Eastern Green Link 3

Marine Archaeology Technical Report

Prepared for National Grid

MSDS Marine & MSDS Heritage

2024/MSDS23267/7

Eastern Green Link 3

Marine Archaeology Technical Report

Project Name	Eastern Green Link 3	
Client	National Grid	
Client Project Number		
MSDS Marine Project Number	MSDS23267	
Author and contact details	Tony Brown [Redacted]	Ken Hamilton [Redacted]
Origination date	28/05/2025	
Reviser (s)	Mark James	
Date of last revision	29/08/2025	
Quality Assurance Approval	Mark James	
Version number:	1.3	
Summary of changes	3rd round client comments addressed	

Contents

Figures

Tables

1.0 Introduction

1.0.1 MSDS Marine Limited (MSDS Marine) have been contracted by National Grid Electricity Transmission (NGET) to produce a Marine Archaeology Technical Report (MATR) for the Marine Environmental Appraisal (MEAp) of the Eastern Green Link 3 project in the North Sea (hereafter referred to as "the Project"). The Project proposes an interconnector cable between the Lincolnshire coast in England and the Aberdeenshire coast in Scotland, including landfall locations at each end.

1.0.2 This document forms the Marine Archaeology Technical Report for the Scottish waters; from mean high water springs (MHWS) in Scotland to the boundary with English adjacent waters (hereafter referred to as "the Proposed Development"). The Proposed Development is being developed by Scottish Hydro Electric Transmission plc (SHE-T), operating and known as "Scottish and Southern Electricity Networks Transmission (SSEN Transmission) ("the Applicant"). A full project description is provided in **Chapter 3: Project Description** of the MEAp.

1.0.3 This MATR sets out methods for the assessment and brings together the results of desk-based assessment of known and potential archaeological remains, geophysical survey and hydrographic data to inform the marine archaeology baseline environment of the Proposed Development.

1.0.4 The study area for marine archaeology baseline assessment includes the Proposed Development Red Line Boundary (RLB) and a 2 km buffer measured from its outer boundary, within the marine zone (hereafter referred to as the 'Study Area'). The Study Area incorporates the area within which there is potential for indirect impacts associated with the deposition of suspended sediments and is consistent with the conclusions reached in **Chapter 6: Marine Physical Processes** of the MEAp. The Study Area also acts as a precautionary maximum Zone of Influence (ZoI), as all potential direct and indirect impacts would occur within this buffer.

1.0.5 The Study Area extends to 200 m above MHWS, capturing archaeological data from the nearby terrestrial landscape with the potential to aid characterisation and interpretation of the marine archaeological character and potential for remains. The marine archaeology Study Area is illustrated by Figure 1.

2.0 Proposed Development location

2.0.1 The project extends to *c*. 580 (+/- 5) km in the North Sea, from Anderby Creek, Lincolnshire, to Sandford Bay, Aberdeenshire. The Proposed Development extends to *c*. 145 km, from the boundary with English adjacent waters to MHWS at Sandford Bay. The Proposed Development's Red Line Boundary (RLB) and Study Area for marine archaeology are shown by Figure 1.

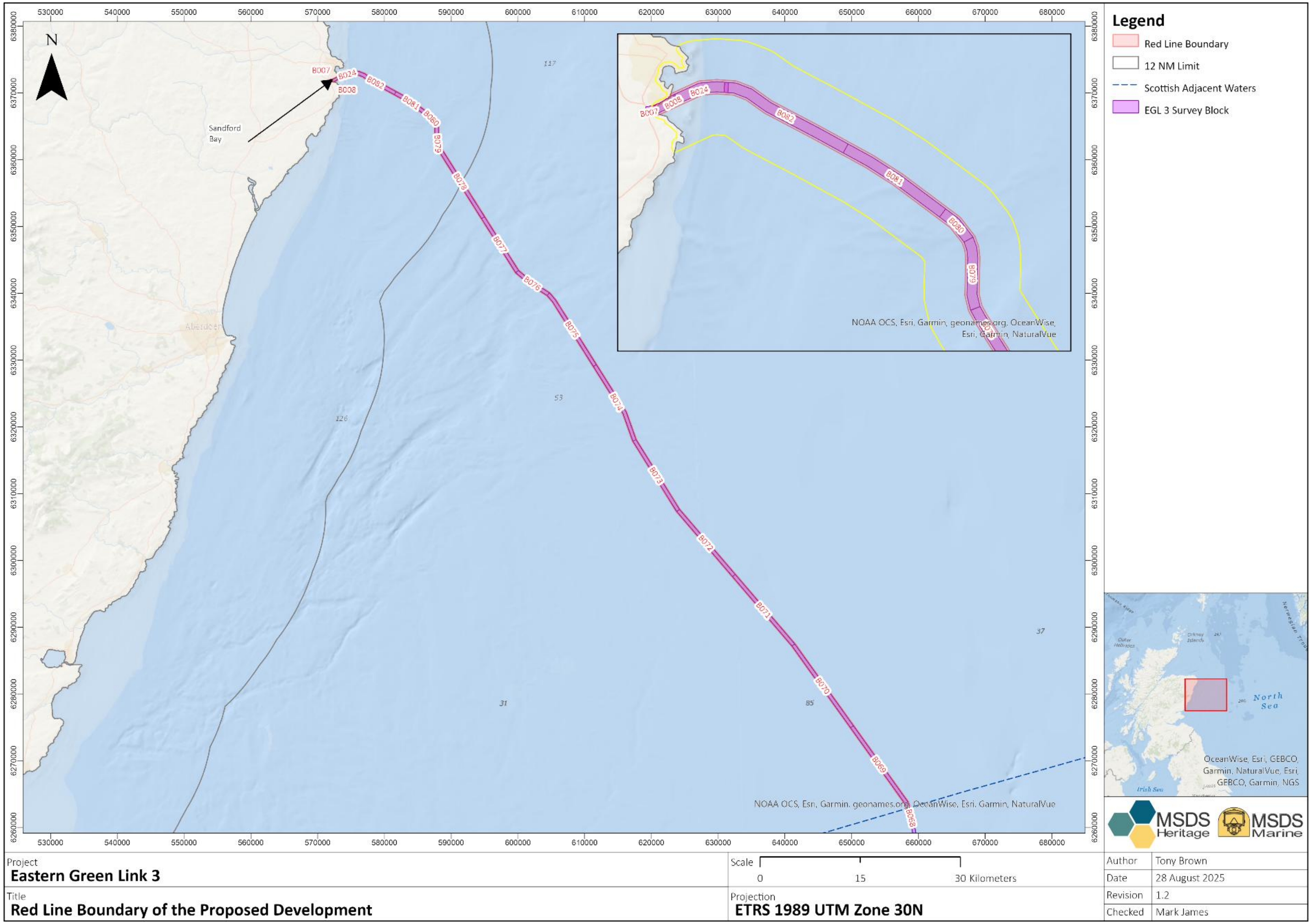


Figure 1: Marine archaeology Study Area

3.0 Legislation, policy and guidance

3.0.1 The assessment has been conducted in line with relevant legislation, policy and guidance. The Proposed Development extends up to MHWS, therefore, both marine and terrestrial legislation, policy and guidance will be relevant. Furthermore, the assessment has incorporated Scottish national legislation, policy and guidance, where applicable.

3.1 Key legislation and international conventions

- The World Heritage Convention (1972);
- Protection of Wrecks Act 1973;
- Ancient Monuments and Archaeological Areas Act 1979;
- United Nations Convention on the Law of the Sea (1982);
- Protection of Military Remains Act 1986;
- Merchant Shipping Act 1995;
- International Council of Monuments and Sites Charter on the Protection and Management of Underwater Cultural Heritage (1996) (the Sofia Charter);
- Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997;
- UNESCO Convention on the Protection of Underwater Cultural Heritage (2001);
- European Convention on the Protection of Archaeological Heritage (revised) (1992) (the Valletta Convention) – ratified by the UK Government in 2000 and came into force in 2001;
- Environmental Assessment (Scotland) Act 2005;
- European Landscape Convention (2000) – adopted in the UK in 2007;
- Marine and Coastal Access Act 2009;
- Marine (Scotland) Act 2010; and
- Historic Environment Scotland Act 2014.

3.2 Policy, plans and supporting documents

- UK Marine Policy Statement (2011);
- Planning Advice Note 2/2011: Planning and Archaeology (2011) (Scotland);
- Scottish Government *Our Place in Time - The Historic Environment Strategy for Scotland* (2014 - currently under review);
- Scottish National Marine Plan (2015 – NMP2 in consultation);
- Historic Environment Policy for Scotland (HEPS 2019);
- Historic Environment Scotland (HES) Circular 12 (2019); and
- National Planning Framework 4 (NPF4) (2023).

3.3 Key guidance

- *COWRIE Historic Environment Guidance for the Offshore Renewable Energy Sector*; (Wessex Archaeology, 2007);
- *Code of Practice for Seabed Development* (Joint Nautical Archaeology Policy Committee, 2008);
- *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties* (ICOMOS 2011);
- *Offshore Geotechnical Investigations and Historic Environment Analysis: Guidance for the Renewable Energy Sector* (Gribble and Leather, 2011);

- *Protocol for Archaeological Discoveries: Offshore Renewables Projects* (The Crown Estate 2014);
- *Environmental Impact Assessment Handbook: Guidance for competent authorities, consultation bodies, and others involved in the Environmental Impact Assessment process in Scotland* (HES and NatureScot 2018);
- *Standard and Guidance for Historic Environment Desk-Based Assessment* (CIfA 2020);
- *Designation Policy and Selection Guidance* (DPSG 2019);
- Historic Environment Circulars;
- HES *Managing Change in the Historic Environment* series;
- Key Agencies Group National and Major Developments: An Agency Joint Statement on Pre-application Engagement;
- Scottish Government Planning Advice Notes, in particular *Planning Advice Note 2/2011: Planning and Archaeology*; *Planning Advice Note 1/2013: Environmental Impact Assessment* (amended 2017); *Planning Circular 1/2017: Environmental Impact Assessment Regulations* (Scottish Government 2017);
- *Archaeological Written Schemes of Investigation for Offshore Wind Farm Projects* (The Crown Estate 2021);
- *Marine Geophysics Data Acquisition, Processing, and Interpretation: Guidance Note 2nd Edition* (Historic England, 2025); and
- *Managing Change in the Historic Environment: Conserving our Underwater Heritage* (HES, 2025).

3.4 Marine plans

3.4.1 The UK Marine Policy Statement (MPS) (2011) underpins other marine legislation in the UK and supports sustainable development in the UK marine area. The MPS sets out a shared vision for the whole UK marine area and provides a framework for the preparation of the emerging marine plans. The MPS sets out the approach to the historic environment, and states that:

"The view shared by the UK Administrations is that heritage assets should be enjoyed for the quality of life they bring to this and future generations, and that they should be conserved through marine planning in a manner appropriate and proportionate to their significance"[1].

3.4.2 In paragraph 2.6.6.8, the MPS further states that:

"The marine plan authority, working with the relevant regulator and advisors, should take account of the desirability of sustaining and enhancing the significance of heritage assets and should adopt a general presumption in favour of the conservation of designated heritage assets within an appropriate setting. The more significant the asset, the greater should be the presumption in favour of its conservation""[2].

3.4.3 The key legislation in the marine zone (seaward of MHWS) of Scotland is the Marine (Scotland) Act 2010, underpinned by the MPS (2011). In accordance with Part 2 of the Act, Scottish Ministers and public authorities must, in carrying out any statutory function which affects the Scottish marine area (being the area of sea within the seaward limits of the territorial sea (out to 12 nautical miles (NM)) of the UK adjacent to Scotland), act in a way best calculated to further

[1] MPS. 2011. Paragraph 2.6.6.3.
[2] MPS. 2011. Paragraph 2.6.6.8.

the achievement of sustainable development. This applies both to the marine planning functions and bodies as well as terrestrial planning functions made within the marine area.

3.4.4 The Marine (Scotland) Act 2010 refers to heritage specifically and sets out provision for the designation of Marine Protected Areas, including historic Marine Protected Areas (HMPAs).

3.4.5 The Scottish National Marine Plan (2015) covers both the Scottish inshore area (out to 12 NM) and the British EEZ adjacent to Scotland (12 to 200 NM). The National Marine Plan recognises that marine activities can affect the terrestrial environment and communities and therefore is consistent with the National Planning Framework 4. The National Marine Plan sets out policies in relation to heritage, in particular:

"GEN 6 Historic environment: Development and use of the marine environment should protect and, where appropriate, enhance heritage assets in a manner proportionate to their significance"[3].

3.4.6 The Scottish Marine Regions Order 2015 set out the boundaries of the 11 Scottish Marine Regions, which run from MHWS to 12 NM. The Proposed Development lies within the North East Marine Region. Regional plans for each of Scotland's marine regions are in development.

3.4.7 A detailed review of Scotland's National Marine Plan and compliance of its policies by the Proposed Development is presented by **Appendix 2 A: National Marine Plan Compliance Assessment** of the MEAp.

[3] https://www.gov.scot/binaries/content/documents/govscot/publications/strategy-plan/2015/03/scotlands-national-marine-plan/documents/00475466-pdf/00475466-pdf/govscot%3Adocument/00475466.pdf Pp. 19.

4.0 Aims and objectives

4.0.1 The overall aim of this assessment is to set out appropriate baseline data relating to the Proposed Development, in order that any impacts associated with the proposals can be properly identified and mitigated where necessary. Following best practice guidance, including HES[4] and the Chartered Institute for Archaeologists (CIfA[5]), this assessment has the following objectives:

- Identify designated and non-designated heritage assets within the Proposed Development;
- Identify the potential for previously unrecorded heritage assets to be present within the Proposed Development;
- Identify heritage assets in the surrounding area that may be affected by the proposals;
- Establish the significance of the remains; and
- Identify any biases, uncertainties and gaps within the data and make recommendations for further work where required.

[4] Historic Environment Scotland. 2018. *Environmental Impact Assessment Handbook, Version 5*. HES.

[5] Chartered Institute for Archaeologists. 2020. *Standard and guidance for historic environment desk-based assessment*. https://www.archaeologists.net/sites/default/files/CIfAS%26GDBA_4.pdf

5.0 Methodology

5.1 Consultation

5.1.1 Consultation was sought from key stakeholders regarding parts of the Proposed Development which fall within their respective areas of geographic coverage. Accordingly, HES and Aberdeenshire County Council were consulted during scoping.

5.1.2 In January 2024, a MEAp Non-Statutory Scoping Report was submitted to the Scottish Government Marine Directorate Licensing Operations Team (MD-LOT) as part of a pre-application consultation exercise for the Proposed Development. Responses to the Scoping Report from consultees were received on 15 July 2024. No response was received from any stakeholder regarding marine archaeology.

5.2 Scope

5.2.1 This Section provides an overview of the methods used to inform the assessment. The Study Area is described first, followed by data sources and detailed methods of the review.

5.2.2 The baseline assessment is primarily focused on known and potential remains relating to:

- Palaeolandscape and submerged prehistory;
- Maritime and coastal remains; and
- Aviation remains.

5.2.3 Onshore heritage assets are included in the discussion where these fall within the Study Area (see below), however, an assessment of settings in respect of onshore heritage assets is beyond the scope of this assessment.

5.3 Study Area

5.3.1 The study area for this assessment includes the Red Line Boundary (RLB) and a 2 km buffer measured from the outer boundary, within the marine zone (hereafter referred to as "the Study Area").

5.3.2 The detailed assessment extends to 200 m above MHWS, capturing archaeological data from the nearby terrestrial landscape with the potential to aid characterisation and interpretation of the marine archaeological character and potential for remains.

5.3.3 The marine archaeology Study Area is illustrated by Figure 1.

5.4 Sources

5.4.1 The baseline survey involved consultation of readily available archaeological and historical information from documentary and cartographic sources and repositories including:

- United Kingdom Hydrographic Office (UKHO) Wrecks, Obstructions and Fouls data: comprising records relating to charted wrecks and other seabed obstructions that are considered navigational hazards;
- HES data: World Heritage Sites, Historic Marine Protected Areas, Scheduled Monuments, Listed Buildings, Inventory of Historic Battlefields, Gardens and Designed Landscapes, Conservation Areas and Properties in Care records for Scotland;

- Canmore data: archaeological and historic environment records for onshore and offshore heritage assets; and
- Aberdeenshire Historic Environment Record (HER) data: archaeological and historic environment records for onshore and offshore heritage assets in Aberdeenshire; and
- Historic England National Record of the Historic Environment (NRHE) data: areas of historic interest, largely derived from the Aberdeenshire HER;
- List of wrecks designated under the Protection of Military Remains Act 1986 (digitised and available online via the government Marine Map portal[6]);
- British Geological Survey (BGS) data and reports;
- Existing geological, geophysical, and geotechnical information accessed via the BGS GeoIndex (Offshore)[7]; and
- Other secondary sources consulted include relevant literature from journals, publications and unpublished archaeological reports.

