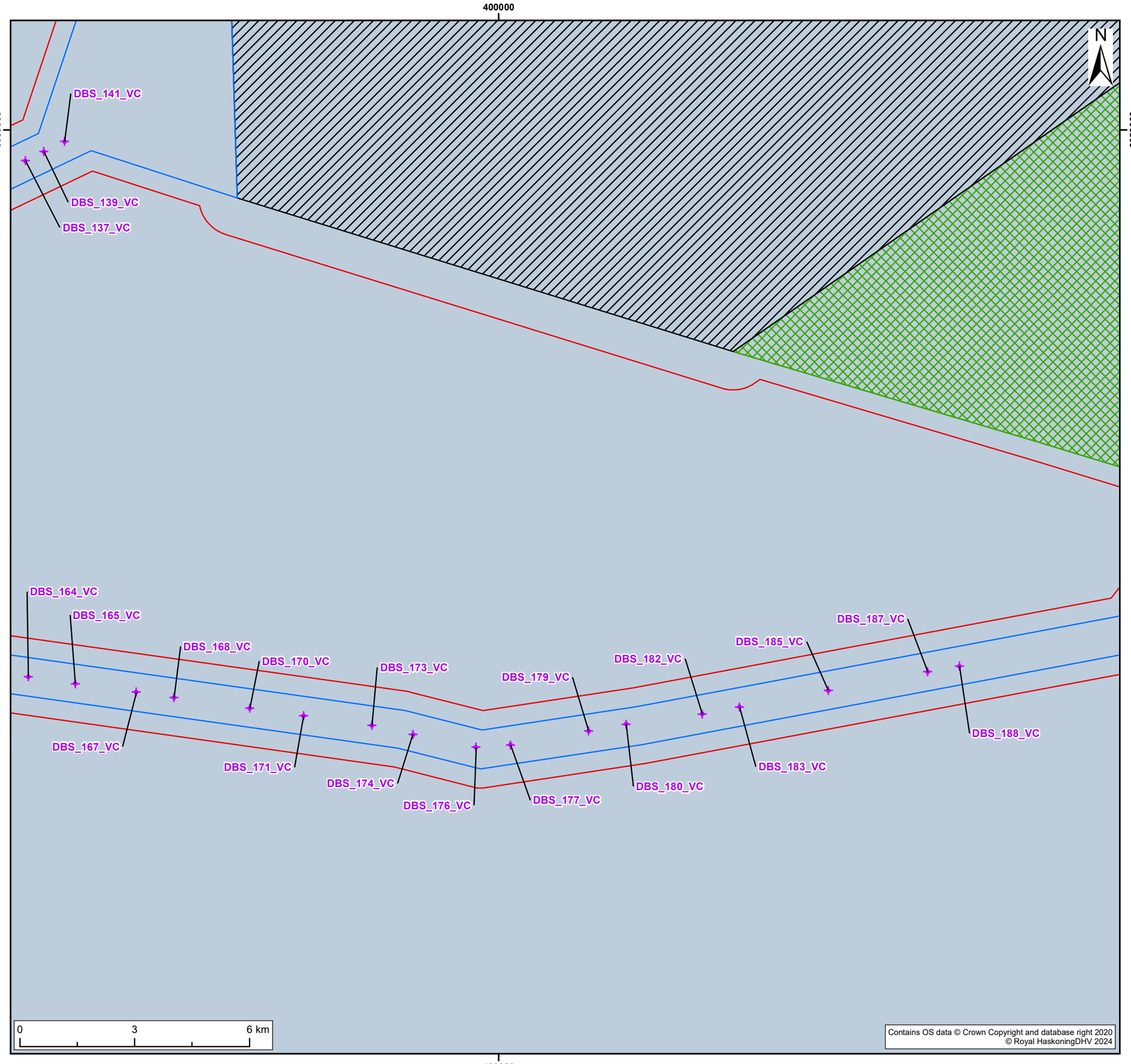

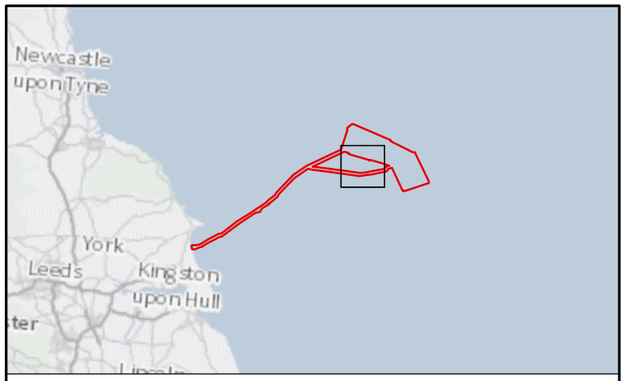

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Survey

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S2	P01	13/02/2024	Suitable for Information	JH	SB	CM
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Location of Geotechnical Boreholes and Vibrocores

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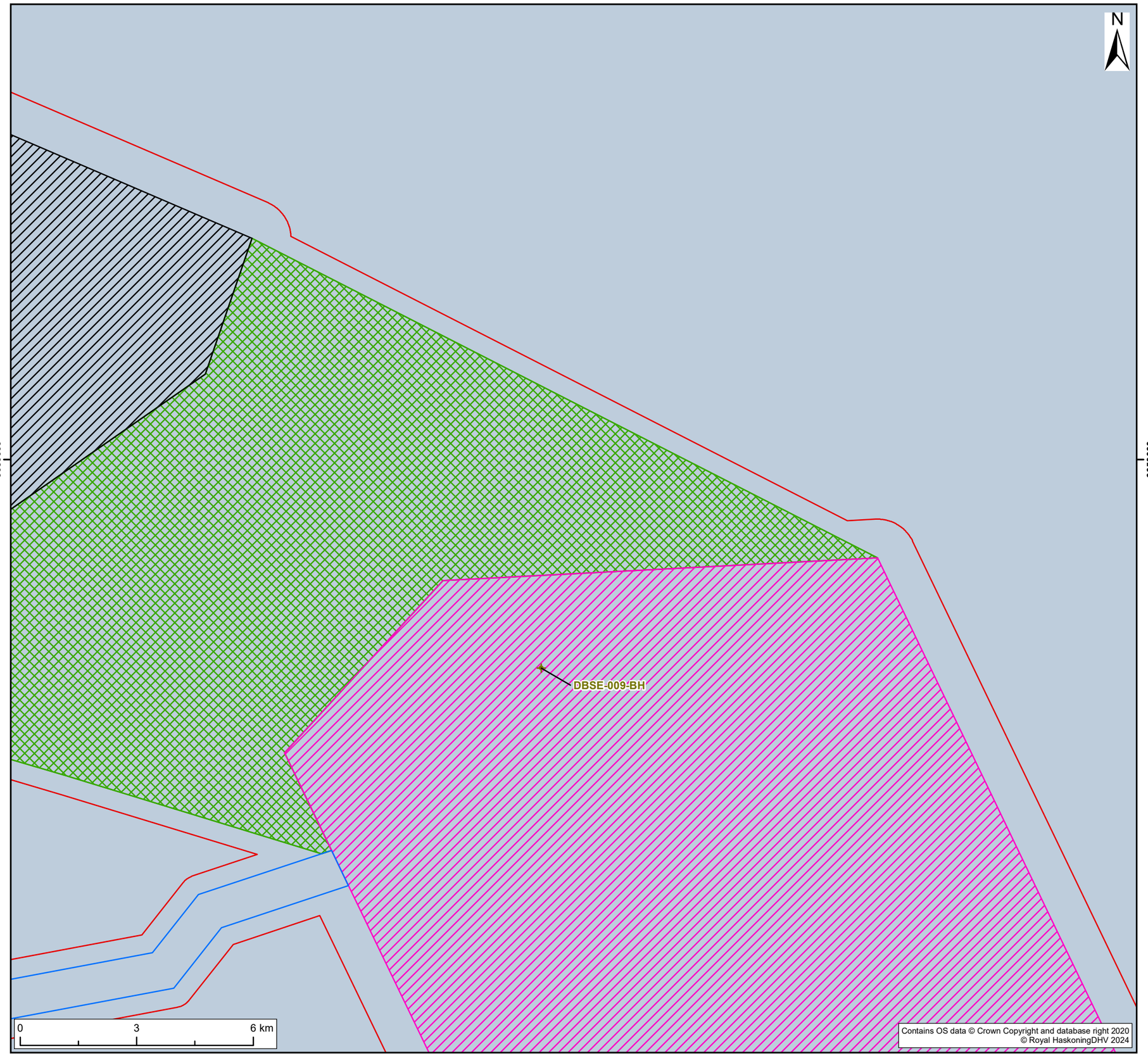

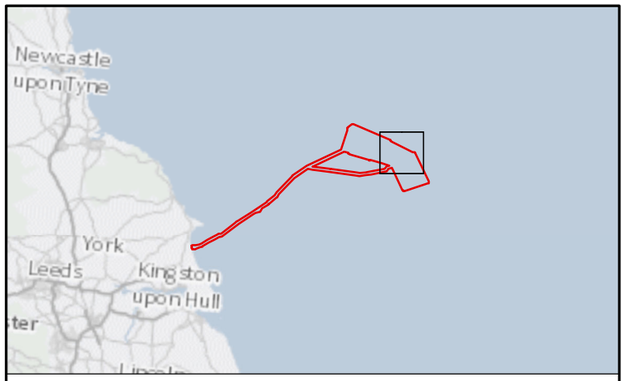

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Survey

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Location of Geotechnical Boreholes and Vibrocores

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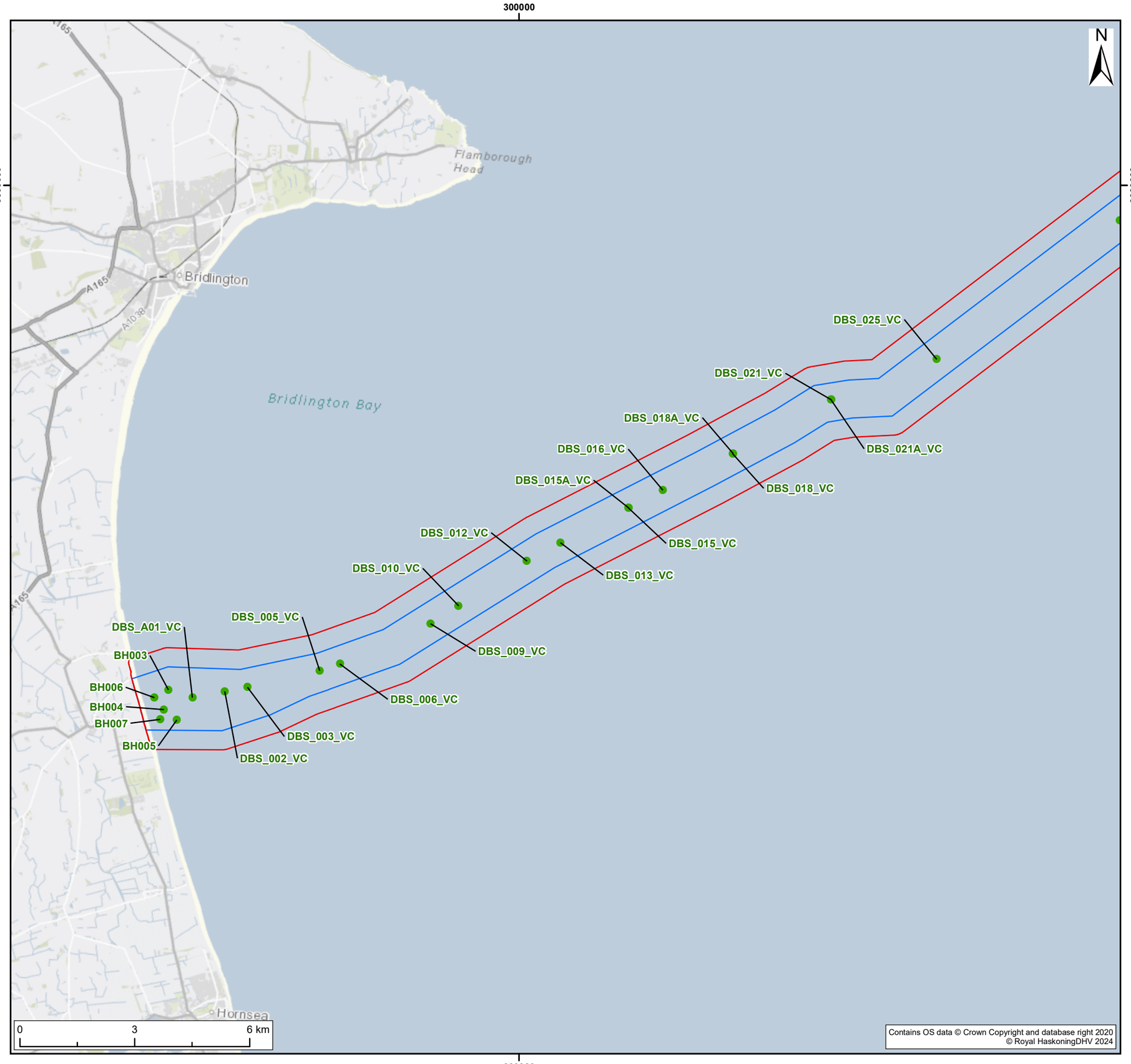