5.4.2 Primary, project-specific data was acquired from geophysical surveys of the nearshore and offshore sections. Preliminary geotechnical investigation was also undertaken in each section and the results combined with the geophysical interpretations in an integrated report. Further details of these and their contribution to the assessment can be found in Sections 6.0, 8.0, 9.0 and 10.0.

5.4.3 Further primary data was acquired through a walkover survey, undertaken at Sandford Bay, Aberdeenshire, on 5 August 2024. Two experienced archaeologists from MSDS Marine[8] inspected the intertidal zone within the RLB to ground truth the existing heritage records situated therein and identify any new sites, deposits or artefacts of archaeological interest. The results of this survey are presented in Section 11.6.

5.4.4 All sources have been used to develop an understanding of the heritage baseline within the Study Area throughout the Quaternary period up to the present day. This data is assessed and presented chronologically within the report, beginning with the potential for submerged prehistoric landscapes. These sources were assessed, and information compiled into gazetteers for the Study Area (Sections 1.0, 17.0 and 18.0).

5.5 Chronology

5.5.1 Three chronology systems are used when discussing archaeological remains or periods. These are as follows:

- Absolute dates: These are fixed dates that correspond with calendar years and are suffixed with BC (Before Christ) or AD (Anno Domini). For example, a date of 641 BC occurred 2,666 years ago and a date of 1066 AD occurred 959 years ago (correct as of 2025);
- Calibrated radiocarbon dates: these can either be presented as calendar dates or as the number of years before 1 January 1950 (before practical radiocarbon dating technology was available and before large-scale nuclear testing altered the global ratio of 14C to 12C, making dating subsequent to this date unreliable). For example, a date of 11,700 Before Present (BP) occurred 11,775 years ago (correct as of 2023) and could also be presented as 9,749 BC, noting that there is no ‘year zero’, so 1 is subtracted from each date; and

[6] https://explore-marine-plans.marineservices.org.uk/ Accessed 08 October 2024.
[7] BGS. Offshore GeoIndex. Accessed 08 May 2025 http://mapapps2.bgs.ac.uk/geoindex_offshore/home.html#
[8] Tony Brown, Principal Heritage Consultant, BA (Hons.) MSc MCIfA, 11+ years in industry, 2 with MSDS Marine; Ken Hamilton, Senior Heritage Consultant, BSc MSc PhD FSA MCIfA, 23+ years in industry, 1 with MSDS Marine.

- Uncalibrated radiocarbon dates: these are dates that are based on the radiocarbon dating that do not take fluctuations in 14C levels into account. These dates can be calibrated using a calibration curve to convert them into calendar dates.

5.5.2 This assessment will use both BP and BC dates. For events or sites that pre-date the Mesolithic (10,000 BP/8,000 BC), dates are usually given in BP. From the Mesolithic onwards dates are generally given in BC. In some cases, dates after the Mesolithic are provided in BP where environmental features and events are discussed, such as the development of the current coastlines of the UK in approximately 6,000 BP.

Archaeological periods and Quaternary chronology

5.5.3 The main archaeological periods discussed in Scotland are listed in Table 1 and are derived from HES's Scottish Archaeological Periods & Ages[9].

5.5.4 The Quaternary chronology of the UK is outlined in Table 2. Marine Isotope Stages (MIS) are alternating warm and cold periods derived from oxygen isotope data taken from deep sea core samples.

Archaeological Period	Sub-Period	Dates
Palaeolithic	Lower	970,000 – 300,000 BP
	Middle	300,000 – 45,000 BP
	Upper	45,000 – 12,000 BP
Mesolithic	Early	10,000 – 7000 BC[10]
	Late	7000 – 4000 BC
Neolithic	Early	4300 – 3500 BC
	Middle	3500 – 2900 BC
	Late	3000 – 2500 BC
Chalcolithic		2500 – 2200 BC
Bronze Age	Early	2200 – 1500 BC
	Middle	1500 – 1100 BC
	Late	1100 – 800 BC
Iron Age	Early	800 – 300 BC
	Middle	300 BC – 300 AD
	Late	300 – 500 AD
	Long (Scotland)	800 BC – 800 AD[11]

[9] https://heritagedata.org/live/schemes/scapa.html
[10] From the Mesolithic, BC is the standard date format.
[11] Interpretations of the date range of Scotland's Iron Age vary by individual researchers, with some arguing this continued up to the arrival of the Norse in the late 8th Century AD. See https://scarf.scot/regional/rarfa/the-iron-age-700-bc-ad-500/7-the-iron-age-700-bc-ad-500/

Archaeological Period	Sub-Period	Dates
Early medieval		400 – 1093 AD
Medieval		1093 – 1603 AD
Post-medieval		1603 – 1900 AD
Modern		1901 – Present

Table 1: Archaeological periods in the UK and Scotland

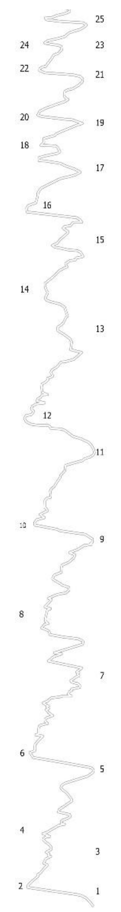
Stage			Age		Climate	Marine Isotope Stage		Epochs and Periods		
Main	Sub.		Start	End		Stages	Record			
Beestonian			970,000	936,000	Interglacial	25		Pleistocene	Early Pleisto.	Lower Palaeolithic
			936,000	917,000		24				
			917,000	900,000	Interglacial	23				
			900,000	866,000	Stadial	22				
			866,000	814,000	Sequence poorly understood but evidence for a series of small expansions of the British Ice Sheet marking at least 4 interstadials and 5 warm episodes.	21				
			814,000	790,000		20				
Bruhnes-Matuyama reversal (c. 780kBP) Cromerian Complex			790,000	761,000		19			Middle Pleistocene	
			761,000	712,000		18				
			712,000	676,000		17				
			676,000	621,000		16				
			621,000	563,000		15				
			563,000	524,000		14				
			524,000	478,000		13				
Anglian			478,000	424,000	Stadial	12				
Hoxnian			424,000	374,000	Interglacial	11				
Wolstonian/ Saalian complex	Unnamed		374,000	337,000	Stadial?	10				
	Purfleet		337,000	300,000	Interglacial	9				Middle Palaeolithic
	Early		300,000	243,000	Stadial?	8				
	Aveley		243,000	191,000	Interglacial	7				
	Late		191,000	123,000	Stadial	6				
Ipswichian			123,000	109,000	Interglacial	5e			Late Pleistocene	
Devensian	Early		109,000	96,000	Stadial	5d				
		Chelford	96,000	87,000	Interstadial	5c				
			87,000	82,000	Stadial	5b				
		Brimpton	82,000	71,000	Interstadial	5a				
			71,000	57,000	Stadial	4				Upper Pal
	Mid	Upton Warren	57,000	29,000	Interstadial	3				
	Late	Dimlington	29,000	14,700	Stadial	2				
		Windemere	14,700	12,900	Interstadial					
		Loch Lomond	12,900	11,700	Stadial					
Holocene			11,700	Present	Interglacial	1		Holocene		Meso.

Table 2: Later Quaternary chronology (based on Marshall et al. 2020[12], with dates from Lisiecki and Raymo, 2005[13]).

[12] Marshall, P., Bayliss, A., Grant, M., Bridgland, D.R., Duller, G., Housley, R., Matthews, I., Outram, Z., Penkman, K.E.H., Pike, A., Schreve, D. & Xuan, C. 2020. *6390 Scientific dating of Pleistocene sites: guidelines for best practice. Consultation Draft*. Swindon: Historic England.

[13] Lisiecki, L. E. & Raymo, M. E. 2005. 'A Pliocene-Pleistocene stack of 57 globally distributed benthic 18O records'. *Paleoceanography*. **20**(1).

6.0 Methodology: archaeological assessment of geophysical and hydrographic data

6.0.1 Primary data for the Proposed Development were acquired from geophysical and hydrographic surveys starting August 2023 and completing November 2024. This included the collection of Multibeam Echosounder (MBES) Bathymetry, Sidescan Sonar (SSS), Magnetometer and Sub-bottom Profiler (SBP) data.

6.1 Data collection

6.1.1 The Proposed Development's survey strategy divided the routes into nearshore and offshore blocks (see Figure 1), with nearshore categorised as water depths below 30 m and offshore categorised as water depths deeper than 30 m. Blocks were surveyed by Next Geosolutions Ltd (NextGeo). Survey operations were undertaken during 2023 and 2024[14] [15].

6.1.2 Survey operations utilised multiple survey vessels, all of which were mobilised with SSS, MBES, Magnetometer and SBP (combination of Parametric and Sparker). The SSS, Magnetometer and Sparker were towed behind the vessel, the MBES and Parametric SBP were mounted to the vessels.

6.1.3 The survey was planned with 30 m line spacing for the nearshore blocks and 70 m line spacing for the offshore blocks. The line spacing was planned to achieve 100% coverage of SSS and 100% coverage of MBES data, with sufficient overlap between lines. In addition, SBP and Magnetometer data were collected along each of the survey lines.

6.1.4 The survey equipment used varied between each of the vessels, however all equipment was of a similar specification. An example specification (*Levoli* – EGL 3 offshore) is provided below in Table 3.

Sensor	Manufacturer	Model	Frequency
Sidescan Sonar	Edgetech	4200	300/600 kHz
Multibeam	R2Sonic	2026	450 kHz
Magnetometer	Geometrics	G-882	4 to 6 m altitude
Parametric SBP	Innomar	SES-2000 Standard	6 kHz
Sparker	Geo Marine	GeoSpark Spark	0.3 to 1.2 kHz

Table 3: Geophysical and hydrographic sensor specifications

[14] NextGeo. (2024a). *Volume 1 - Field Results Report Nearshore Geophysical Survey EGL3.* Unpublished report P2101-010-REP-001-NSH-EGL3 Rev. C2.
[15] NextGeo. (2024b). *Volume 1 - Results Report Offshore Geophysical Survey.* Unpublished report P2101-010-REP-001-OFS Rev. C3.

6.1.5 The data were collected to a specification appropriate to achieve the following interpretation requirements:

- Sidescan Sonar: ensonification of anomalies > 0.5 m;
- Multibeam Bathymetry: ensonification of anomalies > 1.0 m;
- Magnetometer (TVG): 5.0 nT threshold for anomaly picking;
- Parametric Sub-bottom Profiler (SBP): penetration > 5.0 m was achieved; and
- Sparker: penetration > 25 m was achieved.

6.2 Positioning

6.2.1 All data were collected with reference to the European Terrestrial Reference System 1989 (ETRS89) datum and Universal Transverse Mercator (UTM) Zone 30 North projection (ETRS89 Z30N). All vertical depths are relative to lowest astronomical tide (LAT) and were reduced to LAT using Vertical Offshore Reference Frames (VORF).

6.2.2 Towed sensors were positioned using an Ultra Short Baseline (USBL) positioning system to ensure positional accuracy throughout the survey. USBL ensures the actual position of the sensor is recorded, as opposed to when the position is estimated based upon the direction of the vessel and the amount of cable out (layback).

6.2.3 Although the accuracy of the USBL system is dependent on the angle, and the distance of the beacon from the transceiver, tolerances of between 0.5 m and 2.0 m can be achieved. Positional accuracy is further increased through the correlation of the SSS dataset with the MBES dataset.

6.2.4 Surface and sub-sea position sensor specifications varied between each of the vessels, however, all equipment was of a similar specification. An example specification (*Levoli* – EGL 3 offshore) is provided below in Table 4.

Sensor	Manufacturer	Model	Accuracy
Surface positioning	iXBlue	Octans 3000	Roll / pitch 0.008° Heading 0.02° Position 0.01 m
Sub-sea positioning	Kongsberg	HiPAP	0.06% slant range

Table 4: Positioning sensor specifications

6.3 Data deliverables to MSDS Marine

6.3.1 MSDS Marine were provided with the survey deliverables by NGET, including both raw and processed data, alongside interpretations and operations reports. The primary deliverables are detailed in Table 5, below.

Sensor	Data type	Format
Sidescan Sonar	Raw lines (LF and HF)	.xtf
	Processed lines (HF)	.xtf
	Mosaic (HF) 0.25 ppm	.tif
	Contacts	.shp
Sub-bottom Profiler	Raw lines	.sgy
	Processed lines	.sgy
	Isopach	.shp
	Horizons	.tif
Magnetometer (TVG)	Raw lines	.csv
	Grids	.tif
	Contacts	.csv
Multibeam Bathymetry	Raw lines	.xyz
	Grids (at 0.5 m)	.xyz
	Mosaic (at 0.5 m)	.tiff
GIS	Geodatabase	.gdb
Reports	Interpretation report	.pdf
	Operations report	.pdf
	Mobilisation report	.pdf

Table 5: Data deliverables to MSDS Marine & MSDS Heritage

6.4 Data quality and limitations

Sidescan Sonar (SSS)

6.4.1 The SSS data covered the extents of the pre-defined survey blocks, providing coverage of greater than 100% (of the area of the survey blocks), except for Block B008 (see below). The data were generally of good quality, with minimal interference or data degradation caused by environmental factors, or the simultaneous use of different sensors.

6.4.2 Some small horizontal offsets were noted in places between the SSS and MBES data, although these were not significant and were within what would be considered normal tolerances.

However, where visible the positions of anomalies were taken from the MBES data to ensure positional accuracy.

6.4.3 Prominent features, such as ripples and sand waves, can cause obstructions to the line of sight of sonar data, in particular the SSS, the data from which is collected closer to the seabed. Typically, this is mitigated through the collection of high resolution MBES data which ensonifies the seabed from above.

6.4.4 No SSS data for Block B008 (see Figure 1) were available for review and archaeological interpretation was undertaken using MBES and Magnetometer data only. Given the nature of the seabed and visible anomalies, the impact of this on the quality of archaeological interpretation is negligible.

Multibeam Bathymetry (MBES)

6.4.5 The MBES data covered the extents of the pre-defined survey blocks, providing coverage of 100%. A review of the un-gridded point cloud data shows that the quality is good with no significant height or positioning errors that effect the overall dataset. The data density is good, and the data is able to be gridded to 0.25 m, increasing the ability to identify smaller features. Features identified within the MBES data generally correlate well with those identified in the SSS data.

6.4.6 MBES data is considered to provide the most accurate positioning due to the direct, and fixed, correlation between the sensor, the Differential Global Positioning System (DGPS) antennas, and the Motion Reference Unit (MRU) and is the primary source of anomaly positioning.

Magnetometer

6.4.7 The Magnetometer data covered the extents of the pre-defined survey blocks and was collected along the pre-defined survey line plan. The data were sampled at 10 Hz and the data were suitable to identify anomalies with a peak-to-peak amplitude of 5 nT. It should be noted that the 30 - 70 m line spacing achieved is too great for the accurate positioning of magnetic anomalies at distances away from the tracklines but can indicate areas of archaeological potential or can be correlated with visible feature on the seabed that lie on the same plane. Due to the line spacing it is likely that buried ferrous material, particularly smaller objects, between the run lines will not have been identified within the data.

6.4.8 However, the Magnetometer data is considered be of a sufficient specification to enable a robust assessment to be undertaken for the purposes of the MEAp.

6.4.9 Magnetic anomalies were visible in the dataset that relate to existing offshore infrastructure such as cables or pipelines. These are typically characterised by long, straight lines of anomalies, with or without a surface expression. Where an anomaly is clearly identifiable as relating to infrastructure it is removed from the dataset.

Sub-bottom Profiler (SBP)

6.4.10 The SBP data covered the extents of the pre-defined survey blocks. The Parametric data generally achieved penetration to > 5.0 m at a vertical resolution of 0.15 m. The Sparker data were collected at a lower frequency (varied throughout the survey) and generally achieved penetration to > 25 m at a vertical resolution of 0.15 m.