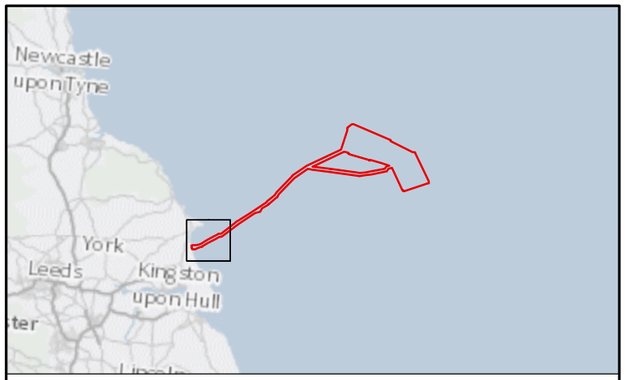

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Priority

- Low
- Medium
- High

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Location of Geotechnical Boreholes and Vibrocores

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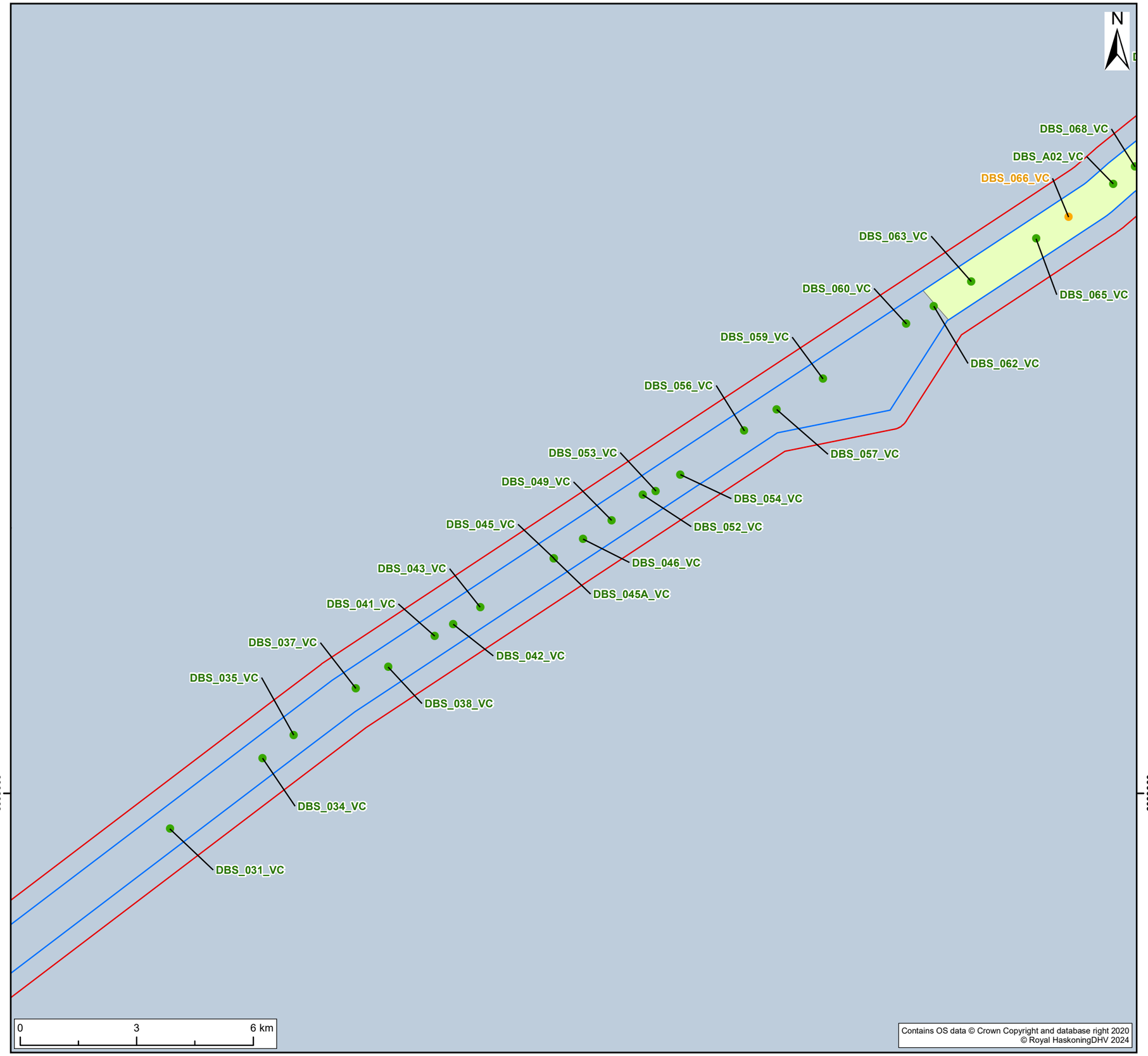

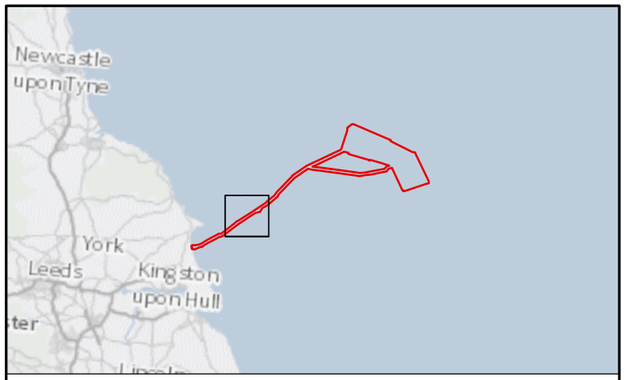

Legend:

- Offshore Development Area
- Export Cable Platform Search Area
- Offshore Export Cable Corridor
- DBS East Array Area
- DBS West Array Area
- Inter-Platform Cable Corridor

Priority

- Low
- Medium
- High

S2	P01	13/02/2024	Suitable for Information	JH	SB	CM
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Location of Geotechnical Boreholes and Vibrocores

Figure: 17-4-2 b | Drawing No: PC2340-RHD-OF-ZZ-DR-Z-0714

Co-ordinate system:	Page Size:	Scale:
WGS 1984 UTM Zone 31N	A3	1:100,000

Project:	Report:
Dogger Bank South Offshore Wind Farms	Environmental Statement

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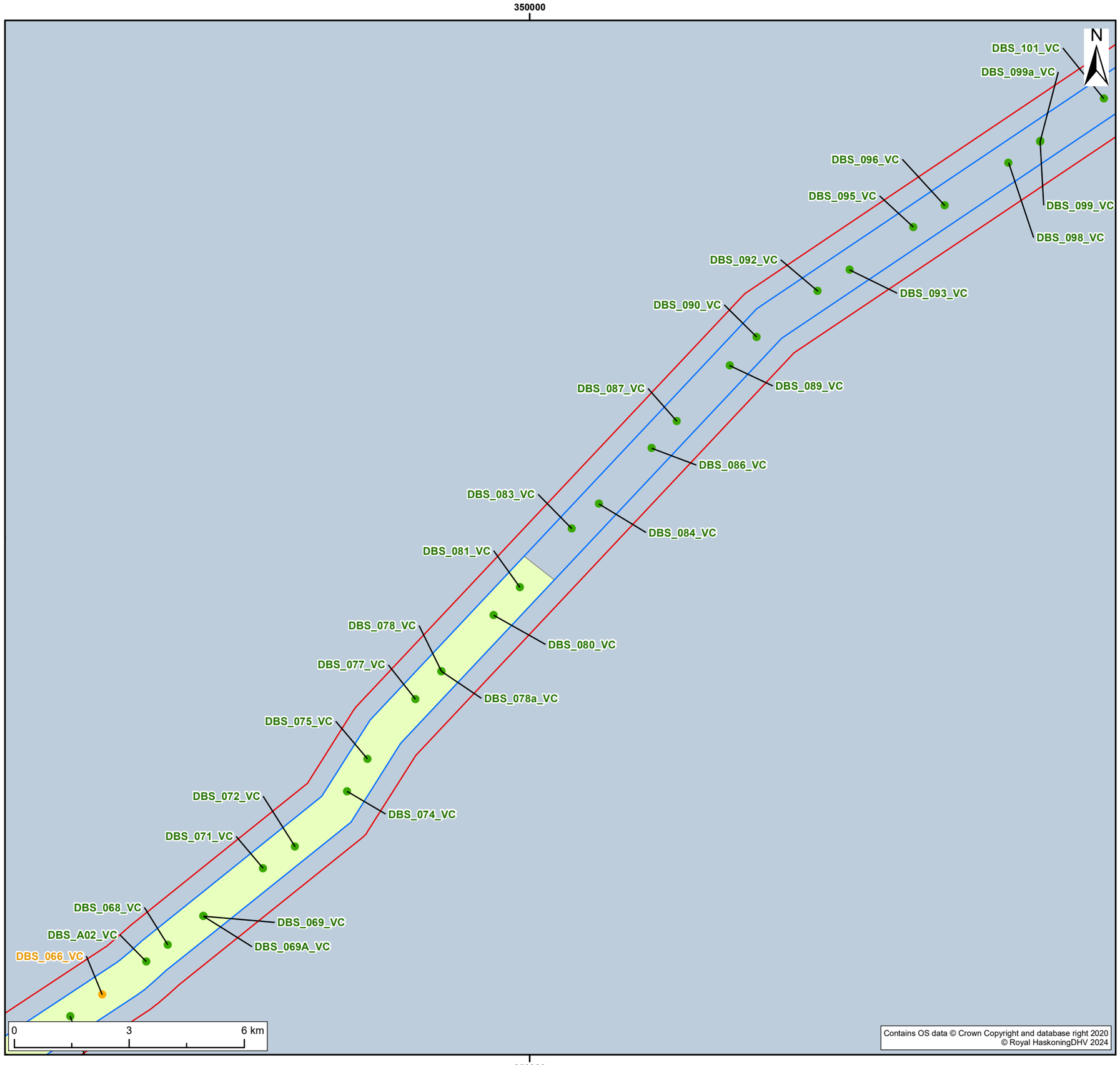
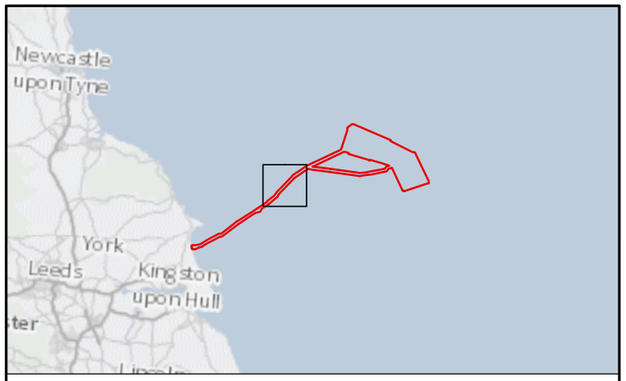
RWE





Legend:

- Offshore Development Area
- Export Cable Platform Search Area
- Offshore Export Cable Corridor
- DBS East Array Area
- DBS West Array Area
- Inter-Platform Cable Corridor

Priority

- Low
- Medium
- High

SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR
S2	P01	13/02/2024	Suitable for Information	JH	SB	CM

Title:

Location of Geotechnical Boreholes and Vibrocores

Figure: 17-4-2 c | Drawing No: PC2340-RHD-OF-ZZ-DR-Z-0714

Co-ordinate system:	Page Size:	Scale:
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Project:	Report:
Dogger Bank South Offshore Wind Farms	Environmental Statement