6.4.11 The data were of good quality, and the combination of the high resolution, shallow penetration and the lower resolution, deeper penetration systems allowed for an effective assessment of the palaeolandscape and the archaeological potential.

6.4.12 SBP data is collected directly beneath the sensor, in general terms, and outside the identification of the palaeolandscape, SBP is not suited to the prospection for buried material of potential anthropogenic origin due to the wide line spacing. It can however be useful for the corroboration of other datasets where a trackline passes directly over a magnetic anomaly, or a potentially buried feature, visible in the SSS or MBES data.

Summary

6.4.13 The data collected across the extents of the pre-defined survey boundary are of good quality overall, with the MBES providing 100% coverage and the SSS providing 100% (of all survey blocks except for Block B008). SBP data were collected to a pre-determined line plan, largely providing suitable coverage and penetration for the interpretation of the palaeoenvironment. The Magnetometer data were collected to a pre-determined line plan suitable for the identification of ferrous material with a peak-to-peak amplitude of 5.0 nT, with the minimum detection size increasing with distance from the tracklines.

6.4.14 The data are considered of an appropriate specification, coverage, and quality, to undertake a robust archaeological assessment to inform the MEAp process, noting that additional data collection and interpretation may be required prior to construction.

6.5 Archaeological assessment of data

6.5.1 The archaeological assessment of data was undertaken by a qualified and experienced maritime archaeologist with a background in geophysical and hydrographic data acquisition, processing and interpretation.

6.5.2 Following delivery of the required datasets, an initial review was undertaken to gain an understanding of the geological and topographic make-up of the survey area. Within the extent of the survey area the potential for variations in the seabed are high and can affect the interpretation of anomalies. The assessment considers the full extents of the survey data, which was collected within pre-defined survey blocks. The assessment of desk-based sources was undertaken within the extents of the survey data, relating to seabed wrecks and obstructions and historic environment assets, wrecks and documented sightings/experiences of historic wrecks. These data are used to inform of known wrecks or the likelihood of encountering physical remains relating to such.

6.5.3 Whilst some of the data extends beyond the pre-defined survey blocks, the purpose of the assessment is to characterise the historic environment and therefore data from the wider area were considered.

Sidescan Sonar (SSS)

6.5.4 SSS is considered the best tool for the identification of anthropogenic anomalies on the seabed due to the ability to ensonify small features and as such forms the basis of any archaeological assessment of data. SSS data in .xtf format were imported into Moga Seaview 6.5 software, navigation and positioning were checked and corrected where required, and optimal gains were applied to ensure the consistent presentation of data.

6.5.5 Data were reviewed on a line-by-line basis, and all anomalies of potential anthropogenic origin identified and recorded. Records include at a minimum an image of the anomaly, dimensions, and a description. Whilst typically only images of medium and high potential anomalies are presented with the assessment report, images of all anomalies are recorded as interpretations can change as the data assessment progresses. A rating of archaeological potential was assigned to the anomaly following the criteria outlined in Table 6 below.

6.5.6 Following assessment of the individual lines, a mosaic was created and a Geotiff exported to allow for the checking of positional accuracy against the MBES data and to identify the extents of any anomalies that may have extended past the limits of individual lines.

Multibeam Bathymetry (MBES)

6.5.7 Due to the minimum anomaly detection size of MBES data being larger than that of SSS data, the primary use during archaeological assessment, outside of seabed characterisation, is the corroboration of anomalies identified within other datasets and the visualisation of anomalies that may otherwise be obscured by shadow.

6.5.8 Navigation corrected, but unprocessed, MBES data were provide to MSDS Marine as .xyz files, the data were imported into QPS Fledermaus where it was gridded and exported as a depth embedded raster, the raster was imported into ArcGIS Pro 3.5 and a hill-shaded surface applied, shading was adjusted to ensure the optimal presentation of data. The resulting 3-Dimensional (3D) image was viewed on a block-by-block basis, and all anomalies of potential anthropogenic origin identified and recorded.

6.5.9 Records include, at a minimum, an image of the anomaly, dimensions and a description. A rating of archaeological potential was assigned to the anomaly following the criteria outlined in Table 6 below. Where the interpretation of an anomaly was unclear, the data were imported into point cloud visualisation software such as Cloud Compare, in order to view the un-gridded data. The gridded surface image was exported as a Geotiff to allow further assessment alongside other datasets.

Magnetometer

6.5.10 Magnetometer data indicates the presence of ferrous, and thus usually anthropogenic, material both on, and under the seabed. Where line spacing allows, typically to a specification for the detection of potential UXO, Magnetometer data can provide accurate positions of buried ferrous anomalies. The survey line spacing is between 30 – 70 m which is too great for the accurate positioning of magnetic anomalies at distances away from the tracklines but can indicate areas of archaeological potential. Where possible, magnetic anomalies were correlated with anomalies visible on the seabed.

6.5.11 Magnetometry data were provided as .csv files and as a gazetteer detailing all anomalies greater than 5.0 nT. An assessment was made by MSDS Marine as to the suitability of the gazetteer for archaeological interpretation. Where required the .csv Magnetometer data were imported into Moga Seaview 6.5 software where the data were smoothed, and a 'baseline' identified and removed from the data to highlight ferrous anomalies whilst taking into account geological variations in the data.

6.5.12 Magnetic anomalies identified within the data had the position, amplitude, and dimensions recorded. A rating of archaeological potential was assigned to the anomaly following the criteria outlined in Table 6 below. The data were gridded to visually identify areas where the distribution of anomalies may represent a wider feature such a buried but dispersed wreck, or modern features such as buried cable or chain.

Potential	Criteria
Low	An anomaly potentially of anthropogenic origin but that is unlikely to be of archaeological significance – Examples may include discarded modern debris such as rope, cable, chain, or fishing gear; small, isolated anomalies with no wider context; or small boulder-like features with associated Magnetometer readings.
Medium	An anomaly believed to be of anthropogenic origin but that would require further investigation to establish its archaeological significance – Examples may include larger unidentifiable debris or clusters of debris, unidentifiable structures, or significant magnetic anomalies.
High	An anomaly almost certainly of anthropogenic origin and with a high potential of being of archaeological significance – high potential anomalies tend to be the remains of wrecks, the suspected remains of wrecks, or known structures of archaeological significance.

Table 6: Criteria for the assessment of archaeological potential

6.6 Palaeolandscape and Sub-Bottom Profiler sources

6.6.1 Several data sources were used for the assessment. The principal sources which were reviewed and assessed are set out below, while other published sources are referred to in-text.

6.6.2 The data available for the Study Area includes:

- Site-specific MBES data collected by NextGeo;
- Site-specific Parametric SBP data collected by NextGeo and achieving up to 5 m penetration;
- Site-specific Sparker SBP data collected by NextGeo and achieving up to 25 m penetration;
- Interpretation reports, comprising:
    - Nearshore Geophysical Survey[16];
    - Offshore Geophysical Survey[17];
- Preliminary geotechnical results reports, comprising:
    - Geotechnical Survey (offshore)[18];
    - Geotechnical Laboratory Testing (nearshore)[19];
- Boreholes, cores, and seismic data collected by the British Geological Survey (BGS) containing evidence which has fed into publications, online databases, and maps, including:
    - BGS. 1984. *"Marr Bank" Map Sheet 56°N-02°W*. Solid Geology 1:250,000 Series;
    - BGS. 1985. *"Marr Bank" Map Sheet 56°N-02°W*. Quaternary Geology 1:250,000 Series;
    - BGS. 1984. *"Marr Bank" Map Sheet 56°N-00°E*. Seabed Sediment 1:250,000 Series;

[16] NextGeo. 2024a.
[17] NextGeo. 2024b.
[18] NextGeo. 2023. *Volume 2 - Field Results Report - Geotechnical Survey - OFS*. Unpublished report P2101-010-REP-002-OFS Rev. C3.
[19] NextGeo. 2025. *Volume 3 - Results Report - Geotechnical Laboratory Testing - NSH-EGL3*. Unpublished report P2101-010-REP-003-NSH-EGL3 Rev. C1.

  - BGS. 1982. *"Peterhead" Map Sheet 57°N-02°W*. Solid Geology 1:250,000 Series;
  - BGS. 1985. *"Peterhead" Map Sheet 57°N-02°W*. Quaternary Geology 1:250,000 Series;
  - BGS. 1984. *"Peterhead" Map Sheet 57°N-02°W*. Seabed Sediment 1:250,000 Series;
  - Gatliff, et al. 1994. T*he geology of the central North Sea – United Kingdom offshore regional report*. London: HMSO (abbreviated in this assessment as the "ORR" (Offshore Regional Report));
- Other studies and research reports, including:
  - Brooks *et al*. 2011. 'The Palaeogeography of Northwest Europe during the last 20,000 years'. *Journal of Maps* 7:1, pp. 573-587; and
  - Shennan *et al*. 2018. 'Relative sea-level changes and crustal movements in Britain and Ireland since the Last Glacial Maximum'. *Quaternary Science Reviews* 188, pp. 143-159.

6.7 Palaeolandscape and Sub-Bottom Profiler interpretation

6.7.1 Whilst the interpretation of the palaeolandscape is based upon the archaeological review of geophysical and hydrographic data, the method of assessment, the assessment criteria and the best practice mitigation strategies differ from those presented in the preceding sections and thus it is detailed separately for clarity.

6.7.2 Sub-surface data acquired from seismic and geotechnical surveys is key to understanding the palaeolandscape potential of the Proposed Development. These data have been assessed to identify ground conditions and the interpretations fed into the assessment of archaeological potential. Seismic data was gathered using Parametric and Sparker SBP sensors. The Parametric SBP used high frequency (*c*. 6 kHz) to produce high vertical resolution data with shallow penetration, whilst the Sparker SBP used low frequency (*c*. 0.3 to 1.2 kHz) to produce lower vertical resolution data with deeper penetration.

6.7.3 Sedimentary units have been identified within the seismic data based on their seismic character and likely depositional environment and tentatively correlated with known geological formations in the area, where possible. The basal horizon of each sedimentary unit has been mapped to feed into the ground model and grids have been exported from the ground model for this assessment. From an archaeological perspective, the ground model provides insight into the potential geological formations within the Study Area and their likely depositional environment, informing the assessment of the palaeolandscape through time and corresponding archaeological potential.

6.7.4 Sedimentary unit grids and geological maps derived from the interpretation of surface and sub-surface data were assessed alongside existing studies contributing to the understanding of the palaeolandscape and prehistoric archaeological potential within the region. An archaeological review of the geophysical survey assessment and ground model was undertaken by MSDS Marine. This included a review of geophysical survey data reports, raw seismic profiles and the ground model outputs, including mapped horizons and grids.

6.7.5 These sources were reviewed to establish an understanding of the geological make-up of the Study Area, formations present and their palaeoenvironmental and archaeological potential. Information about the wider area has also been used to better contextualise the various environments experienced in the area during the Pleistocene and Holocene.

6.8 Methodology: assessment of significance

6.8.1 The UK Marine Policy Statement indicates that authorities should take account of the particular nature of the interest in the (heritage) assets and the value they hold for this and future generations. The Scottish National Marine Plan (2015) conforms with the UK Marine Policy Statement, and sets out policies in relation to heritage, in particular GEN 6 Historic environment: "*Development and use of the marine environment should protect and, where appropriate, enhance heritage assets in a manner proportionate to their significance*".

6.8.2 Both designated and non-designated heritage assets can hold significance. Significance relates to several factors, including, for example, whether the receptor is rare, has protected status or has importance at a local, regional, national or international scale. Designated heritage assets, such as Historic Marine Protected Areas, have high value. For non-designated remains, significance is assessed with reference to several guidance documents, including Historic Environment Scotland's *Designation Policy and Selection Guidance*[20] and relevant research frameworks[21].

[20] Historic Environment Scotland. 2019. *Designation Policy and Selection Guidance*. Edinburgh: Historic Environment Scotland.
[21] Scottish Archaeological Research Framework. https://scarf.scot/national/ Accessed 12 May 2025.

7.0 Baseline Assessment

7.1 Summary of heritage assets

7.1.1 This sub-section summarises the known archaeological resource within the Study Area.

Designated Heritage Assets

7.1.2 No designated heritage assets lie within the marine zone of the RLB or Study Area. Marine designated assets include:

- Scheduled Monuments;
- Remains designated under the Protection of Military Remains Act 1986; and
- Historic Marine Protected Areas.

7.1.3 Part of one Scheduled Monument, and parts of three Conservation Areas, lie within the terrestrial part of the Study Area, listed below and shown by Figure 2:

- Scheduled Monument:
  - Boddam Castle (Designation Ref: SM3252);
- Conservation Area:
  - Boddam (Des. Ref: CA428);
  - Peterhead Central (Des. Ref: CA427); and
  - Peterhead Roanheads (Des. Ref: CA426).

7.1.4 In addition, 104 Listed Buildings lie within the terrestrial part of the Study Area. All additionally lie within one of the three represented Conservation Areas, with the exception of Buchanness Cottage, Boddam (Des. Ref: LB16366). These assets are included in Section 1.0 - Annex E and illustrated by Figure 2.

7.1.5 No World Heritage Sites, Battlefields, Gardens and Designed Landscapes or Properties in Care are recorded within the Study Area.

Non-Designated Heritage Assets

7.1.6 The assessment has identified 998 non-designated heritage assets within the Study Area, comprising:

- Twenty-three (23) UKHO records;
- Two hundred and eighty-one (281) Canmore maritime records;
- One hundred and seventy (170) Canmore point records;
- Two (2) Canmore area records;
- Two hundred (200) Aberdeenshire HER records;
- Three hundred and fourteen (314) HER records for maritime losses (documented losses); and
- Eight (8) NRHE areas.

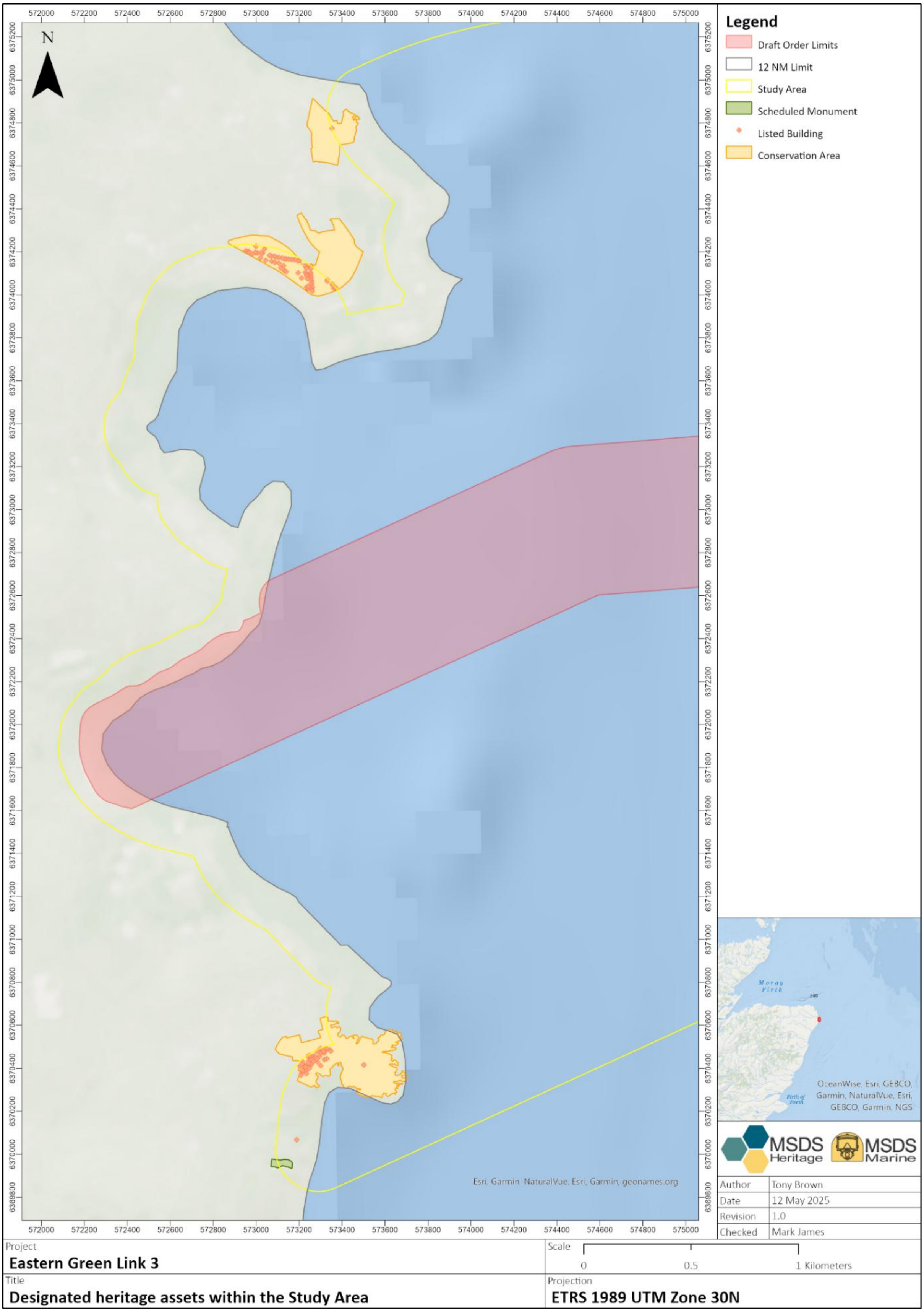


Figure 2: Designated heritage assets within the Study Area

8.0 Submerged prehistory

8.0.1 This section examines a wide range of geological and archaeological data to establish the baseline for the known early prehistoric (Palaeolithic and Mesolithic; *c*. 970,000 to 6,000 BP) resource within the Study Area and potential for as-yet undiscovered remains. Although submerged at present, the Study Area was sub-aerially exposed during much of early prehistory, offering opportunities for hominin and animal occupation.

8.1 Geology

8.1.1 The geology of the Study Area is discussed in two sub-divisions: pre-Quaternary bedrock and Quaternary deposits.

Pre-Quaternary bedrock

8.1.2 Bedrock within the Study Area is characterised by north-south aligned bands, becoming slightly more complex in the nearshore zone. This arrangement is illustrated by Figure 3. Geologies traversed by the Study Area are summarised below (from south to north):

- Palaeocene rocks (mudstone, sandstone and lignite);
- Chalk Group (chalk);
- Cromer Knoll Group (siliciclastic, argillaceous rock);
- Triassic rocks (siliciclastic, argillaceous rock and sandstone);
- Permian rocks (mudstone and gypsum stone);
- Old Red Sandstone Supergroup (conglomerate);
- Southern Highland Group (metasedimentary rock);
- Argyll Group (metasedimentary rock); and
- Unnamed igneous intrusion (micro-gabbroic or granitic rock).

8.1.3 Faulting is common within the surrounding bedrock, generally aligned northwest-southeast or northeast-southwest. Several north-east-southwest aligned faults are mapped crossing the Study Area.

Quaternary Deposits: Overview

8.1.4 The Quaternary period of geologic history began *c*. 2,588,000 years ago and continues into the present[22], thus encompassing the known period of hominin existence in the British Isles. Quaternary deposits therefore have the potential to contain evidence of hominin activity and other remains of archaeological interest.

8.1.5 The Quaternary geology of the North Sea is complex, having been influenced by a series of stadials, interglacials and interstadials over the past million years (Table 2). Archaeological potential for a deposit is therefore attained by correlating several factors, principally:

- Environmental conditions;
- Post-depositional processes; and
- Hominin presence/activity.

[22] https://www.britannica.com/science/Quaternary

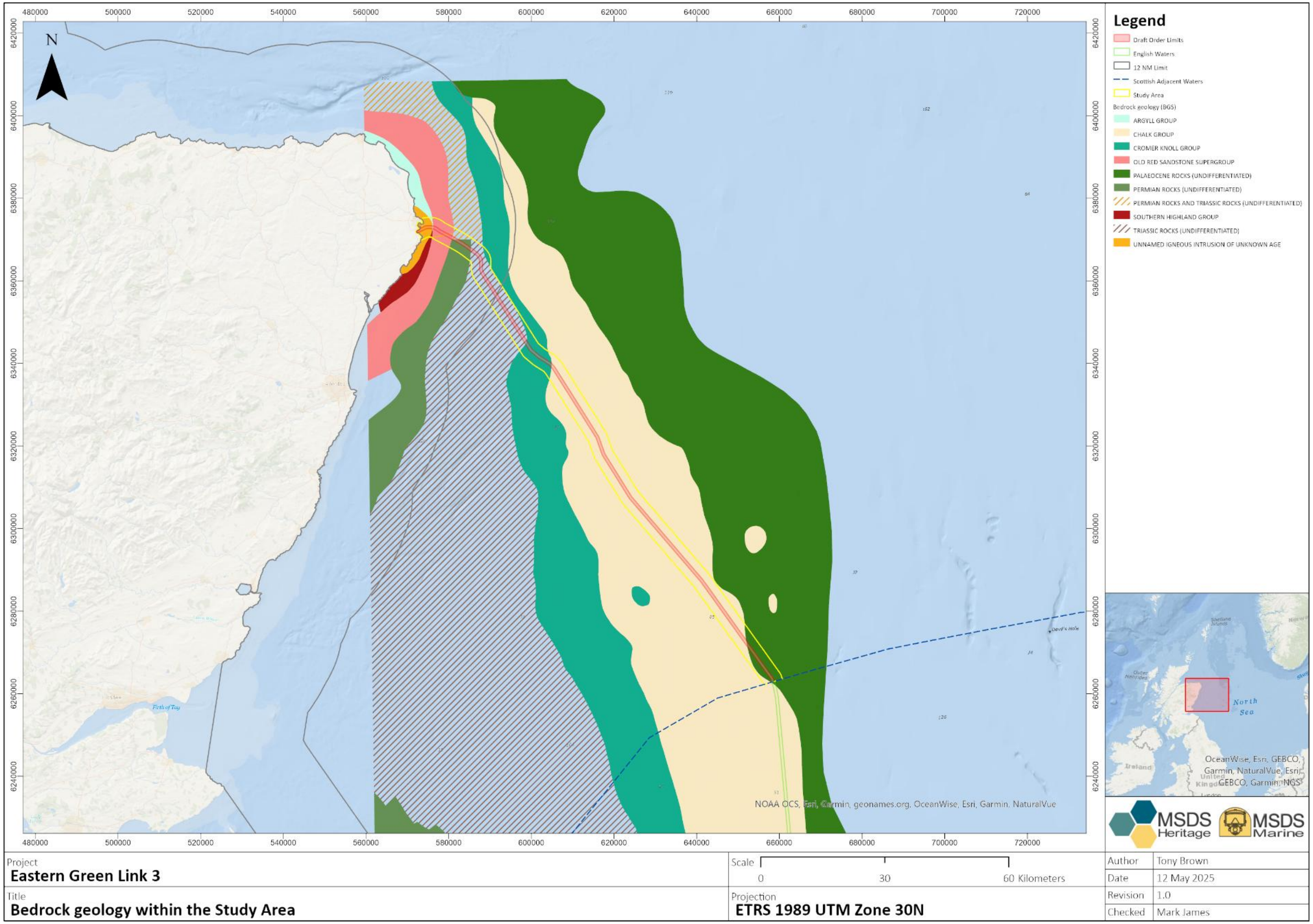


Figure 3: Bedrock geology within the Study Area

8.1.6 The geology of the Study Area has been examined by a range of studies, which have been consulted to inform this assessment. The principal sources are the BGS offshore regional reports (ORR):

- Cameron *et al*. 1992. *The geology of the southern North Sea*[23] (51° N to 55° N);
- Gatliff *et al*. 1994. *The geology of the central North Sea*[24] (55° N to 58° N – only up to 57° 30' N west of 0°); and
- Andrews *et al*. 1990. *The geology of the Moray Firth*[25] (57° 30' N to 57° 30' N – from 58° N east of 0°).

8.1.7 Primary data has been acquired for the RLB, including seismic data to inform sub-seabed geological interpretation. Reports accumulating and interpretating the sub-seabed geology have been reviewed for this assessment:

- Nearshore Geophysical Survey (NextGeo, 2024a[26]);
- Offshore Geophysical Survey (NextGeo, 2024b[27]);
- Geotechnical Survey (offshore) (NextGeo, 2023[28]);
- Geotechnical Laboratory Testing (nearshore) (NextGeo, 2025a[29]); and
- Integrated Geophysical and Geotechnical Survey Report (NextGeo, 2025b[30]).

8.1.8 The geologic discussion within this Section was initially guided by review of the preliminary interpretations of site-specific geophysical and geotechnical data, presented by the reports listed above, and accompanying seismic section charts, examined alongside wider literature, including BGS geological mapping and published reports and other academic literature.

8.1.9 Dissemination of the integrated survey report and preliminary results of Stage 1 and 2 geoarchaeological analysis of geotechnical cores has informed a revised discussion of the identified and anticipated Quaternary sequence and archaeological potential, presented by this assessment.

8.1.10 The scope of each of the reports has guided the presentation of the discussion of this Section:

- EGL 3 Nearshore: Blocks B007, B008 and B024 (KP 576.5 to 580.5); and
- EGL 3 Offshore: Blocks B068 to B082 (KP 436-576.5).

8.1.11 The shapefiles informing the layout and reproduced in relevant figures are as follows:

- Block plan: P2101_EGL3_BLOCKS_POL_20240521_rev00; and
- KPs: P2601_EGL3_KP_ETRS89_UTM30N_Rev9.

---

[23] Cameron, T.D.J., Crosby, A., Balson, P.S., Jeffery, D.H., Lott, G.K., Bulat, J. and Harrison, D.J. 1992. *The geology of the southern North Sea. United Kingdom offshore regional report.* London: HMSO for the British Geological Survey.
[24] Gatliff, R.W., Richards, P.C., Smith, K., Graham, C.C., McCormac, M., Smith, N.J.P., Long, D., Cameron, T.D.J., Evans, D., Stevenson, A.G., Bulat, J. and Ritchie, J.D. 1994. *The geology of the central North Sea. United Kingdom offshore regional report.* London: HMSO for the British Geological Survey.
[25] Andrews, I.J., Long, D., Richards, P.C., Thomson, A.R., Brown, S., Chesher, J.A. and McCormac, M. 1990. *The geology of the Moray Firth. United Kingdom offshore regional report.* London: HMSO for the British Geological Survey.
[26] NextGeo. 2024a. *Volume 1 - Field Results Report Nearshore Geophysical Survey EGL3*. Unpublished report P2101-010-REP-001-NSH-EGL3 Rev. C2.
[27] NextGeo. 2024b. *Volume 1 - Results Report Offshore Geophysical Survey*. Unpublished report P2101-010-REP-001-OFS Rev. C3.
[28] NextGeo. 2023. *Volume 2 - Field Results Report - Geotechnical Survey - OFS*. Unpublished report P2101-010-REP-002-OFS Rev. C3.
[29] NextGeo. 2025a. *Volume 3 - Results Report - Geotechnical Laboratory Testing - NSH-EGL3*. Unpublished report P2101-010-REP-003-NSH-EGL3 Rev. C1.
[30] Nextgeo. 2025b. *Volume 4 – Integrated Geophysical & Geotechnical Survey report – EGL3*. Unpublished report P2101-010-REP-004-EGL3 Rev. C2.

Unit		Formation	Lithology		Depositional environment	Age
MSDS	(NextGeo, 2024a, 2024b)		BGS	NextGeo, 2024b NextGeo, 2025b (in bold)		
1	1a	Surficial sediments	-	Sand, with gravel in different proportions. Locally containing shells, pebbles or Cobbles/boulders. Occasional clay lenses occur. Potentially mobile sediments. **As above.**	Marine.	Holocene; MIS 1
2A	1b	St Andrews Bay Member, Forth Formation	West: interbedded sands and clays. East: pebbly muds and shelly sands.	Soft to firm, brown to reddish clay, containing sand and gravel. **As above.**	Shallow marine, possibly beach and/or fluviomarine.	Early Holocene; MIS 1
2B	1c			Interbedded sand and clay. Possibly former coastal sandbar. **As above.**		
2D	1d	Largo Bay Member, Forth Formation	Inshore: muds and silty muds. Offshore: silts and very fine-grained sands, becoming coarser-grained and pebbly seawards, with shell and wood fragments.	Silty, sandy clay, often containing shell fragments, laminated, soft to firm clay, with an occasional gravel component. **As above.**	Can occur regionally as estuarine to offshore marine. Geoarchaeological analysis has interpreted Unit 2D as glaciomarine to marine in origin.	Late Devensian; MIS 2
3	2a	Marr Bank Formation	Sands, with gravelly layers and sporadic wood fragments and clay balls. Muddy sediments to northwest of distribution.	Sand with gravel. Component of firm to stiff clay, with cobbles/boulders. **No interpretation.**	Shallow glaciomarine.	
	2b			Dense sand and gravel. Occasional clay layers/lenses. Cross-laminated relict bedforms similar to sand bars or ridges. **No interpretation.**		
4B	2d	Wee Bankie Formation	Diamicton, with interbeds of sand, pebbly sand and silty clay.	Glacial deposit/till. Unsorted sediment, soft to stiff clay, with interbeds of sand and pebbly sand and layers/lenses of coarse sand and gravel. **As above.**	Glacigenic.	
4C	Palaeochannel	Possible Wee Bankie and/or Marr Bank formations	N/A	No interpretation. **As above.**	Likely glacigenic and glaciomarine.	

Unit		Formation	Lithology		Depositional environment	Age
MSDS	(NextGeo, 2024a, 2024b)		BGS	NextGeo, 2024b NextGeo, 2025b (in bold)		
5	3	Coal Pit Formation	Upper member: stiff, shell-rich, laminated clay, with scattered pebbles. Lower member: interbedded sand and stiff clay, with shells, pebbles and wood fragments.	Often stratified unit containing usually stiff clay, silt, sand, gravel, pebbles and boulders. **No interpretation.**	Mostly glaciomarine; upper member locally interpreted as intertidal.	Late Wolstonian to Mid-Devensian; MIS 6 to 3
9	4	Aberdeen Ground Formation	Delta-front facies: sands interbedded with muds. Pro-delta and marine facies: interbedded sand, silt, silty clay and clay. Nearshore facies: channel lag deposits and sub-tidal sands.	Glacial deposit/till. Unsorted, often stratified, sediment containing stiff clay, sand, gravel, pebbles and boulders. **As above.**	Delta-front/pro-delta/nearshore/open marine	Tiglian to Cromerian; MIS 100 to 13

Table 7: Quaternary units provisionally identified within the Red Line Boundary

8.1.12 The provisional interpretation of geological units within the RLB is presented by Table 7. Numbering of units for the purposes of this assessment has followed the example set by the baseline assessment for English waters[31], ensuring continuity between the interpretations on a project-by-project basis. Thus, the numbering of units demonstrated by Table 7 is not intended to be sequential and absent numbers simply reflect where certain units identified within English waters of the Project have not been identified in Scottish waters.

Unit 1: Surficial sediments

8.1.13 Unit 1 represents the surficial seabed sediments, principally comprising marine sands with varying proportions of gravel and clay, shell, pebble, cobble and boulder inclusions. Acoustically, Unit 1 is generally transparent, displaying some laminations.

8.1.14 These surficial sediments were laid down in marine conditions of the Holocene (MIS 1) and there is evidence of active mobility. Sandwaves also frequently characterise Unit 1.

8.1.15 Interpretation of this Unit for the nearshore and offshore sections suggest the potential for elements of Unit 1 to comprise Forth Formation sediments[32] [33] [34].

8.1.16 Unit 1 has been interpreted from KP 452 as a discontinuous veneer, generally not exceeding 0.5 m thick. This discontinuity continues northwards for the remainder of the RLB, although the thickness of Unit 1 occasionally reaches *c*. 5 m, particularly where represented by sandwaves.

8.1.17 In Block B024 of the nearshore, Unit 1 measures up to 4 m thick, thinning landward to no greater than 0.5 m within Block B008. The nearshore zone demonstrates variable distributions of Unit 1, due to difference in vertical resolution of the sensors (Parametric <0.2 m; Sparker 0.5 to 0.8 m). Areas of outcropping granitic bedrock were identified, with sedimentary cover generally thin and sparse.

8.1.18 No deposits relating to Unit 1 were found to be of geoarchaeological interest during the Stage 1 and 2 analyses.

Units 2A and 2B: St Andrews Bay Member, Forth Formation

8.1.19 Unit 2A has been provisionally correlated with the St Andrews Bay Member of the Forth Formation. Regionally, offshore deposits of the St Andrews Bay Member comprise interlaminated silts and clays. Where occurring as a channel fill, the composition appears as an upward sequence from gravelly, muddy sands to silty clays[35]. Within the RLB, Unit 2A is characterised as soft to firm clay, containing sand and gravel[36]. The Member was laid down during the Early Holocene (MIS 1) in fluvial to marine conditions.