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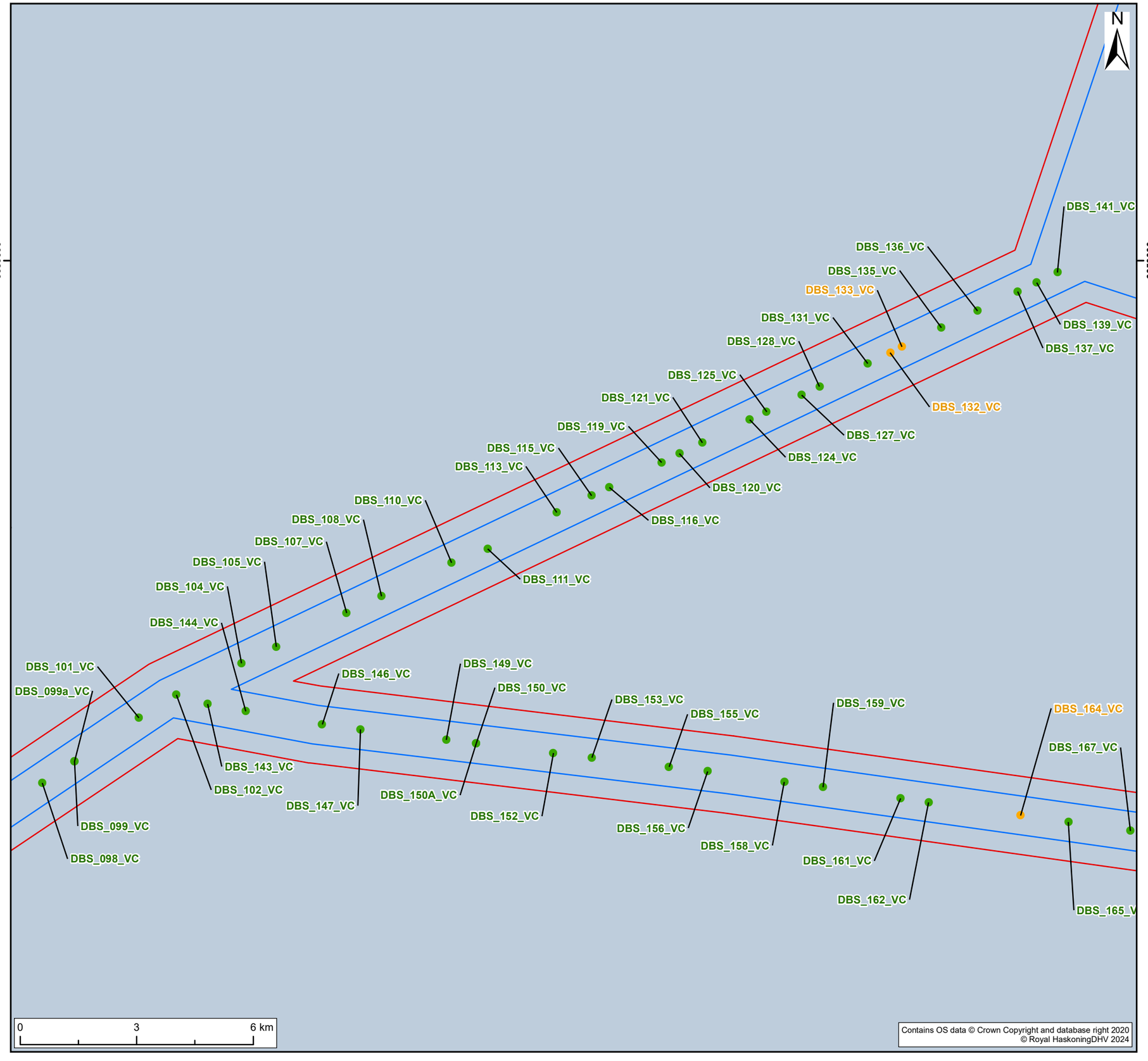
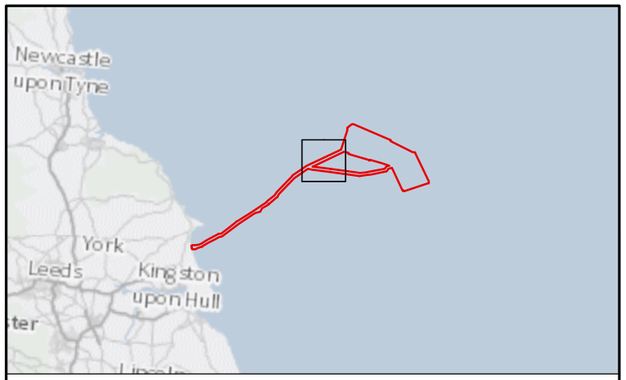
RWE





Legend:

- Offshore Development Area
- Export Cable Platform Search Area
- Offshore Export Cable Corridor
- DBS East Array Area
- DBS West Array Area
- Inter-Platform Cable Corridor

Priority

- Low
- Medium
- High

S2	P01	13/02/2024	Suitable for Information	JH	SB	CM
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Location of Geotechnical Boreholes and Vibrocores

Figure: 17-4-2 d | Drawing No: PC2340-RHD-OF-ZZ-DR-Z-0714

Co-ordinate system:	Page Size:	Scale:
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Project:

Dogger Bank South Offshore Wind Farms

Report:

Environmental Statement

Royal HaskoningDHV
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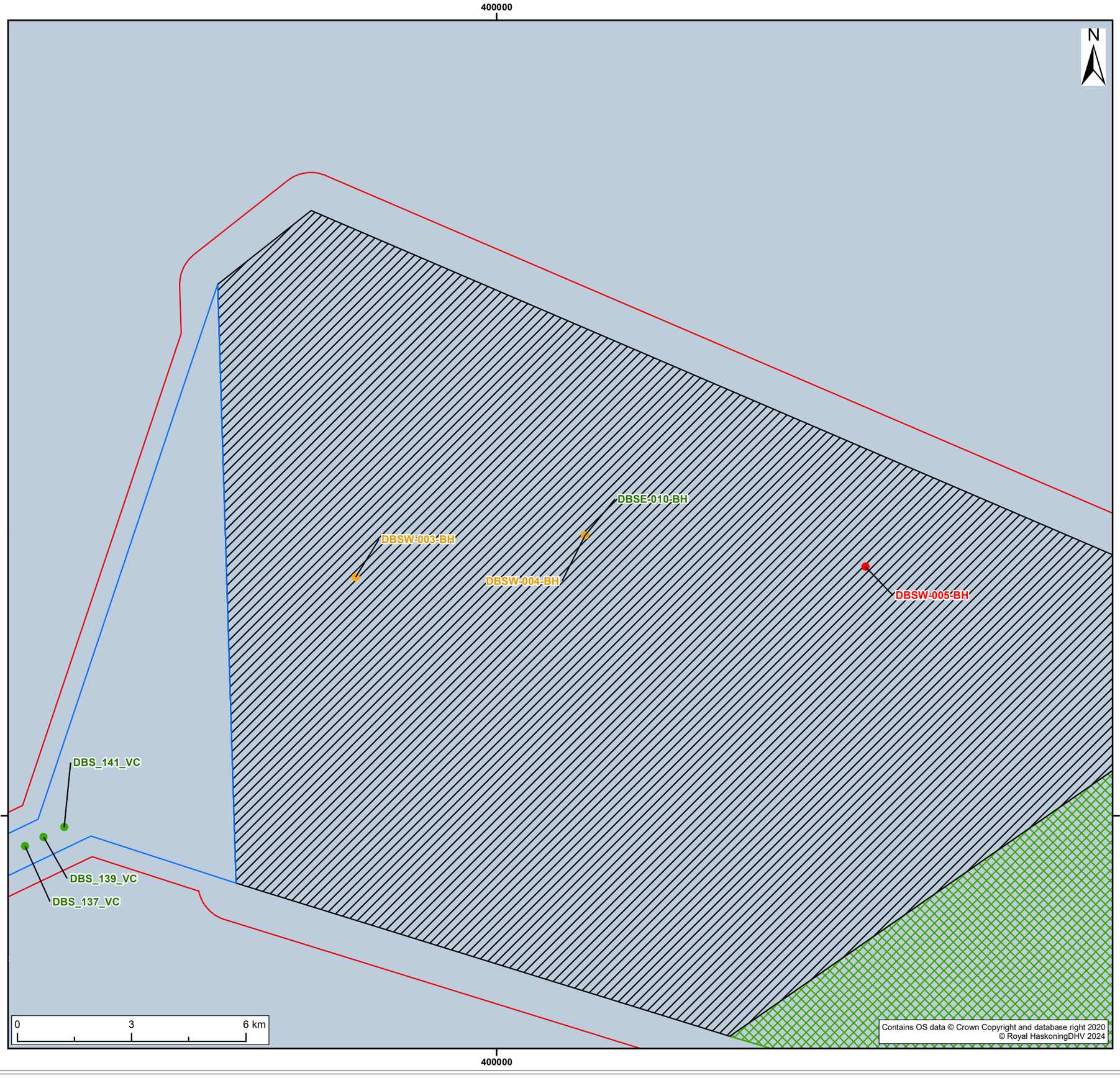

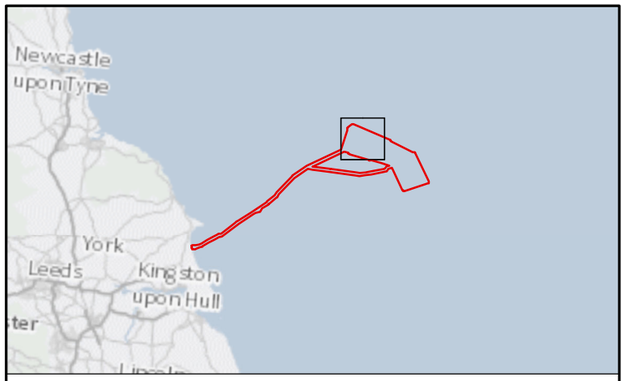

Legend:

- Offshore Development Area
- Export Cable Platform Search Area
- Offshore Export Cable Corridor
- DBS East Array Area
- DBS West Array Area
- Inter-Platform Cable Corridor

Priority

- Low
- Medium
- High

SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR
S2	P01	13/02/2024	Suitable for Information	JH	SB	CM

Title:

Location of Geotechnical Boreholes and Vibrocores

Figure: 17-4-2 e | Drawing No: PC2340-RHD-OF-ZZ-DR-Z-0714

Co-ordinate system:	Page Size:	Scale:
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Project: Dogger Bank South Offshore Wind Farms

Report: Environmental Statement

Royal HaskoningDHV
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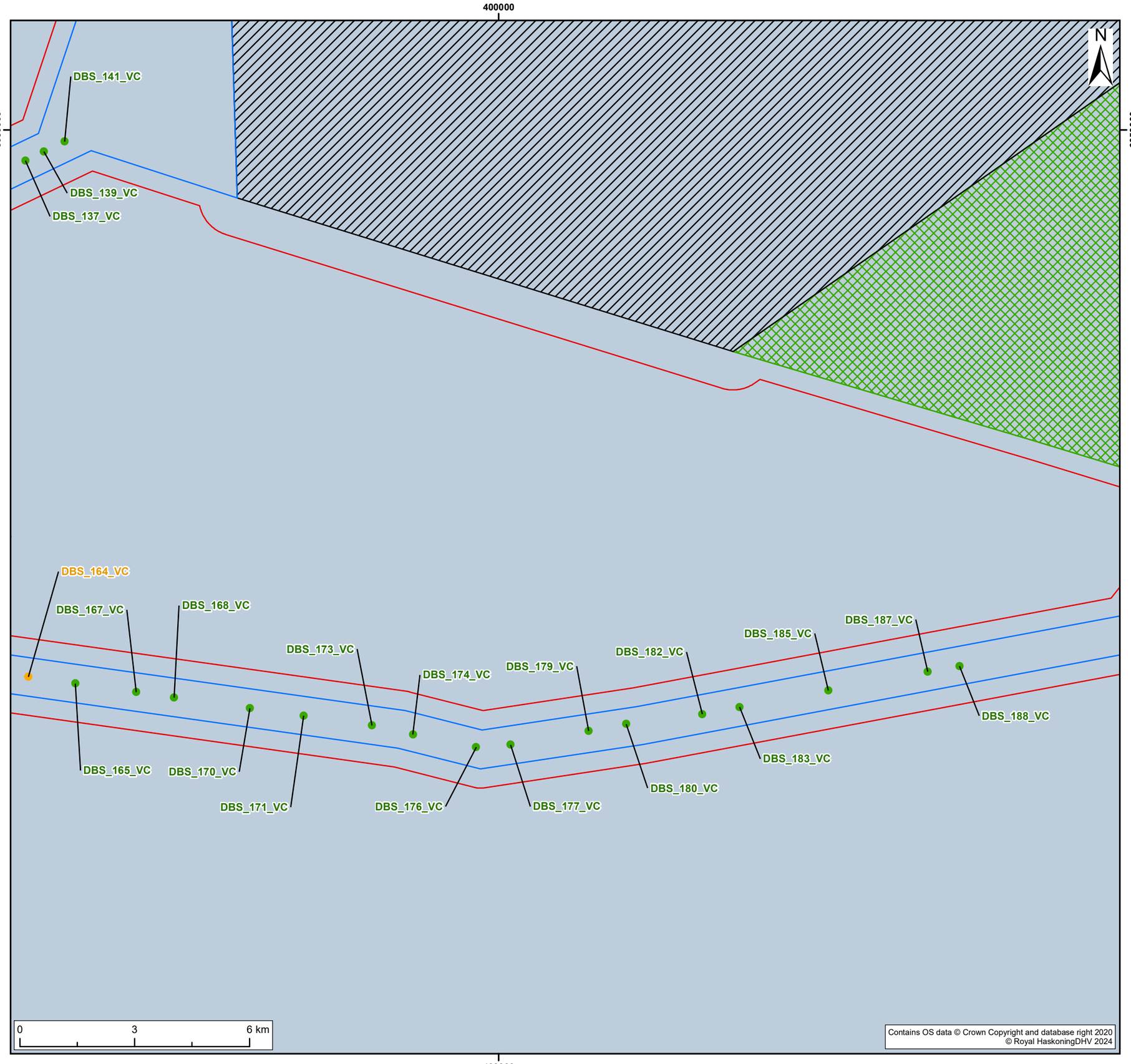

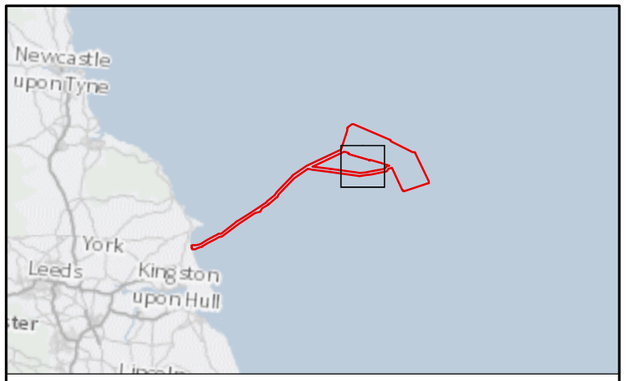

Legend:

- Offshore Development Area
- Export Cable Platform Search Area
- Offshore Export Cable Corridor
- DBS East Array Area
- DBS West Array Area
- Inter-Platform Cable Corridor

Priority

- Low
- Medium
- High

S2	P01	13/02/2024	Suitable for Information	JH	SB	CM
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Location of Geotechnical Boreholes and Vibrocores

Figure: 17-4-2 f | Drawing No: PC2340-RHD-OF-ZZ-DR-Z-0714

Co-ordinate system:	Page Size:	Scale:
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Project:	Report:
Dogger Bank South Offshore Wind Farms	Environmental Statement