8.1.20 The St Andrews Bay Member generally appears within the nearshore zone north of 55° N. A larger, offshore deposit is mapped by the BGS within Blocks B060 to B064 (of the Red Line Boundary in English waters), transitioning further northward to Forth Formation (undivided) deposits (also within English waters)[37]. No St Andrews Bay Member deposits are mapped as outcrops by the BGS with the Study Area, however, Forth Formation (undivided) deposits are

[31] National Grid. 2025.
[32] NextGeo. 2024a.
[33] NextGeo. 2024b.
[34] NextGeo. 2025b.
[35] Stoker, M.S., Long, D. and Fyfe, J.A. 1985. *A revised Quaternary stratigraphy for the central North Sea*. BGS Report Vol. 17, No. 2. London: HMSO.
[36] NextGeo. 2025b.
[37] Gatliff *et al*. 1994.

mapped within Blocks B024 and B071 to B082, interrupted only by local outcrops of the Marr Bank Formation in Blocks B072 and B073.

8.1.21 Southward of KP 452, Unit 2A forms the uppermost seabed sediments, before Unit 1 deposits appear from around that location. Unit 2A first exhibits a blanket-like geometry, up to 1 m thick, before being interrupted by outcrops of the underlying Unit 4B from KP 452.

8.1.22 Unit 2A demonstrates no clear pattern, occurring as a blanket up to 3 m thick and as an infill of wide troughs, up to 7 m thick. It pinches out by KP 484, reappearing as the infill of a palaeochannel around KP 487.

8.1.23 Unit 2B sediments have also been provisionally correlated with the St Andrews Bay Member of the Forth Formation through initial interpretation of the geophysical survey results. The integrated report confirms this as distinct from Unit 2A, characterised by interbedded sand and clay, possibly representing a former coastal sandbar[38].

8.1.24 Unit 2B is shown on the survey charts as a thin veneer between KP 449 to 450 (Block B069), occurring between Units 2A and 2D, and not interpreted elsewhere. This contradicts with the more generalised block-by-block description given within the geophysical results report, which notes Unit 2B deposits throughout Blocks B070 to B077[39]. The integrated report concurs with a localised distribution, having been interpreted within Blocks B075 to B077. Unit 2B is also reported as generally underlying Unit 2A within Blocks B073 and B074, though the integrated report does not explicitly state interpretation of Unit 2B therein[40].

8.1.25 Sample sections from the Sparker data demonstrate a blanket-like geometry, in places heavily truncated by Early Holocene palaeochannels infilled by Unit 2A. Although the St Andrews Bay Member is generally considered to have formed through deposition in a marine environment, Stoker *et al*.[41] note that marine transgression within the Firth of Forth during the Early Holocene may have been oscillatory, demonstrating stages of sub-aerial exposure of intertidal mudflats.

8.1.26 Units 2A and 2B were penetrated and sampled by the geotechnical investigation. No deposits relating to these were found to be of geoarchaeological interest during the Stage 1 and 2 analyses.

Unit 2D: Largo Bay Member, Forth Formation

8.1.27 Unit 2D has been correlated with the Largo Bay Member of the Forth Formation. The Member is mapped by the BGS principally within 12 NM, with a widespread presence in the Firth of Forth (including its namesake, Largo Bay, which provided the geotechnical type-section). Inshore deposits generally comprise interbedded muds and silty muds, whereas the offshore deposits comprise silts and very fine sands, with occasional pebbles, shell fragments and, more rarely, wood fragments[42]. Within the RLB, Unit 2D is characterised by silty, sandy clay, often containing shell fragments, laminated with soft to firm clay with occasional gravel[43].

8.1.28 Largo Bay Member sediments are interpreted as estuarine to offshore marine in origin, dating to the Late Devensian and Early Holocene, spanning a period including the Windermere

---

38 NextGeo. 2025b, pp. 55.
39 NextGeo. 2024b.
40 NextGeo. 2025b, pp. 267, 273.
41 Stoker *et al*. 1985, pp. 20.
42 Stoker *et al*. 1985, pp. 18-19.
43 NextGeo. 2025b, pp. 55.

interstadial and Loch Lomond stadial (*c*. 13,500 to 10,000 BP)[44]. These are equivalent to the St Abbs Formation, mapped by the BGS as sporadic outcrops within the nearshore zone north of 55° N[45].

8.1.29 Unit 2D is defined by an irregular basal horizon from KP 436 to 451 (Blocks B068 to B069; as shown on the survey charts), conforming to the underlying horizon defining a series of palaeochannels incised into underlying deposits (largely Unit 4B). This interpretation differs from the BGS interpretation of the distribution of the Largo Bay Member, placing it instead principally within 12 NM. The BGS illustrate the same section of the RLB (KP 436 to 451; Blocks B068 and B069) as an area of outcropping Marr Bank Formation, with Firth Formation (undivided) deposits mapped close to the east[46].

8.1.30 The geophysical results report, supported by the integrated report, differs in its interpretation of Unit 2D, noting a rather more widespread distribution throughout Blocks B068 to B077. Here, Unit 2D has been interpreted as a blanket of superficial Late Devensian to Holocene sediments, truncated commonly by Early Holocene palaeochannels[47].

8.1.31 Samples from four cores acquired by the geotechnical investigation were identified as of geoarchaeological interest at Stage 1, based on preliminary interpretations of laminated clays (VC_045, VC_067, VC_094 and VC_117). Stage 2 analysis correlated these deposits with the Largo Bay Member, concluding a glaciomarine to temperate marine depositional environment. These conclusions further suggested a limited potential for palaeoenvironmental evidence and recommended no further investigation.

Unit 3: Marr Bank Formation

8.1.32 The Marr Bank Formation is mapped by the BGS between 55° 50′ N to 57° 20′ N and 1° 55′ W to 0° 30′ E, outcropping extensively. The basal reflector within the eastern part of its distribution is noted for becoming discontinuous on its eastward progression, making the Formation acoustically indistinguishable from the upper part of the Coal Pit Formation, into which it locally grades laterally[48].

8.1.33 The type section of the Marr Bank Formation is situated *c*. 4.9 km west from KP 503 (BGS borehole 74/07) characterised by well-sorted, very fine- to coarse-grained sands, occasionally grading into silt and gravel, laid down in shallow, glaciomarine environments[49]. Such deposits are suggestive of Late Devensian high boreal to arctic temperatures and inner shelf to estuarine environmental conditions[50]. Inclusions of clay balls, discrete gravel bands, isolated clasts and wood fragments are suggestive of depositional events such as storms and associated rapid burial[51].

8.1.34 The geophysical results report summary for sub-seabed units includes two possible facies of the Marr Bank Formation, however, no interpretation is demonstrated either throughout the

[44] Stoker *et al*. 1985, pp. 19.
[45] Gatliff *et al*. 1994.
[46] Gatliff *et al*. 1994.
[47] NextGeo. 2024b.
[48] Gatliff *et al*. 1994.
[49] Stoker *et al*. 1985, pp. 11.
[50] Thomson, M. 1978. *IGS studies on the geology of the Firth of Forth and its Approaches*. Report of the Institute of Geological Sciences, No. 77/17.
[51] Stoker *et al*. 1985, pp. 12.

remainder of the report or within the survey charts. The integrated report does not mention the Formation, neither to interpret it within the geotechnical results nor to the contrary.

8.1.35 In consideration of the BGS-mapped distribution (corresponding with KP 399 (in English waters) to 548), it is feasible that Marr Bank Formation deposits are present within the RLB. The absence of the Formation from the geophysical and integrated reports may possibly be attributed to lithological comparability to the stratigraphically higher Largo Bay Member (Forth Formation) and St Andrews Bay Member (Forth Formation). Marr Bank Formation deposits may, therefore, be present within the data but have not been distinguished.

8.1.36 Unit 3 has therefore been provisionally allocated as such, given the potential for identification through reassessment or further data collection. Further detail suggesting the presence of the Marr Bank Formation is discussed below, in relation to Unit 4B.

Unit 4B: Wee Bankie Formation

8.1.37 The Wee Bankie Formation is mapped by the BGS as a broad swathe off the northeast coast of England and east coast of Scotland, ranging from 55° N to the north coast of Aberdeenshire[52]. It is overlain in the Firth of Forth by the St Abbs Formation and, offshore, partly by the Marr Bank Formation, although the Wee Bankie Formation outcrops frequently elsewhere.

8.1.38 The Wee Bankie Formation is interpreted as a basal till, laid down beneath glaciers of the Late Devensian. The Formation is generally dominated by stiff, poorly sorted, polymictic till, sporadically interbedded with thin deposits of sand, pebbly sand and silty clay[53]. The Wee Bankie Formation is likely coeval with the onshore Hatton Till Formation[54].

8.1.39 Unit 4B has been identified in the survey charts from KP 450, largely replacing Unit 2D as the principal palaeochannel infill, with reoccurrences of the latter in larger troughs, such as between KPs 461 to 465. Unit 4B was not identified from KP 515 to KP 561, reappearing thereafter between Units 2A and 5, where the basal horizon of the latter appears to decline steeply beyond the depth of resolution[55].

8.1.40 The basal horizon of Unit 4B has been picked discontinuously throughout the remainder of the RLB and the occasional, sudden terminations are more likely a result of difficulty in interpretation rather than cessation of the horizon. The Unit has been interpreted throughout much of the 12 NM zone, including within much of Blocks B008 and B024, beneath a veneer of Unit 1 sediments.

8.1.41 The integrated report partly concurs with the initial interpretations, though it suggests a much wider distribution of Unit 4B across all survey Blocks except for Block B007. Contrary to the initial interpretations, the integrated report illustrates Unit 4B being incised by a series of palaeochannels, rather than contributing to their infill. Where penetrated by cores, Unit 4B is generally characterised by sand and silty sand.

8.1.42 The distribution of Unit 4B identified by project-specific surveys far exceeds that suggested by the BGS, reaching far further offshore where the BGS maps the Marr Bank Formation. The sands and silty sands recorded in core logs, where these correlate with Unit 4B on seismic sections,

---

[52] Gatliff *et al*. 1994.
[53] Stoker *et al*. 1985, pp. 10.
[54] BGS. 'The BGS Lexicon of Named Rock Units: Hatton Till Formation' https://webapps.bgs.ac.uk/lexicon/lexicon.cfm?pub=HATT Accessed 12 May 2025.
[55] NextGeo. 2024b.

appear to have greater lithological similarity with Marr Bank Formation deposits. Therefore, elements of Unit 4B, particularly those further offshore, may be attributable to Unit 3.

8.1.43 Closer inshore, deposits of gravelly, slightly sandy clay have also been interpreted as Wee Bankie Formation, more closely matching the lithology and distribution of this Formation provided by the BGS (e.g. in VC_675; KP 581).

Unit 4C: Palaeochannel

8.1.44 The survey charts illustrate a series of palaeochannels have been identified from a distinctive basal horizon, from KP 436 to 497, in places exceeding the depth of interpretation, cut into the underlying Coal Pit Formation (Unit 5). There is some uncertainty in the interpretation of these features, particularly their infilling sediments. The survey charts simply label the steep-sided features as "paleochannels" [*sic*], without further interpretation. In some instances, sediments such as Unit 2D or 4B appear as an upper fill, often leaving the main body of the infill unlabelled and uninterpreted. A single palaeochannel is illustrated in the survey charts between KP 516 to 517, covered by Unit 2A, but perhaps not infilled by it. The geophysical results report describes palaeochannels as infilled by Wee Bankie Formation sediments (Unit 4B), up to 58 m deep[56].

8.1.45 The integrated report describes palaeochannels within Blocks B071 and B072 (KP 467 to 493), partly correlating with the survey charts and seismic grids. These are reportedly up to 58 m below the seabed in Block B071 and up to 26 m below the seabed in Block B072. The integrated report, however, describes Unit 4B as incised by palaeochannels, rather than filled by associated deposits. Examination of the seismic grids produced for the basal horizon of Unit 4B suggest channel incisions at KPs 455, 460.5, 462 to 463, 471, 473 to 478.5, 493, 498, 500 to 504, and possibly 520 to 530 and 558.

8.1.46 Within English waters of the project, palaeochannels have been provisionally interpreted as filled by sediments of the Botney Cut Formation[57]. North from 55° N and west from 0°, the lower member of the Botney Cut Formation has been correlated with the Wee Bankie Formation, supporting the interpretation of the palaeochannel fills within Scottish waters primarily comprising sediments of the latter.

Unit 5: Coal Pit Formation

8.1.47 The Coal Pit Formation occurs widely across the central North Sea, outcropping infrequently west of 0° and much more commonly to the east. It has been interpreted as a Late Wolstonian to Mid-Devensian glaciomarine formation and has been sub-divided into upper and lower parts. The lower part generally comprises interbedded sand and stiff clay, with shells, pebbles and wood fragments. The upper comprises laminated, shell-rich clay, with occasional pebbles, which can be locally indistinguishable from Marr Bank Formation sediments[58].

8.1.48 Although much of the Coal Pit Formation has been interpreted as glaciomarine in origin, the upper part identified in BGS borehole BH81/27 (situated *c*. 6.8 km north of the Scottish Adjacent Waters boundary where this intersects the RLB; *c*. 2.5 km northeast from the Study Area) was interpreted as intertidal[59]. Trace recovery from the same borehole suggests that the

---

[56] NextGeo. 2024b.
[57] NextGeo. 2024b.
[58] Gatliff *et al*. 1994.
[59] Stoker *et al*. 1985, pp. 9.

Coal Pit Formation was encountered at *c*. 6.5 m below the seabed. Stoker *et al*.[60] and Holmes[61] have suggested that the Coal Pit Formation was laid down from the Late Wolstonian to Mid Devensian (MIS 6 to 3), with data from BGS borehole BH81/37 suggestive of warmer conditions of the Ipswichian stage (MIS 5e).

8.1.49 Furthermore, analysis of Coal Pit Formation samples from borehole BH75/33, *c*. 144 km northeast from the Study Area, used proportions of *Elphidium ? ustulatum* to identify a sub-unit dating to the Ipswichian interglacial (MIS 5e)[62].

8.1.50 The Coal Pit Formation ranges in thickness from 10 to 120 m, occurring at its thickest where infilling Wolstonian channels. As the infill of tunnel valleys, the depositional process may be complex, however, a general interpretation describes the basal deposits as glaciogenic in origin, often containing diamictons, whereas later fills are more varied, also exhibiting laminated clays and silts of distal glaciomarine and glaciolacustrine environments[63].

8.1.51 Unit 5 has been provisionally correlated with the Coal Pit Formation, identified throughout much of the RLB through preliminary geophysical interpretations and accompanying survey charts, from KP 436 to where it pinches out at KP 540 (as shown by the survey charts). The basal horizon of Unit 5 was briefly identified from 530.5 to 530.8, at *c*. 88 m below LAT, and more continuously from KP 537.5 at a similar depth before falling sharply to *c*. 107 m below LAT.

8.1.52 The basal horizon of Unit 5 ascends from KP 555 to a peak of *c*. 84 m below LAT before falling again to level out at *c*. 100 m. At KP 566, this horizon rises to 79 m below LAT and is shown on the survey charts to form the upper horizon of Unit 9 (see below). Between KP 517 and 534, Unit 5 has been identified close to the seabed, with only a veneer of Unit 1 sediments above.

8.1.53 The widespread system of palaeochannels incises Unit 5 up to KP 497. Afterwards, the irregular upper horizon of Unit 5 has likely been reworked by Devensian glacial action, evidenced by the overlying glacigenic deposits of Unit 4B.

8.1.54 The ground model outputs illustrate a wide distribution of Unit 5 deposits from KP 407 (in English waters) to 452 and KP 505.5 to 578. Despite the widespread initial interpretation of Unit 5 and the distribution of the Coal Pit Formation presented by the BGS, the integrated report makes no explicit mention of the Formation and mentions Unit 5 (as Unit 3; see Table 7) only once. This, however, reads contradictorily to the results presented earlier in the same paragraph and may have been mentioned as 'Unit 3' in error[64]. It is possible that Unit 5 may have been dismissed from secondary interpretations without presentation of the process or full examination of the available data.