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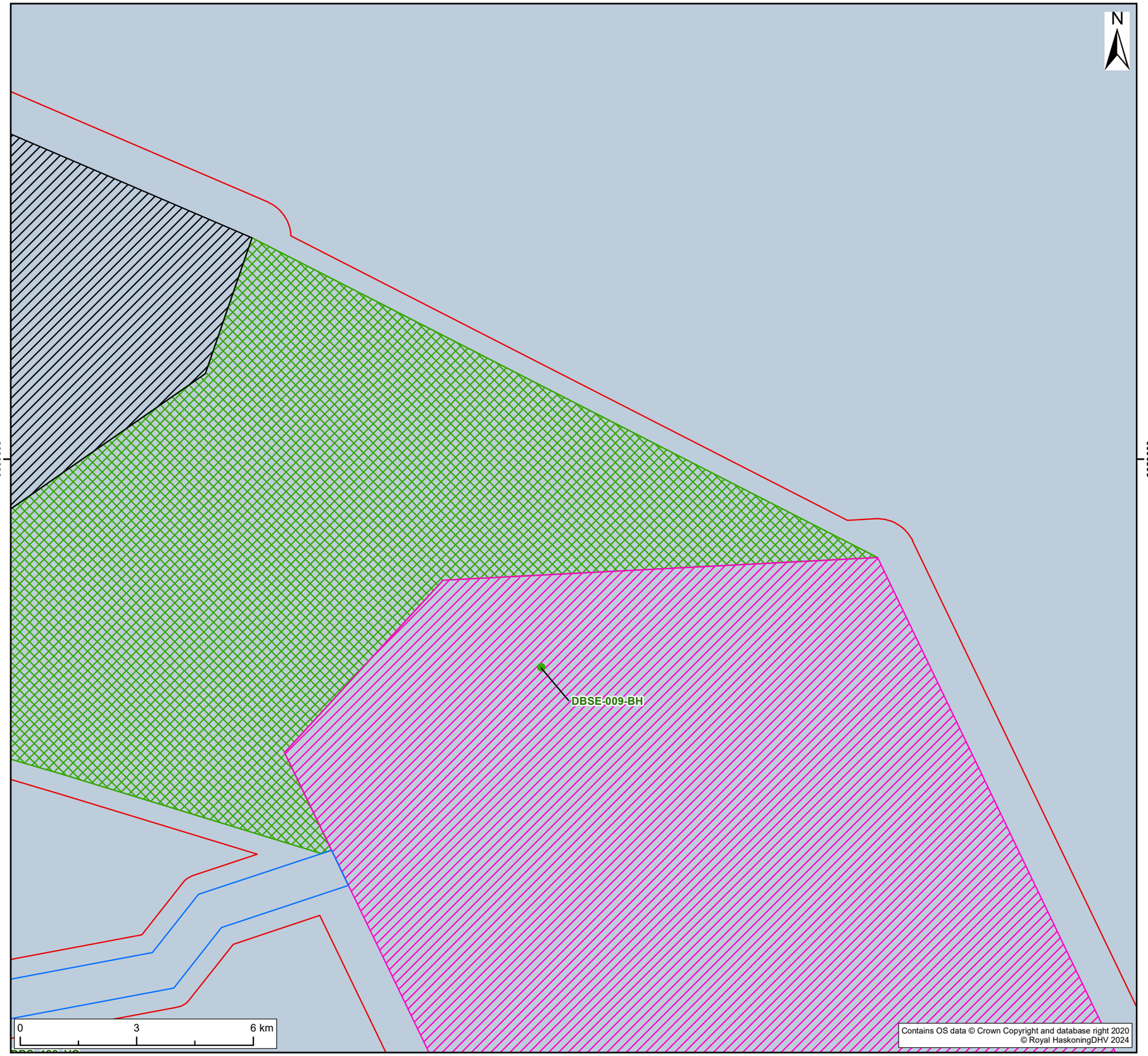

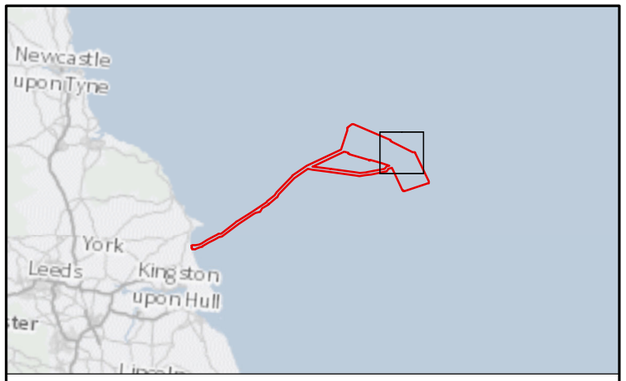

Legend:

- Offshore Development Area
- Export Cable Platform Search Area
- Offshore Export Cable Corridor
- DBS East Array Area
- DBS West Array Area
- Inter-Platform Cable Corridor

Priority

- Low
- Medium
- High

S2	P01	13/02/2024	Suitable for Information	JH	SB	CM
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Location of Geotechnical Boreholes and Vibrocores

Figure: 17-4-2 g | Drawing No: PC2340-RHD-OF-ZZ-DR-Z-0714

Co-ordinate system:	Page Size:	Scale:
WGS 1984 UTM Zone 31N	A3	1:100,000

Project:	Report:
Dogger Bank South Offshore Wind Farms	Environmental Statement

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Annex 17-4-2 Borehole and vibrocore locations

ID	Easting (m)	Northing (m)
DBS_174_VC	397759.75	6034200.12
DBS_188_VC	412046.48	6035993.66
DBS_187_VC	411217.55	6035846.35
DBS_185_VC	408620.85	6035352.61
DBS_183_VC	406298.96	6034922.86
DBS_182_VC	405323.07	6034738.55
DBS_180_VC	403332.17	6034477.94
DBS_179_VC	402351.62	6034296.34
DBS_177_VC	400309.58	6033928.74
DBS_176_VC	399407.33	6033872.19
DBS_173_VC	396686.8	6034441.36
DBS_171_VC	394897.2	6034690.28
DBS_170_VC	393496.55	6034890.77
DBS_168_VC	391515.11	6035171.16
DBS_167_VC	390526.44	6035312.57
DBS_165_VC	388930.49	6035534.33
DBS_164_VC	387699.59	6035710.23
DBS_162_VC	385332.31	6036044
DBS_161_VC	384607.79	6036148.62
DBS_159_VC	382605.34	6036434.33
DBS_158_VC	381616.5	6036572.04

ID	Easting (m)	Northing (m)
DBS_156_VC	379634.15	6036841.91
DBS_155_VC	378641.47	6036963.43
DBS_153_VC	376655.39	6037201.24
DBS_152_VC	375660.88	6037316.19
DBS_150_VC	373677.79	6037563.3
DBS_150A_VC	373674.55	6037562.94
DBS_149_VC	372902.23	6037655.92
DBS_147_VC	370699.23	6037923.61
DBS_146_VC	369708.12	6038050.7
DBS_144_VC	367739.29	6038395.33
-DBS_143_VC	366756.57	6038578.65
DBS_102_VC	365951.43	6038818.91
DBS_139_VC	388109.42	6049433.91
DBS_137_VC	387625.19	6049200.42
DBS_136_VC	386590.04	6048708.4
DBS_135_VC	385660.06	6048269.47
DBS_133_VC	384642.39	6047782.03
DBS_132_VC	384341.82	6047633.55
DBS_131_VC	383757.15	6047353.55
DBS_128_VC	382521.58	6046758.82
DBS_127_VC	382058.32	6046534.8
DBS_125_VC	381156.17	6046106.24

ID	Easting (m)	Northing (m)
DBS_124_VC	380724.75	6045900.99
DBS_121_VC	379502.75	6045313.63
DBS_120_VC	378915.64	6045027.27
DBS_119_VC	378453.14	6044804.89
DBS_116_VC	377103.12	6044158.46
DBS_115_VC	376652.28	6043943.93
DBS_113_VC	375749.57	6043510.61
DBS_111_VC	373975.66	6042575.77
DBS_110_VC	373041.97	6042216.74
DBS_108_VC	371240.12	6041352.6
DBS_107_VC	370335.49	6040921.41
DBS_105_VC	368531.67	6040052.57
DBS_104_VC	367627.94	6039629.51
DBS_101_VC	364991.43	6038219.71
DBS_099_VC	363330.66	6037102.58
DBS_099a_VC	363328.61	6037098.96
DBS_098_VC	362499.2	6036544.1
DBS_096_VC	360839.43	6035426.06
DBS_095_VC	360013.5	6034866.52
DBS_093_VC	358352.09	6033750.33
DBS_092_VC	357521.46	6033198.07
DBS_090_VC	355928	6032003.61

ID	Easting (m)	Northing (m)
DBS_089_VC	355218.77	6031258.94
DBS_087_VC	353846.69	6029799.85
DBS_086_VC	353185.86	6029092.03
DBS_084_VC	351811.9	6027635.31
DBS_083_VC	351098.29	6026995.11
DBS_081_VC	349747.88	6025462.63
DBS_080_VC	349058.4	6024734.72
DBS_078_VC	347695.53	6023270.07
DBS_078a_VC	347698.33	6023268
DBS_077_VC	347016	6022539.49
DBS_075_VC	345764.21	6020980.69
DBS_074_VC	345230.31	6020133.78
DBS_072_VC	343872.64	6018692.13
DBS_071_VC	343042.31	6018131.3
DBS_069_VC	341484.32	6016875.38
DBS_069A_VC	341481.73	6016874.38
DBS_068_VC	340546.2	6016132.29
DBS_A02_VC	339991.58	6015688.66
DBS_066_VC	338839.4	6014829.14
DBS_065_VC	338007.03	6014272.35
DBS_063_VC	336333.44	6013175.37
DBS_062_VC	335371.48	6012540.42

ID	Easting (m)	Northing (m)
DBS_060_VC	334659.22	6012078.33
DBS_059_VC	332512.9	6010668.1
DBS_057_VC	331321.63	6009877.6
DBS_056_VC	330485.61	6009331.16
DBS_054_VC	328837.68	6008201.9
DBS_053_VC	328207	6007779.23
DBS_052_VC	327870.43	6007689.21
DBS_049_VC	327071.9	6007028.7
DBS_046_VC	326335.95	6006541.52
DBS_045_VC	325583.8	6006046.38
DBS_045A_VC	325581.28	6006042.97
DBS_043_VC	323688.25	6004793.08
DBS_042_VC	322989.59	6004346.89
DBS_041_VC	322514.08	6004045.17
DBS_038_VC	321317.41	6003246.52
DBS_A01_VC	291471.38	5986618.69
DBS_002_VC	292314.5	5986775.04
DBS_003_VC	292906.87	5986882.41
DBS_005_VC	294791.41	5987319.41
DBS_006_VC	295323.38	5987496.77
DBS_009_VC	297692.18	5988542.36
DBS_010_VC	298420.63	5989012.05

ID	Easting (m)	Northing (m)
DBS_012_VC	300205.67	5990179.36
DBS_013_VC	301083.31	5990666.62
DBS_015_VC	302864	5991572.27
DBS_015A_VC	302868.75	5991570.86
DBS_016_VC	303757.05	5992031.42
DBS_018_VC	305585.24	5992992.98
DBS_018A_VC	305596.29	5992992.54
DBS_021_VC	308160.18	5994392.88
DBS_021A_VC	308155.69	5994394.97
DBS_025_VC	310917.55	5995454.33
DBS_031_VC	315696.19	5999087.69
DBS_034_VC	318081.12	6000900.69
DBS_037_VC	320483.16	6002699.01
DBS_035_VC	318882.38	6001500.26
BH003	290837.78	5986814.3
BH004	290720.17	5986305.6
BH005	291060.69	5986034.73
BH006	290470.74	5986613.65
BH007	290627.25	5986052.01
DBSE-009-BH	426297.2	6044640.9
DBSE-010-BH	402323.6	6057358.5
DBSW-003-BH	396304.3	6056264.1

ID	Easting (m)	Northing (m)
DBSW-004-BH	402323.6	6057358.5
DBSW-005-BH	409692.2	6056536.6