8.1.55 Sample examination of preliminary core logs supports the presence of Unit 5. Though the Coal Pit Formation may, in places, lie beneath a sequence of Devensian tills and Late Devensian and Early Holocene glaciomarine and marine sediments, seismic interpretations highlighted areas

[60] Stoker *et al*. 1985, pp. 9.
[61] Holmes, R. 1977. *Quaternary deposits of the central North Sea: The Quaternary geology of the UK sector of the North Sea between 56° and 58° N*. Institute of Geological Sciences Report No. 77/14. London: HMSO.
[62] Gregory, D. and Bridge, V.A. 1979. 'On the Quaternary Foraminiferal Species Elphidium ? Ustulatum Todd 1957: Its Stratigraphic and Palaeoecological Implications'. *Journal of Foraminiferal Research*. **9**, pp. 70-75.
[63] Kirkham, J.D., Hogan, K.A., Larter, R.D., Self, E., Games, K., Huuse, M., Stewart, M.A., Ottesen, D., Le Heron, D.P., Lawrence, A., Kane, I., Arnold, N.S. and Dowdeswell, J.A. 2024. 'The infill of tunnel valleys in the central North Sea: Implications for sedimentary processes, geohazards, and ice-sheet dynamics.' *Marine Geology*, **467**: 107185.
[64] NextGeo. 2025b, pp. 240.

where only a veneer of recent marine sand lay atop, such as from KP 517 to 534. The core log for VC_053 (KP 525) illustrates 0.3 m of fine to coarse sand atop 2.7 m of slightly silty clay with rare gravel, the latter lithology comparable to the upper component of the Coal Pit Formation[65]. Similarly, VC_051 (KP 527) exhibited <3.3 m of silty clay beneath 0.4 m of gravelly sand and VC_049 (KP 529) exhibited <3.25 m of sandy silt beneath 0.4 m of gravelly sand. This pattern does not continue more widely, suggesting disparity between the seismic interpretation and the geotechnical results, however, Unit 5 is to be expected widely throughout the RLB.

Unit 9: Aberdeen Ground Formation

8.1.56 Initial interpretation presented by the geophysical results report has grouped the Aberdeen Ground, Egmond Ground and Swarte Bank formations into a single "unit". Acoustically, these three formations have demonstrated similar characteristics: the Aberdeen Ground and Egmond Ground formations both display strong, even, parallel reflectors and the principal part of the Swarte Bank Formation exhibits parallel to sub-parallel reflectors, hence the grouping.

8.1.57 For the purposes of this assessment, the Formations are examined individually, given their distinct depositional conditions and formative periods presenting variable potential for archaeological and palaeoenvironmental evidence.

8.1.58 The Egmond Ground and Swarte Bank formations are mapped by the BGS further south from the Scottish Adjacent Waters boundary and do not fall within the nomenclature used within the central North Sea region. Therefore, although the geophysical results report and integrated report identify deposits of this composite unit as "Unit 4a", further interpreting this as Egmond Ground Formation sediments[66 67], these likely represent the Aberdeen Ground Formation and shall be referred to as such within this assessment. The Egmond Ground and Swarte Bank formations are not discussed further here.

8.1.59 Unit 9 has been provisionally interpreted as deposits of the Aberdeen Ground Formation. The Aberdeen Ground Formation is mapped widely throughout the central North Sea (north of 55° 35′ N) by the BGS, equivalent, in part, to the Yarmouth Roads Formation south of 56° N. The Aberdeen Ground Formation was laid down over a long period during the Early to Middle Pleistocene (MIS 100 to 13) and, although dating of the Formation is not fully resolved, the upper parts of the deposit in this region are thought to date to the Middle Pleistocene. The Brunhes-Matuyama (B-M) magnetic boundary, dated to *c*. 780,000 ±5,000 BP, has been identified within the deposit in the central North Sea area, indicating that parts of the Formation post-date this event[68 69].

8.1.60 The base of the Aberdeen Ground Formation is associated with a distinctive acoustic reflector considered to correlate with the base of the Quaternary deposits in the central North Sea[70] and, like the partly equivalent Yarmouth Roads Formation, covers a period of fluctuating climatic cycles, including warmer and cooler periods. Analysis has demonstrated the presence

---

[65] Gatliff *et al*. 1994.
[66] NextGeo. 2024b.
[67] NextGeo. 2025b.
[68] Stewart, M. L. 2012 . '3D seismic analysis of buried tunnel valleys in the Central North Sea: tunnel valley fill sedimentary architecture.' In M. R. Huuse, *Glaciogenic reservoirs and Hydrocarbon Systems*. London: Geological Society Special Publications **368**.
[69] Stoker, M. S., Skinner, A. C., Fyfe, J. A. and Long, D. 1983. 'Palaeomagnetic evidence for early Pleistocene in the central and northern North Sea'. *Nature*. **304**, pp. 332–334.
[70] Stoker, M.S., Balson, P.S., Long, D. and Tappin, D.R. 2011. *An overview of the lithostratigraphical framework for the Quaternary deposits on the United Kingdom continental shelf*. BGS Research Report RR/11/03.

of clay units with dipping clinoforms, interpreted as evidence of deltaic environments[71]. Analysis has also shown that sub-aerial conditions may have been present during the later Early Pleistocene, though the Middle Pleistocene was dominated by increasingly glacial conditions.

8.1.61 The muds, pebbles and sandy sediments of the upper Aberdeen Ground Formation are thought to have been deposited in glacial environments of the Cromerian complex[72]. Cold water foraminifera identified within this part of the Formation are the product of sub-glacial or pro-glacial environments associated with a tide-water ice sheet. This is the earliest evidence of full glacial conditions in the central North Sea area[73] [74]. Four lithofacies have been identified in the upper part of the Aberdeen Ground Formation: sub-glacial facies, proximal glaciomarine facies, distal glaciomarine facies and marine facies - representing a series of different depositional environments during the Early to Middle Pleistocene[75].

8.1.62 The upper horizon of Unit 9 is first shown on the survey charts at KP 531, although it likely has a far greater distribution within the RLB beneath Unit 5 and beyond the depth of interpretation. This horizon is demonstrated discontinuously on the survey charts (likely due to exceeding the depth of interest/interpretation) up to KP 576.

8.1.63 The basal horizon of Unit 9 was first interpreted at KP 566, giving a thickness of *c*. 3 m. This horizon also marked the top of the bedrock.

8.1.64 The integrated report states that Unit 9 was identified throughout almost the entirety of the RLB, within Blocks B068 to B082, generally overlain by Unit 4B deposits and overlying the bedrock. Egmond Ground Formation has been interpreted beneath Unit 9 in several seismic sections, however, these deposits likely also relate to the Aberdeen Ground Formation, perhaps a lower facies.

8.1.65 Though Unit 9 generally lies beyond the depth of the geotechnical investigations, a small number of cores may have reached these deposits. CPT_018 (KP 560), correlated with the seismic interpretations, appears to penetrate the uppermost part of Unit 9. Herein, the lithology is described as medium to high strength silty clay[76].

Integration of the geophysical and geotechnical data

8.1.66 The integrated report, combining the preliminary seismic interpretations and geotechnical results, aimed to correlate the available data to present the most likely Quaternary sequence throughout the RLB. Review of these final conclusions, as summarised in the above sections, suggests that the integration did not consider the data in its entirety or did not clearly explain the process, such as the omission of Unit 5.

8.1.67 Prior to dissemination of the integrated report, a high-level review of the geotechnical results was undertaken and a small, representative sample of core logs examined in closer detail to present a preliminary ground truthing of the initial geophysical interpretations.

[71] Buckley, F. 2014. 'Seismic Character, Lithology and Age Correlation of the Aberdeen Ground Fm. in the Central North Sea'. Near Surface Geoscience 2014 – 20th European Meeting of Environmental and Engineering Geophysics. 2014, pp. 1-5.
[72] Vaughan-Hirsch, D.P. and Phillips, E.R. 2017. 'Mid-Pleistocene thin-skinned glaciotectonic thrusting of the Aberdeen Ground Formation, Central Graben region, central North Sea'. *Journal of Quaternary Science*. **32**, pp. 196-212.
[73] Gatliff *et al*. 1994.
[74] Vaughan-Hirsch and Phillips. 2017.
[75] Vaughan-Hirsch and Phillips. 2017.
[76] NextGeo. 2025b, pp. 296.

8.1.68 A summary of the geotechnical results describes the vibrocores undertaken within the Scottish waters of the RLB as generally encountering sand, occasionally atop clay or interlaminated with clay. No vibrocores exceeded a penetration depth of 6 m, limiting their potential to encounter and characterise deeper and/or thicker sediments.

8.1.69 To better characterise the initial interpretations of the geophysical data for the purposes of this assessment, a small number of core locations were correlated with the survey charts to tentatively ground truth the latter.

8.1.70 At KP 572, the Quaternary sequence interpreted from the geophysical data suggests a descending layering of Units 1, 4B, 5 and 9, not exceeding *c*. 2.7 m cumulative thickness. Vibrocore VC_005, undertaken at this same location, however, demonstrated a simple sequence of 0.3 m of gravelly, shelly sand (likely correlating with Unit 1) atop sandy clay to its terminal depth at 2.6 m below seabed.

8.1.71 Vibrocore VC_031, taken at KP 510.5, demonstrated a sequence of 0.45 m of silty sand, atop 2.2 m of clay, itself atop silty clay to the terminal depth at 4.75 m below seabed. This correlates with the sequence interpreted from the geophysical data, showing Unit 1 atop Unit 2A, itself atop Unit 5. This correlation of results, however, is not replicated nearby at KP 547, where the geophysical interpretation (a descending sequence of Units 1, 2A and 3) is represented within vibrocore VC_030 as 0.3 m of sand atop silty clay to the terminal depth of 3.8 m below seabed.

8.1.72 Vibrocores from the southernmost part of the RLB generally demonstrated sands to depths up to 6 m below seabed. These results do not correlate with the geophysical interpretations, for example, at KP 446, where the initial interpretation presents a descending sequence of Units 2A, 2D and 4C.

8.1.73 The preliminary, sample ground truthing described above, alongside the examples of correlating and disparate data discussed in paragraphs 8.1.13 to 8.1.65, demonstrate the complexity of correlating and interpreting all available data to present a cohesive model of the Quaternary sequence within the RLB. The data has been more successfully correlated to interpret units closer to the seabed, as these have been investigated extensively by Sparker and Parametric SBP sensors, CPTs and vibrocore sampling. Understanding of these deposits is likely to be considered of greater importance, given the anticipated project-related impacts. Deeper units have been interpreted and correlated with greater difficulty, however, these are less likely to experience impacts associated with the Proposed Development.

8.2 Geomorphology

Glaciations

8.2.1 The known history of hominin occupation of Britain is marked by three main stages of glaciation: the Anglian (478,000 to 424,000 BP; MIS 12), the Wolstonian complex (374,000 to 123,000 BP; MIS 10 to 6) and the Devensian (109,000 to 11,700 BP; MIS 5d to 2). The latter two each include several interstadials, of which less information is available for the Wolstonian. The pre-Anglian Cromerian complex and Beestonian stage also express evidence of a series of stadials and interstadials, however, these sequences are poorly understood at present[77] [78] and the latter generally precedes known hominin occupation of Britain.

8.2.2 The Early and Middle Pleistocene in Scotland saw a series of short-lived ice sheet advances into the North Sea (at least ten are known from this period)[79] and warmer periods were characterised by the Eridanos delta. This landscape was disrupted by the significant glaciations of the later Quaternary period (e.g. the Anglian).

8.2.3 With the source of the British-Irish ice sheet situated in the Western Highlands, the Study Area lay beneath glacial ice for much of the Anglian and Wolstonian stadials (Figure 4). The longevity of the deposition of the Aberdeen Ground Formation (MIS 100 to 13), underlying large parts of the central North Sea, suggests that glacial activity likely influenced this unit during stadials of the preceding Cromerian complex and Beestonian stage, however, as previously mentioned, these sequences are currently poorly understood.

8.2.4 Basal deposits of the Coal Pit Formation in the central North Sea have been attributed a Late Wolstonian date (MIS 6)[80], however, these earliest deposits most likely occur as basal channel fills. The Coal Pit Formation (Unit 5) is provisionally interpreted throughout much of the RLB, though basal deposits are infrequently identified. These are not representative of basal channel infill, therefore, the earliest deposits of the Coal Pit Formation are not present in the identified Quaternary sequence.

8.2.5 Batchelor *et al.*[81] examined empirical data and numerical modelling from over 180 studies to reconstruct ice-sheet extents in the Northern Hemisphere at intervals throughout the Pleistocene. The reconstructions suggest that the Study Area was covered by ice during much of MIS 12, 10, 8 and 6 and ice-free during MIS 5d to 5a. Glaciers readvanced over much of the North Sea during MIS 4, retreating again during the Upton Warren interstadial (MIS 3). By the end of MIS 3, temperatures had fallen enough to allow expansion of the Fennoscandian ice-sheet over the Baltic Sea, leading up the Last Glacial Maximum (LGM; *c*. 27,000; MIS 2)[82] and confluence of the Fennoscandian and British-Irish ice-sheets in MIS 2.

---

[77] Lamb, R.M., Harding, R., Huuse, M., Stewart, M. and Brocklehurst, S.H. 2017. 'The early Quaternary North Sea Basin.' *Journal of the Geological Society*. **175**, pp. 275-290.
[78] Lauer, T. and Weiss, M. 2018. 'Timing of the Saalian- and Elsterian glacial cycles and the implications of Middle-Pleistocene hominin presence in central Europe.' *Scientific Reports*. **8**, pp. 1-12.
[79] Hall, A.M., Merritt, J.W., Connell, E.R. and Hubbard, A. 2018. 'Early and Middle Pleistocene environments, landforms and sediments in Scotland'. *Earth and Environmental Science Transactions of the Royal Society of Edinburgh*.
[80] Gatliff *et al.* 1994.
[81] Batchelor, C.L., Margold, M., Krapp, M., Murton, D.K., Dalton, A.S., Gibbard, P.L., Stokes, C.R., Murton, J.B. and Manica, A. 2019. 'The configuration of Northern Hemisphere ice sheets through the Quaternary'. *Nature Communications*. **10**.
[82] Gibbard, P.L. and Clark, C.D. 2004. 'Pleistocene Glaciation Limits in Great Britain'. *Developments in Quaternary Science*. **2**, pp. 47-82.