Annex 17-4-3 Geoarchaeological Review

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBSW-003-BH	0	1.75	Fine to medium SAND with occasional to frequent shell fragments and organic layers (0.10-0.75m, 1.00-1.55m)	Seabed sediments	Low
DBSW-003-BH	1.75	7.85	Gravelly SAND with shell fragments	Shallow Marine Sand	Low
DBSW-003-BH	7.85	9.4	Sandy GRAVEL with shell fragments	Gravel lag	Low
DBSW-003-BH	9.4	12	Hard CLAY with subangular gravels	Diamict	Low
DBSW-003-BH	12	12.65	Hard CLAY with closely spaced thin laminae of brown sand	Diamict	Low
DBSW-003-BH	12.65	16	Hard CLAY	Diamict	Low
DBSW-003-BH	16	19	Hard CLAY with rare shell fragments and locally fissured	Diamict	Low
DBSW-003-BH	19	20.5	Dense SAND	Glacial Sand	Low
DBSW-003-BH	20.5	23.15	Hard CLAY with foliations and thin silt laminae	Diamict	Low
DBSW-003-BH	23.15	30.8	Very Dense SAND	Glacial Sand	Low
DBSW-003-BH	30.8	35.8	Hard CLAY with sand laminae	Diamict	Low
DBSW-003-BH	35.8	46.75	Very Dense SAND	Glacial Sand	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBSW-003-BH	46.75	60	Very Dense SAND with clay pockets/laminae and occasional shell fragments	Pre-glacial sand	Medium
DBSW-004-BH	0	4.5	SAND with rare shell fragments	Seabed sediments	Low
DBSW-004-BH	4.5	8.75	Hard CLAY with fissures	Diamict	Low
DBSW-004-BH	8.75	12.75	Gravelly sandy CLAY with smooth undulating and planar fissures	Diamict	Low
DBSW-004-BH	12.75	16.85	Fine to medium SAND with occasional pockets of clay with extremely closely to very closely spaced thin laminae of black organic matter	Glacial Sand	Low
DBSW-004-BH	16.85	18.7	Fine to medium SAND	Glacial Sand	Low
DBSW-004-BH	18.7	24.3	Hard slightly Sandy CLAY, with subangular gravel	Diamict	Low
DBSW-004-BH	24.3	33.1	Dense SAND with pockets and laminae of black organic matter	Glacial Sand	Low
DBSW-004-BH	33.1	37.5	Loose to medium dense clayey SAND with thin beds of dense sand and rare organic matter	Glacial Sand	Low
DBSW-004-BH	37.5	38.5	CLAY with thin fine sand Laminae	Laminated Clay	Low
DBSW-004-BH	38.5	55.3	Very dense SAND	Pre-glacial sand	Medium

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBSW-004-BH	55.3	60	Medium dense very clayey SAND	Pre-glacial sand	Medium
DBSW-005-BH	0	2.2	Silty fine SAND with occasional shells and shell fragments and with rare pockets of clay	Seabed sediments	Low
DBSW-005-BH	2.2	3	Slightly gravelly SAND with shells and shell fragments	Shallow Marine Sand	Low
DBSW-005-BH	3	3.85	Subangular to subrounded GRAVEL	Gravel lag	Low
DBSW-005-BH	3.85	8.5	Very dense fine SAND	Shallow Marine Sand	Low
DBSW-005-BH	8.5	9	Very dense fine SAND with occasional shell fragments and thin laminae of black organic matter	Shallow Marine Sand	Low
DBSW-005-BH	9	18.3	Low to medium strength black very sandy CLAY with close laminae of sand and organic matter	Alluvium	High
DBSW-005-BH	18.3	21.35	Dense fine SAND and Clayey SAND, rare shell and rare wood fragments with clayey layers	Alluvium	Medium
DBSW-005-BH	21.35	30.5	Medium to high strength CLAY, with fissures and thin laminations of clay	Diamict	Low
DBSW-005-BH	30.5	42.9	Dense to Very Dense fine to medium SAND with rare organic matter	Glacial Sand	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBSW-005-BH	42.9	46.55	Very high strength CLAY with closely spaced foliations, and rare sell fragments	Diamict	Low
DBSW-005-BH	46.55	51.25	Fine SAND with rare shell fragments and with rare pockets of black organic matter	Pre-glacial sand	Medium
DBSW-005-BH	51.25	60	Very dense fine to coarse SAND with rare to occasional shell fragments	Pre-glacial sand	Medium
DBSE-009-BH	0	9.7	Fine to medium SAND with gravel, rare organic matter and rare shell fragments	Shallow Marine Sand	Low
DBSE-009-BH	9.7	25.5	High strength slightly gravelly calcareous CLAY	Diamict	Low
DBSE-009-BH	25.5	30.3	High to very high strength slightly gravelly slightly calcareous CLAY	Diamict	Low
DBSE-009-BH	30.3	47.35	High to very high strength fissured slightly sandy slightly gravelly CLAY	Diamict	Low
DBSE-009-BH	47.35	51.75	High to very high strength CLAY	Diamict	Low
DBSE-009-BH	51.75	60	Very high strength fissured slightly sandy slightly gravelly CLAY	Diamict	Low
DBSE-010-BH	0	3.6	SAND with occasional shell fragments and rare pockets or organic matter	Seabed sediments	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBSE-010-BH	3.6	26.6	High to very high strength fissured sandy slightly gravelly CLAY	Diamict	Low
DBSE-010-BH	26.6	30.5	Dense fine to medium SAND with rare shell fragments	Glacial Sand	Low
DBSE-010-BH	30.5	34.5	Dense fine to medium SAND with rare clay pockets	Glacial Sand	Low
DBSE-010-BH	34.5	39.3	Loose to medium dense very clayey fine SAND	Glacial Sand	Low
DBSE-010-BH	39.3	53.35	Very high to extremely high strength very sandy CLAY with some closely spaced laminae	Laminated Clay	Low
DBSE-010-BH	53.35	60	Very high strength sandy calcareous CLAY with laminae	Laminated Clay	Low
Nearshore - BH003	0	0.5	Slightly gravelly SAND with occasional shell fragments	Seabed sediments	Low
Nearshore - BH003	0.5	3	Stiff slightly gravelly sandy to very sandy CLAY with occasional shell fragments	Diamict	Low
Nearshore - BH003	3	6.5	Very stiff dark brownish grey slightly gravelly sandy CLAY with occasional shell fragments	Diamict	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
Nearshore - BH003	6.5	7	Possible structureless CHALK. Light greenish grey to off white sandy silty GRAVEL	Chalk	Low
Nearshore - BH003	7	8	Possible structureless CHALK. Recovered as off white sandy GRAVEL	Chalk	Low
Nearshore - BH003	8	8.4	Possible structureless CHALK. Composed of firm slightly gravelly slightly sandy SILT	Chalk	Low
Nearshore - BH003	8.4	9.15	Recovered non intact as angular to subangular weak possible medium density CHALK fragments	Chalk	Low
Nearshore - BH003	9.15	13.4	Possible medium density CHALK fragments	Chalk	Low
Nearshore - BH003	13.4	14.4	Possible strutcureless CHALK. Composed of soft and firm off white gravelly SILT	Chalk	Low
Nearshore - BH003	14.4	23.65	Very weak to weak locally moderately weak medium to high density locally possible very high density off white CHALK occasional dark grey sponge remnants	Chalk	Low
Nearshore - BH003	23.65	24.78	Weak possible medium to high density off white CHALK with rare dark grey sponge remnants	Chalk	Low
Nearshore - BH003	24.78	26.11	Very weak to weak high density off white CHALK	Chalk	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
Nearshore - BH003	26.11	30	Weak high density off white CHALK with occasional light grey burrow mottling occasional dark grey sponge remnants	Chalk	Low
Nearshore - BH004	0	0.5	Light gravelly slightly silty SAND with frequent shell fragments	Seabed sediments	Low
Nearshore - BH004	0.5	2	Slightly gravelly SAND with occasional shell fragments	Shallow Marine Sand	Low
Nearshore - BH004	2	3.5	Slightly gravelly very sandy CLAY with some shell fragments	Diamict	Low
Nearshore - BH004	3.5	7.35	Very stiff slightly sandy gravelly slightly calcareous CLAY	Diamict	Low
Nearshore - BH004	7.35	8.25	Stiff slightly sandy silty CLAY with rare shell fragments	Diamict	Low
Nearshore - BH004	8.25	9.25	Very stiff sandy gravelly CLAY	Diamict	Low
Nearshore - BH004	9.25	11	Brownish grey sandy to very sandy clayey GRAVEL	Diamict	Low
Nearshore - BH004	11	13.2	Firm light greenish grey to off white slightly gravelly sandy CLAY	Diamict	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
Nearshore - BH004	13.2	14.2	Possible structureless CHALK. Recovered as off white slightly sandy silty GRAVEL.	Chalk	Low
Nearshore - BH004	14.2	16.75	Recovered non intact as angular to subangular weak possible medium to high density CHALK fragments	Chalk	Low
Nearshore - BH004	16.75	19	Weak possible high density off white CHALK. Highly fractured producing predominately non intact core.	Chalk	Low
Nearshore - BH004	19	19.5	Core Loss	Chalk	Low
Nearshore - BH004	19.5	22.56	Very weak to weak possible medium density off white CHALK	Chalk	Low
Nearshore - BH004	22.56	23.94	Very weak to weak possible medium density off white CHALK	Chalk	Low
Nearshore - BH004	23.94	24.81	Weak possible medium to high density off white CHALK	Chalk	Low
Nearshore - BH004	24.81	29.5	Weak high density off white CHALK with occasional light grey burrow mottling	Chalk	Low
Nearshore - BH005	0	0.5	Light greyish brown sandy GRAVEL with low cobble content and occasional shell fragments	Seabed sediments	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
Nearshore - BH005	0.5	1	Greyish brown slightly gravelly clayey SAND with low cobble content and occasional shell fragments	Shallow Marine Sand	Low
Nearshore - BH005	1	4.35	Very stiff dark brownish grey slightly sandy slightly gravelly CLAY	Diamict	Low
Nearshore - BH005	4.35	8	Light greyish brown to brown sandy and very sandy GRAVEL	Diamict	Low
Nearshore - BH005	8	8.5	Firm light greenish grey to off white sandy gravelly CLAY	Diamict	Low
Nearshore - BH005	8.5	10.4	Possible structureless CHALK Recovered as off white slightly sandy silty GRAVEL	Chalk	Low
Nearshore - BH005	10.4	10.8	Probable structureless CHALK. Composed of firm slightly gravelly slightly sandy SILT	Chalk	Low
Nearshore - BH005	10.8	11.3	Core Loss	Chalk	Low
Nearshore - BH005	11.3	12.35	Recovered non intact as angular to subangular weak possible medium and high density CHALK fragments with fossil inoceramid fragments	Chalk	Low
Nearshore - BH005	12.35	12.69	Core Loss	Chalk	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
Nearshore - BH005	12.69	14.6	Weak high density off white CHALK with occasional black speckling	Chalk	Low
Nearshore - BH005	14.6	15.1	Core Loss	Chalk	Low
Nearshore - BH005	15.1	20.6	Weak and moderately weak possible medium and high density off white CHALK	Chalk	Low
Nearshore - BH005	20.6	22.32	Weak medium and high density off white CHALK with occasional light grey burrow mottling and rare light orange sponge remnants	Chalk	Low
Nearshore - BH005	22.32	23.9	Weak possible medium density off white CHALK with occasional light grey burrow mottling	Chalk	Low
Nearshore - BH005	23.9	24.61	Weak and moderately weak high density off white CHALK with occasional light grey burrow mottling and occasional black sponge remnants (20mm x 25mm) and rare yellow sponge remnants	Chalk	Low
Nearshore - BH005	24.61	25.26	Weak and moderately weak high density off white CHALK with occasional light grey burrow mottling	Chalk	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
Nearshore - BH005	25.26	27.6	Weak and moderately weak high density off white CHALK with occasional light grey burrow mottling	Chalk	Low
Nearshore - BH005	27.6	28.16	Weak and moderately weak high density off white CHALK with occasional light grey burrow mottling and occasional black and dark grey sponge remnants	Chalk	Low
Nearshore - BH005	28.16	29.6	Weak and moderately weak high density off white CHALK with light grey burrow mottling and occasional dark grey and black sponge remnants	Chalk	Low
Nearshore - BH006	0	0.5	Firm dark brownish grey gravelly sandy CLAY with rare shell fragments	Diamict	Low
Nearshore - BH006	0	3.1	Firm dark brownish grey slightly gravelly slightly sandy calcareous CLAY	Diamict	Low
Nearshore - BH006	3.1	4.7	Brown slightly gravelly to gravelly slightly silty SAND with rare shell fragments	Glacial Sand	Low
Nearshore - BH006	4.7	9.3	Stiff greyish brown slightly sandy gravelly calcareous CLAY	Diamict	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
Nearshore - BH006	9.3	10.15	Firm olive green mottled olive brown slightly gravelly sandy calcareous SILT with rare shell fragments	Glacial Sand	Low
Nearshore - BH006	10.15	11.1	Recovered as medium and coarse subrounded and well rounded gravel of mixed lithologies including flint chalk, basalt, quartzite and sandstone with occasional coating of olive grey silt. [POSSIBLE PALEOCHANNEL DEPOSIT]	Diamict	Low
Nearshore - BH006	11.1	11.85	Probable Structureless CHALK. Recovered as off white silty GRAVEL	Chalk	Low
Nearshore - BH006	11.85	12.7	Recovered as non intact angular and subangular weak possible medium to high density CHALK fragments	Chalk	Low
Nearshore - BH006	12.7	16.2	Structureless CHALK. Recovered as off white slightly sandy silty GRAVEL	Chalk	Low
Nearshore - BH006	16.2	16.6	Structureless CHALK. Recovered as off white slightly sandy silty GRAVEL	Chalk	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
Nearshore - BH006	16.6	19	Recovered as non intact angular very weak to weak possible medium to high density CHALK fragments	Chalk	Low
Nearshore - BH006	19	20.3	Very weak to weak locally moderately weak medium to high density locally possible high density off white CHALK	Chalk	Low
Nearshore - BH006	20.3	22.45	Recovered as non intact angular very weak to weak possible medium to high density CHALK fragments	Chalk	Low
Nearshore - BH006	22.45	24.65	Weak possible medium to high density off white CHALK	Chalk	Low
Nearshore - BH006	24.65	27.43	Very weak to weak high density off white CHALK	Chalk	Low
Nearshore - BH006	27.43	29.6	Weak high density off white CHALK	Chalk	Low
Nearshore - BH007	0	0.3	Brown slightly gravelly slightly silty SAND	Seabed sediments	Low
Nearshore - BH007	0.3	2.9	Firm dark brownish grey gravelly sandy CLAY	Diamict	Low
Nearshore - BH007	2.9	3.97	Possible brown gravelly SAND. Sand is fine to coarse	Glacial Sand	Low
Nearshore - BH007	3.97	9.9	Firm dark brownish grey slightly sandy gravelly CLAY. Sand is fine to coarse	Diamict	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
Nearshore - BH007	9.9	11.4	Possible structureless CHALK. Composed of off-white slightly sandy gravelly SILT	Chalk	Low
Nearshore - BH007	11.4	16.3	Possible structureless CHALK. Recovered as off-white slightly sandy silty GRAVEL	Chalk	Low
Nearshore - BH007	16.3	22.9	Recovered as non intact angular and subangular weak possible medium to high density off-white CHALK fragments	Chalk	Low
DBS_002_VC	0	0.95	Very dark grey very silty fine to medium SAND with occasional coarse sand-sized shells and shell fragments	Seabed sediments	Low
DBS_002_VC	0.95	1	Very dark grey very gravelly medium to coarse SAND.	Shallow Marine Sand	Low
DBS_002_VC	1	2	Slightly gravelly fine to medium SAND with occasional coarse sand-sized shells and shell fragments	Shallow Marine Sand	Low
DBS_002_VC	2	2.7	Gravelly fine to medium SAND with occasional coarse sand-sized shells and shell fragments	Shallow Marine Sand	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_003_VC	0	1	Silty fine to medium SAND with rare coarse sand-sized shell fragments, gravel-sized pockets of black possibly organic matter	Seabed sediments	Low
DBS_003_VC	1	1.85	Very dark grey silty fine to medium SAND, fine gravel-sized pockets of black possibly organic matter	Shallow Marine Sand	Low
DBS_003_VC	1.85	3	High strength very dark grey silty fine to medium sand CLAY	Diamict	Low
DBS_003_VC	3	4.7	Stiff to very stiff high strength to very high strength slightly gravelly calcareous CLAY with occasional coarse sand-sized shells and shell fragments	Diamict	Low
DBS_005_VC	0	3	Fine SAND with coarse sand-gravel sized shell fragments and with gravel sized pockets of black organic matter	Shallow Marine Sand	Low
DBS_005_VC	3	4.3	Very stiff very high strength gravelly slightly sandy CLAY with occasional shell fragments and pockets of organic matter	Diamict	Low
DBS_006_VC	0	1	Fine to medium SAND with rare coarse sand-sized shell fragments	Shallow Marine Sand	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_006_VC	1	5.4	Fine to medium SAND with rare coarse sand-sized shell fragments with gravel-sized pockets of organic matter	Shallow Marine Sand	Low
DBS_009_VC	0	1.7	Firm to very stiff medium strength to high strength slightly gravelly CLAY with rare coarse sand-sized shell fragments	Diamict	Low
DBS_010_VC	0	0.25	Very gravelly fine to medium calcareous SAND with occasional coarse sand-sized to fine gravel-size shells and shell fragments	Seabed sediments	Low
DBS_010_VC	0.25	1.3	Highly weathered light grey CHALK	Chalk	Low
DBS_010_VC	1.3	3.1	Stiff to very stiff high to very high strength very dark greyish brown slightly gravelly slightly sandy calcareous CLAY with rare coarse sand-sized shells and shell fragments	Diamict	Low
DBS_012_VC	0	0.45	Firm to stiff very dark grey slightly gravelly slightly calcareous CLAY	Diamict	Low
DBS_012_VC	0.45	1.2	Slightly sandy clayey SILT	Glacial Sand	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_012_VC	1.2	1.55	Stiff to very stiff high strength very dark greyish brown silty slightly sandy slightly gravelly calcareous CLAY	Diamict	Low
DBS_013_VC	0	2.25	Stiff medium strength to high strength very dark greyish brown gravelly sandy calcareous CLAY	Diamict	Low
DBS_015_VC	0	0.3	Stiff gravelly slightly sandy calcareous CLAY with occasional coarse sand-sized shells and shell fragments	Diamict	Low
DBS_015A_VC	0	1.5	Very stiff to hard very high strength to extremely high strength very dark greyish brown gravelly calcareous CLAY with occasional coarse sand-sized shells and shell fragments	Diamict	Low
DBS_016_VC	0	1.75	Very stiff to hard low strength to very high strength sandy gravelly calcareous CLAY with occasional coarse sand-sized shell fragments	Diamict	Low
DBS_018A_VC	0	0.1	Very dark grey silty sandy subrounded fine to course GRAVEL of various lithologies with numerous coarse sand-sized to fine gravel-sized shells and shell fragments	Gravel lag	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_018A_VC	0.1	0.3	Stiff high strength to very high strength dark yellowish brown gravelly slightly sandy calcareous CLAY	Diamict	Low
DBS_021A_VC	0	0.1	Gravelly slightly sandy slightly calcareous CLAY	Diamict	Low
DBS_025_VC	0	0.25	Very gravelly clayey fine to medium very calcareous SAND with occasional coarse sand-sized shells and shell fragments	Seabed sediments	Low
DBS_025_VC	0.25	0.35	Slightly sandy slightly gravelly CLAY	Diamict	Low
DBS_025_VC	0.35	2.4	Extremely weak to very weak highly weathered white CHALK	Chalk	Low
DBS_031_VC	0	0.1	Gravelly silty fine to medium calcareous SAND with frequent coarse sand-sized to fine gravel-sized shells and shell fragments	Seabed sediments	Low
DBS_031_VC	0.1	0.7	Gravelly slightly silty fine to coarse calcareous SAND with numerous occasional sand-sized to fine gravel-sized shells and shell fragments and pockets of clay	Shallow Marine Sand	Low
DBS_031_VC	0.7	1.1	Firm to stiff high strength dark reddish brown gravelly calcareous CLAY	Diamict	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_034_VC	0	0.55	Gravelly fine to medium calcareous SAND with numerous medium sand-sized to fine gravel-sized shell fragments	Seabed sediments	Low