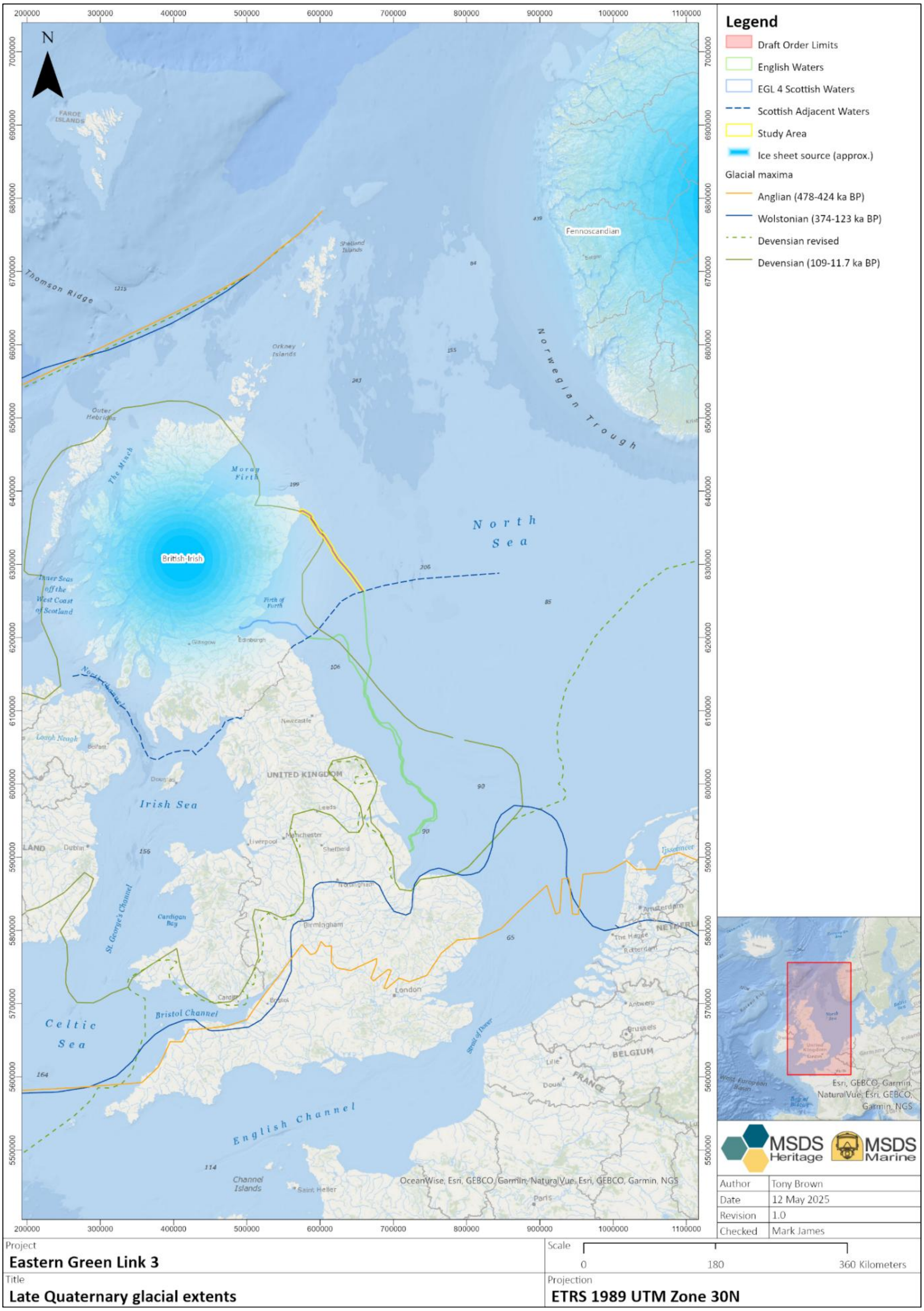


Figure 4: Late Quaternary glacial extents

8.2.6 Hughes *et al*.[83] produced a range of timeslices to illustrate fluctuation of the Fennoscandian and British-Irish ice sheets in the Late Quaternary, using marine cores dated and calibrated by a range of methods (radiocarbon, optically stimulated luminescence (OSL) and electron spin resonance). The resultant ice sheet modelling suggested that conjunction of the ice sheets persisted up to 18,000 BP, though thinning of this ice bridge and sea level rise is suggested to have introduced glaciomarine elements to the Study Area by 20,000 BP. A glacial readvance is suggested around 17,000 BP and the Study Area was likely not entirely ice-free until *c*. 16,000 BP.

8.2.7 The maximum glacial extent for the Last Glacial Maximum (LGM; *c*. 27,000 BP) during the Devensian, informed by several studies, including those cited above, is presented by Figure 4.

8.2.8 The Devensian glaciation was the last glaciation to affect Britain. The maximum extents of the glaciation (the LGM) were achieved at various points between 27,000 to 17,000 BP, although there is some disparity in the scholarship. The 'traditional' view places northern England, parts of the Midlands, most of Wales, northern and central Ireland, most of mainland Scotland and the Western Isles under glacial conditions (Figure 4). This viewpoint suggests that southern Ireland and parts of northeast Scotland, including the Orkney and Shetland archipelagos, the northeast coast (approximately between Banff and Peterhead) and much of the North Sea, were not covered by glacial ice during the Devensian stage[84]. Under this interpretation, the Study Area would not have lain wholly under glacial ice during the LGM.

8.2.9 Subsequent review of the evidence and incorporation of additional data, however, has significantly extended the perceived extent of glaciation to the southwest and northeast, concluding in the latter at a confluence of the British-Irish and the Fennoscandian ice sheets within the present North Sea[85] [86] [87] [88] (Figure 4). This revised interpretation would place the Study Area beneath glacial ice at the height of the LGM.

Glacial geology

8.2.10 The oldest Quaternary formation provisionally interpreted within the RLB comprises sediments of the Aberdeen Ground Formation (Unit 9). Laid down over a protracted period during the Early and Middle Pleistocene, it is feasible that elements of this Formation may contain evidence of glacial processes dating to phases of expansion of the British-Irish Ice Sheet during the Cromerian and Beestonian stages.

8.2.11 Glacigenic deposits and landforms associated with subsequent Middle Pleistocene stadials, namely the Anglian and Wolstonian, are understood to have largely been eroded within the central North Sea and Study Area. Such erosion was likely caused by a combination of hydrodynamic and glacial processes. At their maxima, both stadials exhibited ice cover over the entirety of the Study Area (Figure 4).

8.2.12 Whilst glacigenic deposits dating to the Anglian and Wolstonian have not been identified, elements of the Coal Pit Formation (provisionally interpreted within the Study Area as Unit 5)

[83] Hughes, A.L.C., Gyllencreutz, R., Lohne, Ø.S., Mangerud, J., Svendsen, J.I. 2016. 'The last Eurasian ice sheets - a chronological database and time-slice reconstruction, DATED-1.' *Boreas*. **45**(1), 1-45.
[84] Hall, A.M. and Bent, A.J.A. 1990. 'The limits of the last British ice sheet in northern Scotland and the adjacent shelf'. *Quaternary Newsletter*. **61**, pp. 2-12.
[85] Gibbard and Clark. 2004.
[86] Batchelor *et al*. 2019.
[87] Kirkham *et al*. 2024.
[88] Gibbard, P.L. and Clark, C.D. 2011. 'Pleistocene Glaciation Limits in Great Britain.' *Developments in Quaternary Sciences*. **15**, pp. 75-93.

may date to these stages. The frequently incised basal horizon of the Coal Pit Formation has been laterally traced to suggest equivalence with the Ling Bank and Fisher formations and subsequently, through these, with Anglian-age elements of the Yarmouth Roads Formation[89]. Other studies suggest that the Coal Pit Formation is likely of Wolstonian to Devensian age and, although there exists some uncertainty regarding the Formation's origins, a Wolstonian age is generally attributed to its lower elements[90] [91].

8.2.13 The Devensian glaciations are the best understood and most widely studied of the Pleistocene glaciations, particularly the Dimlington (29,000 to 14,700 BP) and Loch Lomond (12,900 to 11,700 BP) stadials. The greatest extent of ice during the LGM was attained at various times for different locations, generally peaking at *c*. 26,000 BP[92]. Timing and maxima remain a subject of debate for researchers; within the North Sea, the maximum southerly extent was attained between *c*. 20,000 BP or as late as 17,000 BP, reaching the Norfolk coast. This peak correlates with the Dimlington stadial and a single sea level limiting point suggests a contemporary (19,498 BP) RSL of -17.85 m (AA34281; Section 20.0 – Annex F), indicative of seawater locked up in glacial ice.

8.2.14 Units 3 (if present), 4B, 4C and 5 are partly or wholly attributable to Devensian glacial processes.

Glacial landforms

8.2.15 Glaciation introduces a range of processes which result in changes to the bedrock, sedimentary deposits and geometry of the landscape. Some of the resultant landforms are determined by the movement and weight of the ice overburden, whereas others are caused by associated hydrodynamic processes.

8.2.16 The EMODnet geological database[93] maps a series of tunnel valleys and glacial meltwater channels both within the Study Area and nearby, illustrating the impact and aftereffects of glacial ice on the subsea landscape (Figure 5). The RLB traverses a channel system between KP 517 to 552 and a system of moraines at KP 458 to 461, KP 498 to 509 and KP 562 to 564.

8.2.17 The moraine formations mapped by the EMODnet data correlate closely with the interpreted distribution of the Wee Bankie Formation (Unit 4B) – comprising glacial tills. Unit 4B is identified from KP 450 in the geophysical data, close to where a large moraine traverses the Study Area. The Unit has not been interpreted from KP 515 to 561; an area mapped by EMODnet as characterised by a northeast-southwest aligned glacial meltwater system. It is plausible that these channels may have eroded moraine deposits in their path, though the geophysical data suggests that these were relatively shallow: only a single palaeochannel is identified in this area, at the southernmost margin between KPs 516 and 517.

---

[89] British Geological Survey. 1991. *Swallow Hole Sheet 55°N-00°: Quaternary Geology 1:250,000 Series*. Southampton: Ordnance Survey for the BGS.
[90] Stoker *et al.* 1985, pp. 10.
[91] https://webapps.bgs.ac.uk/lexicon/lexicon.cfm?pub=COP Accessed 09 May 2025.
[92] Gibbard, P.L., West, R.G., Zagwijn, W.H., Balson, P.S., Burger, A.W., Funnell., B.M., Jeffery, D.H., de Jong, J., van Kolfschoten, T., Lister, A.M., Meijer, T., Norton, P.E.P., Preece, R.C., Rose, J., Stuart, A.J., Whiteman, C.A. and Zalasiewicz, J.A. 1991. 'Early and early Middle Pleistocene correlations in the Southern North Sea basin.' *Quaternary Science Reviews*. **10**(1), pp. 23-52.
[93] EMODnet. https://www.emodnet-geology.eu/map-viewer/?p=submerged_landscapes Accessed 11 May 2025.

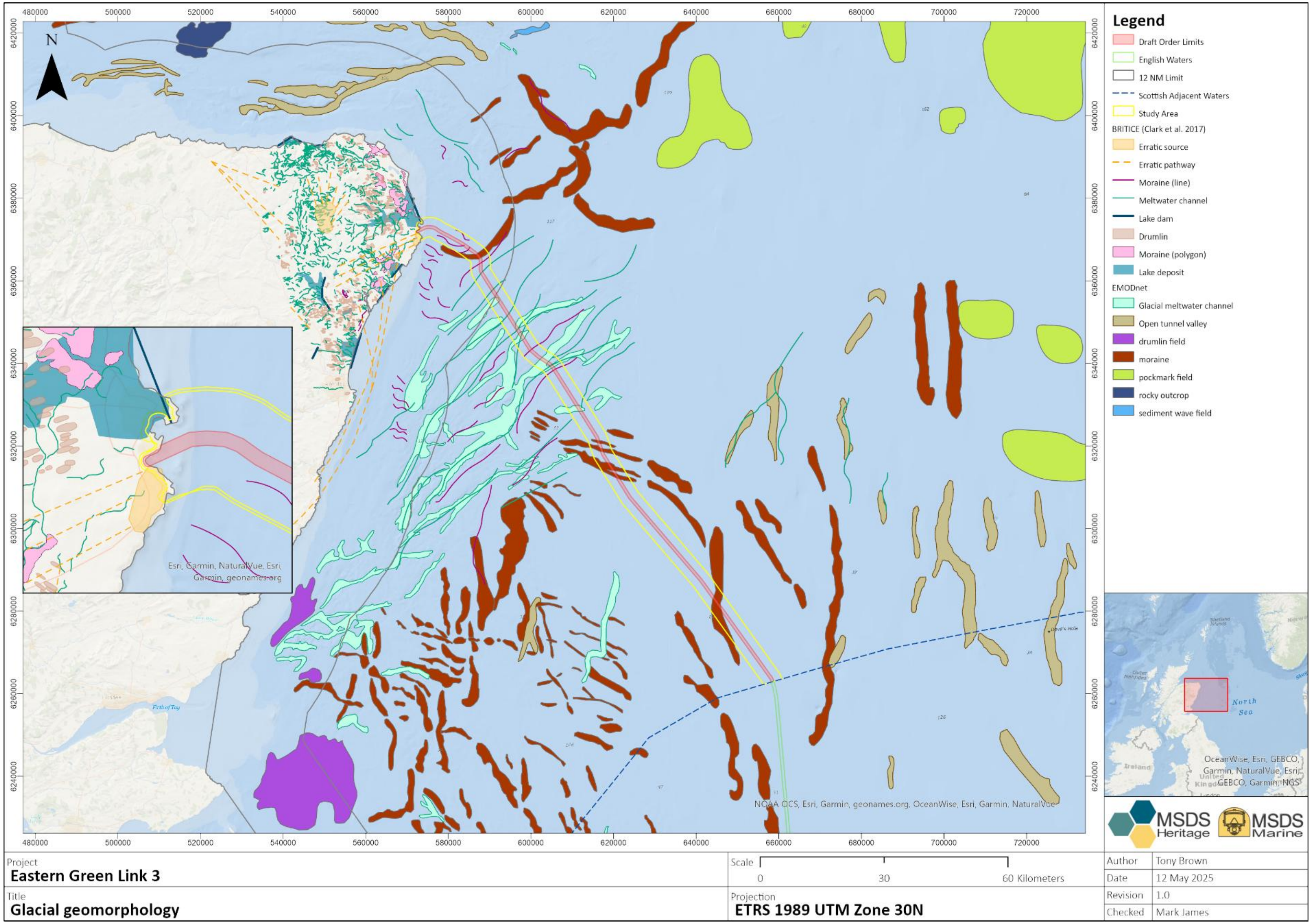


Figure 5: Glacial geomorphology

8.2.18 The BRITICE project[94] mapped glacial landforms across England, Scotland and Wales dating to the LGM. Although largely focussed on terrestrial landforms, mapping of some offshore glacial features was also undertaken. A series of moraines and channels is presented by this project's data, broadly correlating with the EMODnet data discussed above. In addition, a series of parallel moraines are mapped between the glacial meltwater channels from KP 529 to 541 and a pattern of smaller moraines are illustrated within and near to the 12 NM zone of the Study Area (Figure 5).

8.2.19 The BRITICE data exhibits a more detailed view of the glacial geomorphology within the terrestrial part of the Study Area and its surroundings (Figure 5 – inset). An area of erratics (glacially translocated rocks) is represented within the southern part of the Study Area, south of the RLB. Mapped pathways demonstrate that these originated from the southwest.

8.2.20 An area of lake deposits is mapped within the northern part of the Study Area (at landfall), relating to a former ice-dammed lake. The projected ice dam also enters the Study Area.

8.2.21 Beyond the Study Area slightly further inland, the glacial geomorphology is characterised by moraines, drumlins, meltwater channels and additional ice-dammed lakes. These formations in present terrestrial environments may be used as analogues to inform understanding of impacts of glacial processes on the formerly subaerial palaeolandscapes of the North Sea.

Sea level data

8.2.22 Data relating to past sea levels can be correlated with geological and glacigenic data to inform our understanding of palaeolandscape development during the Late Quaternary and Early Holocene. Analysis of reconstructed palaeolandscapes can inform subsequent discussions relating to human occupation and archaeological potential.

8.2.23 There are few Sea Level Index Points (SLIPs) offshore in the North Sea and none within the central region. Many nearby SLIPs are largely located along the current coastline and within waterways and lowlands, such as the Tay Valley, the Forth Valley and the River South Esk estuary.

8.2.24 Sea level studies for this period are complex and subject to a wide range of variables. One of the key factors is that of glacial isostatic adjustment (GIA), relating to the viscoelastic response (deformation) of Earth structures arising from glacial ice-load[95]. The British-Irish ice sheet developed outward from the Scottish Highlands during the Dimlington stadial (29,000 to 14,700 BP), extending as far south as the Norfolk coast and the Western Approaches (Figure 4). Northern parts of Britain were therefore subject to greater depression and rebound, which are to be expected within the RSL record.

8.2.25 Similar glacial origins are to be expected for the earlier Wolstonian (MIS 10 to 6) and Anglian (MIS 12) glaciations, however, little RSL data is available to inform GIA modelling for these periods. Early and pre-Holocene SLIPs are fewer in number than later Holocene SLIPs (i.e. younger than *c*. 9,000 BP), principally due to contemporarily deposited organic sediments (commonly used for the dating element of SLIPs) being situated in deep sea areas and beneath

[94] Clark, C.D., Ely, J.C., Greenwood, S.L., Hughes, A.L.C., Meehan, R., Barr, I.D., Bateman, M.D., Bradwell, T., Doole, J., Evans, D.J.A., Jorden, C.J., Monteys, X., Pellicer, X.M. and Sheehy, M. 2017. 'BRITICE Glacial Map, version 2: a map and GIS database of glacial landforms of the last British-Irish Ice Sheet.' *Boreas*. **47**(1), pp. 11-e8.

[95] Bagge, M., Klemann, B., Steinburger, M. Latinovíc, M. and Thomas, M. 2021. 'Glacial-Isostatic Adjustment Models Using Geodynamically Constrained 3D Earth Structures.' *Geochemistry, Geophysics, Geosystems*. **22**(11).

thick layers of later sediments, making these organic sediments harder to sample. The reliability of Early and pre-Holocene SLIPs is limited by vertical uncertainties arising from low sample density and uncertainties in understanding the impact of local ice loading[96].