DBS_034_VC	0.55	0.7	Firm to stiff high strength dark reddish brown slightly gravelly slightly calcareous CLAY	Diamict	Low
DBS_035_VC	0	0.4	Gravelly sandy fine to medium calcareous SAND with frequent medium to coarse sand-sized shell fragments	Seabed sediments	Low
DBS_035_VC	0.4	0.95	Gravelly fine to coarse calcareous SAND with frequent coarse sand-sized to fine gravel-sized shells fragments and occasional coarse sand-sized to fine gravel-sized wood fragments	Shallow Marine Sand	Low
DBS_037_VC	0	0.3	Gravelly slightly silty calcareous silica fine to coarse SAND with numerous coarse sand-sized to coarse gravel-sized shell fragments	Seabed sediments	Low
DBS_038_VC	0	0.45	Gravelly slightly silty slightly calcareous fine to medium SAND with occasional coarse sand-sized shell fragments	Seabed sediments	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_038_VC	0.45	0.2	High strength to very high strength slightly gravelly CLAY with occasional medium sand-sized mica crystals	Diamict	Low
DBS_038_VC	0.2	2.5	Firm high strength grey gravelly slightly calcareous CLAY	Diamict	Low
DBS_041_VC	0	0.65	Slightly gravelly slightly calcareous fine to medium SAND with occasional sand-sized shell fragments and pockets of black organic matter	Shallow Marine Sand	Low
DBS_041_VC	0.65	1.95	Slightly silty slightly calcareous fine SAND with mica crystals and pockets of black organic matter	Shallow Marine Sand	Low
DBS_041_VC	1.95	3	Gravelly slightly silty slightly calcareous fine to medium SAND with coarse sand-sized shell and fragments frequent medium sand-sizes to coarse sand-sized coal fragments	Shallow Marine Sand	Low
DBS_041_VC	3	4.75	Stiff high strength to very high strength dark greyish brown slightly gravelly slightly calcareous CLAY with occasional mica crystals	Diamict	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_042_VC	0	1.3	Slightly gravelly calcareous fine to medium SAND with occasional coarse sand-sized shell fragments with a thin laminae of medium sand-sized to course sand-sized black material possibly coal fragments	Shallow Marine Sand	Low
DBS_042_VC	1.3	3.95	Stiff high strength to very high strength brown gravelly slightly calcareous CLAY.	Diamict	Low
DBS_043_VC	0	0.4	Slightly gravelly slightly calcareous medium to coarse SAND with occasional coarse sand-sized to coarse gravel-sized shell fragments and pockets of clay	Seabed sediments	Low
DBS_046_VC	0	0.65	Gravelly slightly calcareous fine to coarse SAND with medium gravel-sized pockets of firm clay	Seabed sediments	Low
DBS_046_VC	0.65	1.5	Very stiff very high strength grey slightly sandy silty calcareous CLAY	Diamict	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_052_VC	0	0.8	Dark greyish brown slightly silty slightly calcareous fine to medium SAND with occasional medium sand-sized to coarse sand-sized shell fragments and mica crystals and pockets of black organic matter	Seabed sediments	Low
DBS_053_VC	0	0.3	Dark grey slightly silty slightly calcareous fine to medium SAND with frequent coarse sand-sized shells and shell fragments and rare mica crystals	Seabed sediments	Low
DBS_053_VC	0.3	5	Dark grey slightly silty slightly calcareous fine to medium SAND with rare mica crystals	Shallow Marine Sand	Low
DBS_054_VC	0	1.6	Slightly silty slightly clayey slightly calcareous fine to medium SAND with frequent medium sand-sized to medium gravel-sized shells and shell fragments	Shallow Marine Sand	Low
DBS_056_VC	0	2.2	Slightly silty slightly calcareous fine to medium SAND with occasional coarse sand-sized shell fragments and mica crystals	Shallow Marine Sand	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_056_VC	2.2	4.75	Very stiff high strength to very high strength dark greyish brown slightly gravelly slightly sandy calcareous CLAY with mica crystals and sandy clay	Diamict	Low
DBS_057_VC	0	1.2	Dark greyish brown silty slightly calcareous fine to medium SAND with occasional coarse sand-sized to medium gravel-sized shells and shell fragments	Seabed sediments	Low
DBS_057_VC	1.2	2	Firm medium strength to high strength slightly gravelly slightly calcareous CLAY with occasional mica crystals	Diamict	Low
DBS_057_VC	2	3.6	Firm high strength to very high strength slightly sandy gravelly slightly calcareous CLAY with occasional mica crystals	Diamict	Low
DBS_059_VC	0	0.7	Silty slightly calcareous fine to medium SAND with occasional coarse sand-sized to medium gravel-sized shell fragment	Seabed sediments	Low
DBS_059_VC	0.7	1.2	Gravelly silty calcareous fine to coarse SAND with rare coarse sand-sized shell fragments	Shallow Marine Sand	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_059_VC	1.2	1.4	Slightly sandy subangular to rounded fine to course GRAVEL with occasional course sand-sized to fine gravel-sized shell fragments	Gravel lag	Low
DBS_059_VC	1.4	2.7	Stiff high strength to very high strength slightly gravelly slightly sandy calcareous CLAY. Gravel is subangular to subrounded fine to medium of various lithologies including mudstone	Diamict	Low
DBS_060_VC	0	0.45	Dark greyish brown slightly calcareous fine to medium SAND with rare coarse sand-sized shell fragments and pockets of black organic matter	Seabed sediments	Low
DBS_060_VC	0.45	2.8	Dark greyish brown silty slightly calcareous fine to medium SAND with rare coarse sand-sized shell fragments	Shallow Marine Sand	Low
DBS_060_VC	2.8	3.25	Very gravelly slightly silty calcareous fine to coarse SAND with frequent coarse sand-sized to fine gravel-sized shell fragments. Gravel is subangular to subrounded fine to coarse of various lithologies	Shallow Marine Sand	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_060_VC	3.25	4	Stiff medium strength very dark greyish brown slightly gravelly calcareous CLAY with occasional pockets of black organic matter. Gravel is subangular to subrounded fine to medium of various lithologies	Diamict	Low
DBS_062_VC	0	1.4	Silty slightly calcareous fine to medium SAND with occasional coarse sand-sized to fine gravel-sized shell fragments and mica crystals	Seabed sediments	Low
DBS_062_VC	1.4	2	Stiff extremely high strength black sandy calcareous CLAY	Diamict	Low
DBS_063_VC	0	3.2	Slightly silty slightly calcareous fine to medium SAND with rare medium sand-sized to medium gravel-sized shells and shell fragments	Shallow Marine Sand	Low
DBS_063_VC	3.2	4.6	Stiff medium strength to high strength dark grey gravelly slightly silty calcareous CLAY. Gravel is subangular to subrounded fine of various lithologies including mudstone	Diamict	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_065_VC	0	1	Dark greyish brown slightly calcareous fine to medium SAND with rare coarse sand-sized to medium gravel-sized shells and shell fragments with possible organic staining	Seabed sediments	Low
DBS_065_VC	1	1.7	Dark greyish brown slightly calcareous fine to medium SAND with rare coarse sand-sized to medium gravel-sized shells and shell fragments with medium sand-sized to course sand-sized organic matter	Shallow Marine Sand	Low
DBS_065_VC	1.7	2	Firm high to very high strength dark grey slightly gravelly slightly calcareous CLAY. Gravel is subangular to subrounded fine of various lithologies	Diamict	Low
DBS_065_VC	2	3	Firm low to medium strength dark grey slightly gravelly slightly calcareous CLAY. Gravel is subangular to subrounded fine of various lithologies	Diamict	Low
DBS_065_VC	3	5	Firm high strength dark grey slightly gravelly slightly calcareous CLAY. Gravel is subangular to subrounded fine of various lithologies	Diamict	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_066_VC	0	1.2	Greyish brown slightly calcareous fine to medium SAND with occasional coarse sand-sized shells and shell fragments and rare mica crystals	Seabed sediments	Low
DBS_066_VC	1.2	1.4	Slightly clayey SILT with shell fragments with mica crystals	Alluvium	Medium
DBS_066_VC	1.4	3.3	Firm high strength to very high strength dark grey slightly gravelly slightly calcareous CLAY with occasional orange staining. Gravel is subangular to subrounded fine of various lithologies	Diamict	Low
DBS_069A_VC	0	0.05	Slightly silty gravelly slightly calcareous fine to medium SAND with rare coarse sand-sized to medium gravel-sized shells and shell fragments	Seabed sediments	Low
DBS_069A_VC	0.05	0.15	Slightly calcareous very gravelly CLAY with rare coarse sand-sized shell fragments. Gravel is subangular to subrounded fine to medium of various lithologies including mudstone	Diamict	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_071_VC	0	0.25	Slightly calcareous fine to medium SAND with occasional coarse sand-sized shell fragments and occasional black staining	Seabed sediments	Low
DBS_071_VC	0.25	0.5	Very high strength to extremely high strength blocky to foliated dark yellowish brown to black silty CLAY with rare coarse sand-sized to fine gravel-sized shell fragments	Mudstone	Low
DBS_072_VC	0	0.7	Dark grey slightly calcareous fine to medium SAND with occasional shells and shell fragments	Seabed sediments	Low
DBS_072_VC	0.7	0.9	Slightly gravelly dark greyish brown fine to medium SAND. Gravel is angular to subrounded medium to coarse of various lithologies	Shallow Marine Sand	Low
DBS_074_VC	0	4.8	Dark greyish brown silty slightly calcareous fine to medium SAND with rare coarse sand-sized to fine gravel-sized shell fragments	Shallow Marine Sand	Low
DBS_075_VC	0	5.3	Greyish brown slightly calcareous fine to medium SAND with rare coarse sand-sized shell fragments	Shallow Marine Sand	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_077_VC	0	6.2	Slightly calcareous fine to medium SAND with rare coarse sand-sized shell fragments	Shallow Marine Sand	Low
DBS_078A_VC	0	6.1	Dark greyish brown slightly calcareous fine to medium SAND	Shallow Marine Sand	Low
DBS_080_VC	0	6	Light yellowish brown and olive grey fine to medium SAND	Shallow Marine Sand	Low
DBS_081_VC	0	6.1	Dark greyish brown fine to medium SAND	Shallow Marine Sand	Low
DBS_083_VC	0	4.4	Very dense very dark grey slightly silty slightly calcareous fine to medium SAND with occasional medium sand-sized to medium gravel-sized shell fragments	Shallow Marine Sand	Low
DBS_083_VC	4.4	5	High to extremely high strength blocky black clay	Mudstone	Low
DBS_084_VC	0	6	Dark grey slightly silty fine to medium SAND with occasional coarse sand-sized to fine gravel-sized shell fragments	Shallow Marine Sand	Low
DBS_087_VC	0	0.3	Light yellowish brown slightly calcareous fine to medium SAND	Seabed sediments	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_087_VC	0.3	6.1	Very dark grey fine to medium SAND with occasional fine to medium gravel-sized pockets of sandy black clay and rare coarse sand-sized to medium gravel-sized shells	Shallow Marine Sand	Low
DBS_089_VC	0	2.5	Slightly calcareous fine to medium SAND	Shallow Marine Sand	Low
DBS_089_VC	2.5	2.85	Slightly calcareous fine to medium SAND with frequent fine to medium gravel-sized pockets of organic matter	Shallow Marine Sand	Low
DBS_089_VC	2.85	5.8	Slightly calcareous fine to medium SAND with occasional coarse sand-sized to fine gravel-sized shell fragments	Shallow Marine Sand	Low
DBS_090_VC	0	6.1	Slightly silty slightly calcareous fine to medium SAND with occasional coarse sand-sized to fine gravel-sized shell fragments	Shallow Marine Sand	Low
DBS_092_VC	0	0.2	Lightly silty fine to medium SAND with a coarse gravel-sized pocket of black staining	Shallow Marine Sand	Low
DBS_092_VC	0.2	6.1	Silty slightly calcareous fine to medium SAND with occasional coarse sand-sized to medium gravel-sized shells and shell fragments	Shallow Marine Sand	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_093_VC	0	6.1	Dark grey fine to medium SAND with two fine gravel-sized pockets of organic matter	Shallow Marine Sand	Low
DBS_095_VC	0	0.2	Fine to medium SAND with occasional fine to medium gravel-sized pockets of clayey black sand	Shallow Marine Sand	Low
DBS_095_VC	0.2	6	Silty slightly calcareous fine to medium SAND with occasional fine to medium gravel-sized pockets of clayey black sand	Shallow Marine Sand	Low
DBS_096_VC	0	0.2	Slightly silty fine to medium SAND with occasional fine to medium gravel-sized shell fragments	Shallow Marine Sand	Low
DBS_096_VC	0.2	5.9	Slightly silty slightly calcareous fine to medium SAND	Shallow Marine Sand	Low
DBS_098_VC	0	6	Dark greyish brown fine to medium SAND with medium sand-sized to coarse sand-sized shell fragments	Shallow Marine Sand	Low
DBS_099_VC	0	1	Loose to medium dense silty slightly calcareous fine to medium SAND with rare medium sand-sized to fine gravel-sized shell fragments and mica crystals	Shallow Marine Sand	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_099_VC	1	2.2	Medium dense silty slightly calcareous fine to medium SAND with occasional medium sand-sized to fine gravel-sized shell fragments and rare mica crystals	Shallow Marine Sand	Low
DBS_099A_VC	0	1	Loose to medium dense fine to medium SAND with occasional coarse sand-sized to medium gravel-sized shells and shell fragment	Shallow Marine Sand	Low
DBS_099A_VC	1	6.1	Medium dense grey slightly silty slightly calcareous fine to medium SAND with mica crystals	Shallow Marine Sand	Low
DBS_101_VC	0	1	Loose to medium dense silty slightly calcareous fine to medium SAND, with rare coarse sand-size to fine gravel-size shell fragments and fine gravel-sized pockets of black staining possibly organic	Shallow Marine Sand	Low
DBS_101_VC	1	6.2	Medium dense silty slightly calcareous fine to medium SAND with occasional medium sand-sized to coarse gravel-sized shell fragments	Shallow Marine Sand	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_102_VC	0	0.2	Slightly silty slightly calcareous fine to medium SAND, with frequent coarse sand-size to fine gravel-size shells and shell fragments	Shallow Marine Sand	Low
DBS_102_VC	0.2	6.1	Silty slightly calcareous fine to medium SAND, with rare mica crystals	Shallow Marine Sand	Low
DBS_104_VC	0	1	Silty slightly calcareous fine to medium SAND, with occasional coarse sand-size to coarse gravel-size shells and shell fragments and rare mica crystals	Shallow Marine Sand	Low
DBS_104_VC	1	6	Grey silty slightly calcareous fine to medium SAND with mica crystals	Shallow Marine Sand	Low
DBS_105_VC	0	0.6	Slightly calcareous fine to medium SAND, with rare coarse sand-size to medium gravel-size shell fragments and pockets of clayey sand	Shallow Marine Sand	Low
DBS_105_VC	0.6	6.1	Dark grey silty slightly calcareous fine to medium SAND with coarse sand-sized to fine gravel-sized shell fragments and rare pieces of wood	Shallow Marine Sand	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_107_VC	0	2	Silty slightly calcareous fine to medium SAND, with rare coarse sand-size to fine gravel-size shell fragments and mica crystals	Shallow Marine Sand	Low
DBS_107_VC	2	4.8	Silty slightly calcareous fine to medium SAND with mica crystals	Shallow Marine Sand	Low
DBS_108_VC	0	1.65	Silty slightly calcareous fine to medium SAND, with rare coarse sand-size to fine gravel-size shell fragments	Shallow Marine Sand	Low
DBS_108_VC	1.65	5.2	Slightly silty slightly calcareous fine to medium SAND	Shallow Marine Sand	Low
DBS_110_VC	0	1	Silty slightly calcareous fine to medium SAND, with rare coarse sand-size shell fragments	Shallow Marine Sand	Low
DBS_110_VC	1	6.3	Silty slightly calcareous fine to medium SAND	Shallow Marine Sand	Low
DBS_111_VC	0	2.29	Silty slightly calcareous fine to medium SAND	Shallow Marine Sand	Low
DBS_111_VC	2.29	3.55	Olive brown slightly gravelly CLAY with extremely closely to closely spaced thin to thick laminae of reddish brown sandy clay	Shallow Marine Sand	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_111_VC	3.55	5.3	High strength thinly laminated olive brown CLAY with extremely closely spaced to closely spaced thin laminae to very thin beds of reddish brown sandy slightly gravelly clay. Gravel is subangular to rounded fine of various lithologies	Diamict	Low
DBS_113_VC	0	1	Silty slightly calcareous fine SAND, with H2S odour	Seabed sediments	Low
DBS_113_VC	1	1.95	Stiff extremely high strength brown sandy slightly gravelly slightly calcareous CLAY. Gravel is subangular to subrounded fine of various lithologies including chalk	Diamict	Low
DBS_115_VC	0	0.5	Very dark grey slightly silty slightly calcareous fine to medium SAND, with H2S odour	Seabed sediments	Low
DBS_115_VC	0.5	1.5	Stiff high strength brown sandy slightly gravelly slightly calcareous CLAY. Gravel is subangular fine of various lithologies including chalk	Diamict	Low
DBS_116_VC	0	2.38	Slightly silty slightly calcareous fine to medium SAND, with rare coarse sand-size shell fragments	Seabed sediments	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_116_VC	2.38	4	Stiff very high strength brown sandy slightly gravelly slightly calcareous CLAY, with rare fine gravel-size shell fragments. Gravel is subrounded of fine various lithologies including chalk	Diamict	Low
DBS_119_VC	0	5.65	Slightly gravelly light olive brown to dark greyish brown fine to medium SAND. Gravel is subrounded fine to medium of various lithologies	Shallow Marine Sand	Low
DBS_120_VC	0	6.25	Greyish brown slightly silty fine to medium SAND with occasionally medium sand-sized to medium gravel-sized shells and shell fragments	Shallow Marine Sand	Low
DBS_121_VC	0	2.7	Dark grey slightly silty fine to medium SAND with occasional medium sand-sized to medium gravel-sized shell fragments and a coarse gravel-sized pocket of black organic matter	Shallow Marine Sand	Low
DBS_121_VC	2.7	3.1	Stiff brown sandy calcareous CLAY, with a single subrounded coarse gravel clast	Diamict	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_121_VC	3.1	6.4	Slightly silty slightly calcareous fine to medium SAND with rare shell fragments and rare mica crystals	Glacial Sand	Low
DBS_124_VC	0	5.6	Slightly silty slightly calcareous fine to medium SAND, with rare coarse sand-size to fine gravel-size shell fragments and rare fine to medium gravel-sized pockets of black organic staining	Shallow Marine Sand	Low
DBS_125_VC	0	6.25	Slightly silty slightly calcareous fine to medium SAND, with frequent coarse sand-size to fine gravel-size shell fragments	Shallow Marine Sand	Low
DBS_127_VC	0	5.4	Slightly calcareous medium to coarse SAND, with numerous coarse sand-size shell fragments	Shallow Marine Sand	Low
DBS_128_VC	0	5.8	Slightly calcareous medium to coarse SAND, with frequent coarse sand-size shell fragments	Shallow Marine Sand	Low
DBS_131_VC	0	0.25	Slightly silty slightly calcareous fine to medium SAND, with rare fine gravel-size shell fragments and organic matter	Seabed sediments	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_131_VC	0.25	5.65	Very dark greyish brown slightly silty fine to medium SAND with occasional coarse sand-sized to medium gravel-sized shells and shell fragments with medium gravel-sized pockets of organic matter	Shallow Marine Sand	Low
DBS_132_VC	0	0.15	Very sandy slightly calcareous SILT, with rare coarse sand-size to fine gravel-size shell fragments	Alluvium	Medium
DBS_132_VC	0.15	2.7	Silty slightly clayey calcareous fine to medium SAND with rare coarse sand-size to fine gravel-size shell fragments	Shallow Marine Sand	Low
DBS_132_VC	2.7	5.9	Slightly calcareous fine to medium SAND with rare coarse sand-size to fine gravel-size shell fragments and occasional coarse sand-size to fine gravel-size pockets of organic matter	Shallow Marine Sand	Low
DBS_133_VC	0	3.5	Fine to medium slightly silty SAND with occasional medium sand-sized shell fragments with mica crystals	Shallow Marine Sand	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_133_VC	3.5	4.65	Gravelly medium to coarse SAND with abundant medium sand-sized to medium gravel-sized shell fragments	Shallow Marine Sand	Low
DBS_133_VC	4.65	5.85	Very gravelly fine to medium SAND with occasional medium sand-sized to fine gravel-sized shell fragments with rare mica crystals. Gravel is subrounded to angular fine to coarse of various lithologies	Shallow Marine Sand	Low
DBS_135_VC	0	0.2	Slightly calcareous fine to medium SAND, with rare coarse sand-size shells and shell fragments and mica crystals	Seabed sediments	Low
DBS_135_VC	0.2	6	Slightly calcareous fine to medium SAND, with occasional coarse sand-size to coarse gravel-size shell fragments with occasional coarse sand-size to fine gravel-size pockets of organic matter	Shallow Marine Sand	Low
DBS_136_VC	0	1	Slightly calcareous fine to medium SAND, with occasional coarse sand-size to coarse gravel-size shells and shell fragments	Shallow Marine Sand	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_136_VC	1	5	Grey slightly calcareous fine to medium SAND with occasional coarse gravel-size shell fragments	Shallow Marine Sand	Low
DBS_137_VC	0	5.3	Slightly calcareous fine to medium SAND, with rare coarse sand-size shell fragments and occasional medium to coarse gravel-sized pockets of organic matter	Shallow Marine Sand	Low
DBS_139_VC	0	0.45	Silty slightly sandy calcareous fine to coarse SAND, with rare coarse sand-size to fine gravel-size shell fragments	Seabed sediments	Low
DBS_139_VC	0.45	1.35	Very gravelly calcareous medium to coarse SAND, with frequent coarse sand-size to fine gravel-size shell fragments. Gravel is subangular to subrounded fine to medium of various lithologies	Shallow Marine Sand	Low
DBS_139_VC	1.35	5.2	Slightly gravelly calcareous fine to medium SAND, with frequent medium sand-size shell fragments. Gravel is subangular to subrounded fine to medium of various lithologies	Shallow Marine Sand	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_141_VC	0	0.8	Medium to coarse GRAVEL. Gravel is subangular to rounded fine to coarse of various lithologies	Seabed sediments	Low
DBS_141_VC	0.8	6.3	Gravelly fine to medium SAND. Gravel is subangular to rounded fine to medium of various lithologies	Shallow Marine Sand	Low
DBS_143_VC	0	0.35	Slightly silty slightly calcareous fine to medium SAND with mica crystals	Seabed sediments	Low
DBS_143_VC	0.35	6.1	Slightly silty slightly calcareous fine to medium SAND with mica crystals and occasional medium sand-sized to coarse gravel-sized shells and shell fragments	Shallow Marine Sand	Low
DBS_144_VC	0	6.15	Slightly silty slightly calcareous fine to medium SAND, with occasional coarse sand-sized to medium gravel-sized shells and shell fragments	Shallow Marine Sand	Low
DBS_146_VC	0	6	Slightly silty slightly calcareous fine to medium SAND with occasional coarse sand-sized to coarse gravel-sized shells and shell fragments with coarse gravel-sized pockets of black organic staining	Shallow Marine Sand	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_147_VC	0	0.25	Slightly calcareous fine to medium SAND, with rare coarse gravel-sized shell fragments	Seabed sediments	Low
DBS_147_VC	0.25	6	Slightly silty slightly calcareous fine to medium SAND	Shallow Marine Sand	Low
DBS_149_VC	0	1.8	Slightly silty slightly calcareous fine to medium SAND, with occasional medium sand-sized to medium gravel-sized shells and shell fragments and rare mica crystals and H2S odour	Shallow Marine Sand	Low
DBS_149_VC	1.8	2.25	High strength brown sandy calcareous CLAY, with occasional fine gravel-size shell fragments and with occasional pockets of grey sand	Diamict	Low
DBS_149_VC	2.25	3.7	Silty slightly calcareous fine to medium SAND with occasional medium sand-sized to medium gravel-sized shells and shell fragments and mica crystals	Shallow Marine Sand	Low
DBS_150A_VC	0	0.45	Slightly silty slightly calcareous fine to medium SAND, with rare fine gravel-size shell fragments and mica crystals	Seabed sediments	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_150A_VC	0.45	2	Slightly silty slightly gravelly slightly calcareous fine to medium SAND, with occasional coarse sand-size to fine gravel-size shell fragments and mica crystals. Gravel is subrounded fine of various lithologies	Shallow Marine Sand	Low
DBS_152_VC	0	0.35	Slightly silty slightly calcareous fine to medium SAND, with rare coarse sand-size to fine gravel-size shell fragments and pockets of staining possibly organic	Seabed sediments	Low
DBS_152_VC	0.35	6.3	Slightly silty slightly calcareous fine to medium SAND with occasional medium sand-sized to medium gravel-sized shells and shell fragments with mica crystals	Shallow Marine Sand	Low
DBS_153_VC	0	6.35	Slightly silty calcareous fine to medium SAND, with rare coarse sand-size shell fragments with fine to medium gravel-sized pockets of organic staining	Shallow Marine Sand	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_155_VC	0	6	Slightly silty slightly calcareous fine to medium SAND, with H2S odour with rare coarse sand-size shell fragments and mica crystals	Shallow Marine Sand	Low
DBS_156_VC	0	6	Slightly silty fine to medium SAND, with rare coarse sand-size to fine gravel-size shell fragments and a fine to medium gravel-sized pocket of black organic staining	Shallow Marine Sand	Low
DBS_158_VC	0	5.8	Silty slightly calcareous fine to medium SAND, with a fine gravel-sized pocket of frequent medium sand-sized coal fragments	Shallow Marine Sand	Low
DBS_159_VC	0	3.95	Slightly calcareous fine to medium SAND	Shallow Marine Sand	Low
DBS_159_VC	3.95	5.8	Calcareous fine to medium SAND, with occasional medium sand-size shell fragments and with occasional fine gravel-size to medium gravel-size pockets of organic matter	Shallow Marine Sand	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_161_VC	0	1.6	Slightly silty very gravelly fine to coarse SAND, with rare coarse sand-sized to fine gravel-size shell fragments and organic staining. Gravel is subangular to subrounded fine to coarse of various lithologies	Shallow Marine Sand	Low
DBS_162_VC	0	3.15	Silty fine to medium SAND, with rare coarse sand-size shell fragments and with occasional fine to medium gravel-size pockets of organic matter	Seabed sediments	Low
DBS_162_VC	3.15	3.25	Stiff very high strength dark grey slightly gravelly calcareous CLAY. Gravel is subangular to subrounded fine to coarse of various lithologies including chalk	Diamict	Low
DBS_162_VC	3.25	3.3	Silty very gravelly calcareous fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of various lithologies	Glacial Sand	Low
DBS_164_VC	0	0.15	Slightly silty calcareous fine to medium SAND	Seabed sediments	Low
DBS_164_VC	0.15	0.5	Grey slightly sandy calcareous SILT	Shallow Marine Sand	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_164_VC	0.5	3.15	Soft very low strength to low strength grey slightly sandy CLAY	Alluvium	Medium
DBS_164_VC	3.15	5.6	Grey slightly sandy calcareous SILT	Alluvium	Medium
DBS_165_VC	0	0.35	Silty slightly calcareous fine to medium SAND, with occasional coarse sand-size to fine gravel-size shell fragments	Shallow Marine Sand	Low
DBS_165_VC	0.35	0.5	Slightly silty fine to medium SAND with medium gravel-sized pockets of organic staining	Shallow Marine Sand	Low
DBS_165_VC	0.5	2	Silty gravelly fine to medium SAND, with occasional coarse sand-size to fine gravel-size shell fragments	Shallow Marine Sand	Low
DBS_167_VC	0	3	Silty slightly calcareous fine to medium SAND, with frequent medium gravel-sized to coarse gravel-sized pockets of black organic staining	Shallow Marine Sand	Low
DBS_167_VC	3	3.95	Very dark grey silty slightly calcareous fine to medium SAND, with occasional fine gravel-sized shells and shell fragments	Diamict	Low
DBS_168_VC	0	0.3	Silty fine to medium SAND, with rare coarse sand-size shell fragments	Seabed sediments	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_168_VC	0.3	5	Silty slightly calcareous fine to medium SAND, with occasional coarse sand-size to fine gravel-size shell fragments	Shallow Marine Sand	Low
DBS_168_VC	5	6.2	Silty calcareous fine to medium SAND	Shallow Marine Sand	Low
DBS_170_VC	0	0.3	Silty slightly calcareous fine to medium SAND, with rare coarse sand-size shell fragments	Seabed sediments	Low
DBS_170_VC	0.3	6.1	Slightly calcareous fine to medium SAND	Shallow Marine Sand	Low
DBS_171_VC	0	0.95	Silty slightly calcareous fine to medium SAND	Seabed sediments	Low
DBS_171_VC	0.95	1.65	Clayey slightly gravelly slightly calcareous fine to medium SAND. Gravel is fine, subrounded of various lithologies	Diamict	Low
DBS_171_VC	1.65	4.75	Silty slightly calcareous fine to medium SAND, with rare mica crystals	Glacial Sand	Low
DBS_171_VC	4.75	6.3	Slightly silty slightly calcareous fine to medium SAND	Glacial Sand	Low
DBS_173_VC	0	3.4	Silty slightly calcareous fine SAND, with H2S odour	Seabed sediments	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_173_VC	3.4	6.3	Slightly silty slightly calcareous fine to medium SAND, with rare fine to medium gravel-size shell fragments and mica crystals	Shallow Marine Sand	Low
DBS_174_VC	0	4.2	Slightly silty slightly calcareous fine to medium SAND with rare coarse sand-size to fine gravel-size shell fragments and with rare mica crystals	Seabed sediments	Low
DBS_174_VC	4.2	6	Stiff medium strength brown slightly gravelly slightly calcareous CLAY. Gravel is subangular to subrounded fine to medium of various lithologies	Diamict	Low
DBS_176_VC	0	0.3	Silty slightly calcareous fine to medium SAND, with H2S odour	Seabed sediments	Low
DBS_176_VC	0.3	4.2	Silty slightly calcareous fine to medium SAND, with rare fine gravel-size shell fragments and occasional fine sand-sized to coarse gravel-sized coal fragments with a fine to medium gravel-sized pockets of black organic matter	Shallow Marine Sand	Low
DBS_176_VC	4.2	6	Slightly silty slightly calcareous fine to medium SAND	Glacial Sand	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_177_VC	0	0.25	Silty slightly calcareous fine to medium SAND, with H2S odour	Seabed sediments	Low
DBS_177_VC	0.25	5.9	Slightly silty slightly calcareous fine to medium SAND, with traces of black organic matter, with rare coarse sand-size shell fragments	Shallow Marine Sand	Low
DBS_179_VC	0	0.2	Silty slightly calcareous fine to medium SAND, with rare fine gravel-size shell fragments and with H2S odour	Seabed sediments	Low
DBS_179_VC	0.2	5.7	Slightly silty slightly calcareous fine to medium SAND	Shallow Marine Sand	Low
DBS_180_VC	0	6	Slightly silty slightly calcareous fine to medium SAND, with traces of black organic matter	Shallow Marine Sand	Low
DBS_182_VC	0	0.2	Slightly silty fine to medium SAND with occasional medium sand-sized to fine gravel-sized shell fragment with occasional medium gravel-sized pocket of black organic staining	Seabed sediments	Low
DBS_182_VC	0.2	6.2	Slightly silty fine to medium SAND with occasional medium sand-sized to fine gravel-sized shell fragments	Shallow Marine Sand	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_183_VC	0	6.2	Silty fine to medium SAND with occasional medium sand-sized to medium gravel-sized shells and shell fragments	Shallow Marine Sand	Low
DBS_185_VC	0	0.25	Slightly silty fine to medium SAND with occasional medium sand-sized to medium gravel-sized shells and shell fragments	Seabed sediments	Low
DBS_185_VC	0.25	5.3	Slightly silty fine to medium SAND with occasional medium sand-sized to medium gravel-sized shells and shell fragments	Shallow Marine Sand	Low
DBS_187_VC	0	0.35	Silty slightly calcareous fine to medium SAND, with occasional coarse sand-size to medium gravel-size shells and shell fragments H2S odour	Seabed sediments	Low
DBS_187_VC	0.35	5.2	Slightly silty slightly calcareous fine to medium SAND, with occasional coarse sand-size shell fragments with occasional fine gravel-sized pockets of black organic staining	Shallow Marine Sand	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_188_VC	0	0.25	Slightly silty slightly calcareous fine to medium SAND, with frequent coarse sand-size to medium gravel-size shells and shell fragments	Seabed sediments	Low
DBS_188_VC	0.25	5.4	Slightly silty slightly calcareous fine to medium SAND, with frequent to abundant coarse sand-sized to fine gravel-sized shell fragments with fine gravel-sized to medium gravel-sized pockets of black organic staining	Shallow Marine Sand	Low
DBS_A01_VC	0	0.2	Slightly silty SAND with rare shells and shell fragments calcareous and a thick lamina of black sandy clay with organic matter and H2S odour	Seabed sediments	Low
DBS_A01_VC	0.2	2.3	Firm to stiff medium strength to high strength dark olive grey gravelly slightly sandy CLAY with occasional coarse sand-size shells and shell fragments and H2S odour. Gravel is subangular to subrounded fine to medium	Diamict	Low

ID	Depth from (mbsf)	Depth to (mbsf)	Description	Interpretation / Unit	Priority
DBS_A02_VC	0	0.5	Slightly silty slightly calcareous fine to medium SAND, with rare coarse sand-size shell fragments	Seabed sediments	Low
DBS_A02_VC	0.5	3.05	Gravelly slightly silty slightly calcareous fine to medium SAND, with rare coarse sand-size shell fragments. Gravel is subangular to subrounded fine to medium of various lithologies	Shallow Marine Sand	Low
DBS_A02_VC	3.05	4.9	Stiff very high strength very dark grey slightly gravelly slightly calcareous CLAY. Gravel is subangular to subrounded fine of various lithologies	Diamict	Low

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