8.2.26 Shennan *et al*.[97] have produced a recent and extensive study of RSL in Britain and Ireland since the LGM. Their study, incorporating over 2,100 data points including SLIPs and marine and terrestrial limiting data, provides regional insights into RSLs across the British Isles. A sub-sample of 475 SLIPs and limiting points was consulted to inform the discussion of this sub-section, (Figure 6), ranging in date from 21,447 to 990 BP. A gazetteer of the sub-sample is included as Section 20.0 - Annex F.

8.2.27 Modelling of palaeo-coastlines have applied RSL data to illustrate the development of marine boundaries, such as the model produced by Brooks *et al*.[98]. This model, reproduced in part by Figure 6, demonstrates the Flandrian marine transgression of the Late Devensian and Early Holocene, concurring largely with the results of Shennan *et al*.[99] , although based partly on the results of the same team's earlier studies[100].

8.2.28 The earliest marine limiting points date to *c*. 21,447 and 20,577 BP (Sample IDs: CAMS111596 and CAMS111597, respectively) and demonstrate higher RSL (14.82 m), coinciding with the mid-point of the Dimlington stadial. A series of limiting points and SLIPs from the Tay Valley and northeast Scotland demonstrate a broad trend of rising sea level during the latter part of the Dimlington stadial (18,143 to 14,896 BP), although the progression is somewhat erratic.

8.2.29 Evidence of raised marine deposits has also been attributed to the subsequent Windermere interstadial (*c*. 14,700 to 12,900 BP; MIS 2) by numerous authors, including Peacock *et al*.[101] and Sutherland and Gordon[102], indicative of higher RSL.

---

[96] Hijma, M.P., Bradley, S.L., Cohen, K.M., van der Wal, W., Barlow, N.L.M., Blank, B., Frechen, M., Hennekam, R., van Heteren, S., Kiden, P., Mavritsakis, A., Meijninger, B.M.L., Reichart, G., Reinhardt, L., Rijsdijk, K.F., Vink, A. and Busschers, F.S. 2025. 'Global sea-level rise in the early Holocene revealed from North Sea peats.' *Nature*. **639**, pp. 652-657.

[97] Shennan, I., Bradley, S.L. & Edwards, R. 2018. 'Relative sea-level changes and crustal movements in Britain and Ireland since the Last Glacial Maximum.' *Quaternary Science Reviews*. **188**, pp. 143-159.

[98] Brooks, A.J., Bradely, S.L., Edwards, R.J. and Goodwyn, N. 2011. 'The palaeogeography of Northwest Europe during the last 20,000 years.' *Journal of Maps*. **7**(1), pp. 573-587.

[99] Shennan *et al*. 2018.

[100] Shennan, I., Bradley, S., Milne, G., Brooks, A., Bassett, S. and Hamilton, S. 2006. 'Relative sea-level changes, glacial isostatic modelling and ice sheet reconstructions from the British Isles since the Last Glacial maximum.' *Journal of Quaternary Science*. **21**, pp. 585–599.

[101] Peacock, J.D., Horne, D.J. and Whittaker, J.E. 2012. 'Late Devensian evolution of the marine offshore environment of western Scotland.' *Proceedings of the Geologists' Association*. **123**, pp. 419-437.

[102] Sutherland, D.G. and Gordon, J.E. 1993. 'The Quaternary in Scotland'. In Gordon, J.E. and Sutherland, D.G. (eds.). *Quaternary of Scotland*. Glasgow: Chapman and Hall, pp. 13-47.

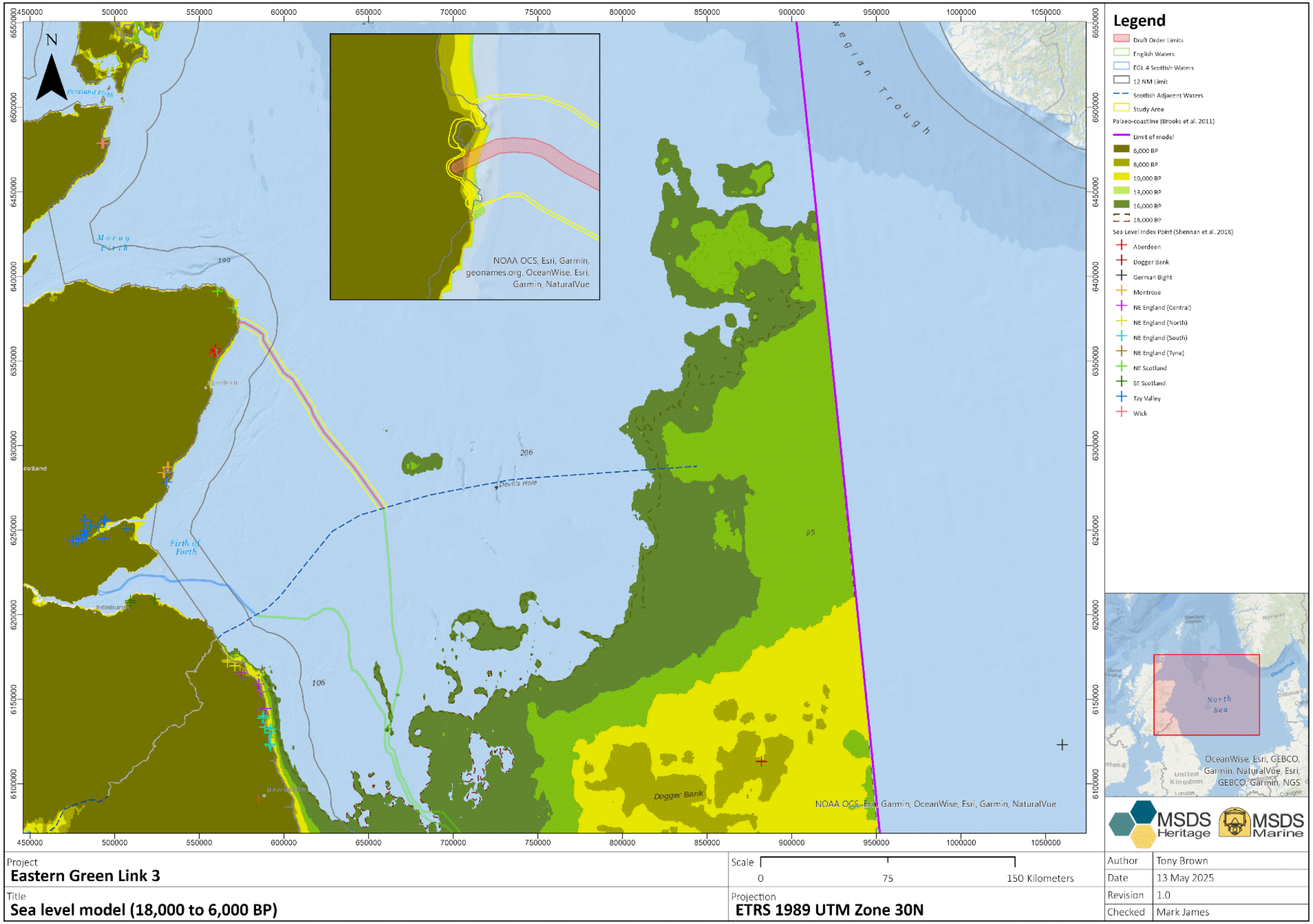


Figure 6: Sea level model (18,000 to 6,000 BP)

8.2.30 The Loch Lomond stadial (*c*. 12,900 to 11,700 BP; MIS 2) witnessed localised glaciation in the Scottish Highlands and Western Isles, although the associated GIA would have been significantly less than during the Dimlington[103] [104]. Lower RSL during the Loch Lomond stadial is reflective of isostatic rebound, counteracting the RSL increase from the freeing up of a large volume of water from glacial ice witnessed further south in the British Isles. Lower RSL is expressed by local SLIPs, indicating -9.7 m at *c*. 11,900 BP (Sample ID: SRR4707). Stoker *et al*.[105] found evidence of a late glacial shoreline in eastern Scotland, also demonstrating lower RSL during this period, but placed this at -20 to -30m OD.

8.2.31 A relatively swift period of sea level rise after *c*. 10,000 BP is expressed in the SLIP data, attributed to the Holocene transgression and regional by the Storegga tsunami (*c*. 8,200 BP)[106], however, this period has also been interpreted as two key phases of sea level increase, around 8,440 ±44 BP and 8,220 ±65 BP[107]. This largely concurs with the sea level curve for eastern Scotland presented by Stoker *et al*.[108].

8.2.32 Data presented by Shennan *et al*.[109] indicates that the local RSL was between -9.66 and -9.81 m OD (Sample IDs: SRR4707 & SRR5099, respectively) around 10,000 BP and between 1.75 and -0.55 m OD around 8,000 BP (Sample IDs: SRR869 & SRR4717, respectively). However, Stoker *et al*.[110] indicate a highstand of *c*. +5 m OD from *c*. 8,000 to 2,000 BP. All sources indicate that the Study Area was fully submerged prior to 18,000 BP and remained marine thereafter, with the exception of c. 1.5 km below MHWS, which was gradually transgressed between 18,000 to 6,000 BP to the present coastline.

8.3 Prehistoric archaeological potential

8.3.1 This Section considers the potential for submerged prehistoric remains, including archaeological sites, palaeolandscape elements and palaeoenvironmental evidence, to be present within the Study Area.

8.3.2 The prehistoric archaeological record of the UK covers the period from the earliest hominin occupation, potentially as far back as 970,000 BP, to the “end” of the Iron Age and the Roman invasion of Britain in AD 43. In Scotland, particularly the Highland zone where the Roman sphere of influence had a lesser socio-cultural impact, the Iron Age is considered to last up to 400 AD, encapsulating a shorter and predominantly military-focussed Roman period (AD 77 to 211)[111]. Other scholars consider the Scottish Iron Age to last up to *c*. 800 AD, with the onset of

[103] Ballantyne, C.K., McCarroll, D., Nesje, A., Dahl, S.O. and Stone, J.O. 1998. ‘The Last Ice Sheet in North-West Scotland: Reconstruction and Implications.’ *Quaternary Science Reviews*. **17**, pp. 1149-1184.
[104] Ballantyne, C.K. 2007. ‘Loch Lomond Stadial glaciers in North Harris, Outer Hebrides, North-West Scotland: glacier reconstruction and palaeoclimatic implications.’ *Quaternary Science Reviews*. **26**, pp. 3134-3149.
[105] Stoker, M.S., Golledge, N.R., Phillips, E.R., Wilkinson, I.P. and Akehurst, M.C. 2008. ‘Lateglacial-Holocene shoreface progradation offshore eastern Scotland: a response to climatic and coastal hydrographic change.’ *Boreas*. **38**, pp. 309.
[106] Nyland, A.J., Walker, J. and Warren, G. 2021. ‘Evidence of the Storegga Tsunami 8200 BP? An Archaeological Review of Impact After a Large-Scale Marine Event in Mesolithic Northern Europe.’ *Frontiers in Earth Science*. **9**.
[107] Hijma, M.P. and Cohen, K.M. 2019. ‘Holocene sea-level database for the Rhine-Meuse Deta, The Netherlands: Implications for the pre-8.2 ka sea-level jump.’ *Quaternary Science Reviews*. **214**, pp. 68-86.
[108] Stoker *et al*. 2008, pp. 309.
[109] Shennan *et al*. 2018.
[110] Stoker *et al*. 2008.
[111] Hunter, F. and Carruthers, M. (eds.). 2012. *Scotland: The Roman Presence*. Scottish Archaeological Research Framework Summary Roman Panel Document.

distinctive Norse influence[112]. The coastline of the UK changed drastically during prehistory and large tracts of what is now the seabed were once sub-aerially exposed.

8.3.3 Prehistoric archaeological potential is gauged with reference to evidence for human activity in Britain during each period and the contemporary environment within the Study Area, also considering depositional and post-depositional factors through interpretation of geological deposits present. Deposits with potential are generally those laid during periods of sub-aerial exposure or by fluvial process, rather than sub-glacial or marine deposits. However, there is also potential for archaeological material to be redeposited or reworked within secondary contexts resulting from fluvial erosion or glacial processes[113].

8.4 Lower and Middle Palaeolithic (c. 970,000 to 60,000 BP; MIS 19 to 4)

8.4.1 The Lower and Middle Palaeolithic span most of the known human history of the British Isles (*c*. 970,000 to 57,000 BP; MIS 25 to 4). Pre-dating the earliest recorded modern human remains, these periods witnessed the occupation of the British Isles and associated palaeolandscape by human ancestors, such as *homo antecessor, h. heidelbergensis* and *h. neanderthalensis*[114]. No well-provenanced finds of Lower or Middle Palaeolithic date are recorded in Scotland and a general absence of recorded hominin remains in Britain is noted between 180,000 to 60,000 BP[115] .

8.4.2 The North Sea palaeolandscape experienced periods of subaerial exposure, as inferred by the palaeo-deltaic Eridanos system[116]. It is feasible, therefore, that evidence of Lower Palaeolithic hominin and faunal occupation may be preserved within the Study Area, however, sediments dating to the Early Pleistocene and early Middle Pleistocene would have been reworked by successive stages of Late Quaternary glacial advance, marine transgression and associated taphonomic processes.

8.4.3 The oldest postulated Quaternary geological unit within the Study Area is the Aberdeen Ground Formation (Unit 9). This Formation was laid down through a range of Pleistocene environmental conditions (MIS 100 to 13). The earliest hominin evidence in Britain was derived from the Cromer Forest Beds Formation, the onshore equivalent of the Yarmouth Roads Formation, which is coeval, in part, with the Aberdeen Ground Formation[117]. The Yarmouth Roads Formation is also long lived (MIS 62 to 13) and is associated with the Eridanos delta system which characterised the central North Sea region during the Early and Middle Pleistocene[118].

8.4.4 The overlap of the deposition of the Aberdeen Ground Formation and hominin occupation comprises the Late Beestonian (MIS 25 to 22) and Cromerian complex (MIS 21 to 13), periods which are relatively poorly understood in terms of stadial/interstadial cycles and RSL. As such,

---

[112] https://scarf.scot/regional/rarfa/the-iron-age-700-bc-ad-500/7-the-iron-age-700-bc-ad-500/ Accessed 29 August 2024.
[113] Hosfield, R. and Chambers, J. 2004. *The Archaeological Potential of Secondary Contexts*. ALSF Project 3361.
[114] Flemming, N.C., Çağatay, M.N., Chiocci, F.L., Galanidou, N., Jöns, H., Lericolais, G., Missiaen, T., Moore, F., Rosentau, A., Sakellariou, D., Skar, B., Stevenson, A., Weerts, H. 2014. 'Land Beneath the Waves: Submerged landscapes and sea level change. A joint geoscience-humanities strategy for European Continental Shelf Prehistoric Research.' In Chu, N.C. and McDonough, N. (eds.). Position Paper 21 of the European Marine Board, Ostend, Belgium.
[115] https://scarf.scot/national/palaeolithic-mesolithic-panel-report/1-introduction-to-the-palaeolithic-and-mesolithic-periods/ Accessed 29 August 2024.
[116] Lamb *et al.* 2017.
[117] Ashton N., Lewis, S.G., De Groote, I., Duffy, S.M., Bates, M., Bates, R., Hoare, P., Lewis, M., Parfitt, S.A., Peglar, S., Williams, C. and Stringer, C. 2014. 'Hominin Footprints from Early Pleistocene Deposits at Happisburgh, UK.' *PLOS ONE.* **9**(2), pp. 1-13. https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0088329&type=printable
[118] Lamb *et al.* 2017.

it remains unclear when periods of sub-aerial exposure of the central North Sea may have supported hominin occupation.

8.4.5 Although the Yarmouth Roads and Cromer Forest Beds formations hold some archaeological potential, it is likely that much of the corresponding strata of the Aberdeen Ground Formation (the upper parts of the formation) present within the Study Area are characterised by marine facies, laid down in colder environs than the delta system further south[119], precluding hominin activity. Furthermore, there is a general absence of secure evidence of Lower or Middle Palaeolithic activity in a Scottish context and the potential for in situ archaeological remains is therefore extremely limited[120] [121]. Redeposited remains could occur, where eroded and translocated from other formations, however, no such contemporary evidence has been found in Scottish offshore contexts to date. The potential for redeposited remains from these periods is therefore extremely limited.

8.4.6 Remains of palaeoenvironmental interest may be present within the Aberdeen Ground Formation, particularly if identified within channel fills[122]. The sub-glacial facies of this formation lack faunal remains and are unlikely to contain a range of palaeoenvironmental evidence[123]. The presence of glaciomarine and marine facies indicates that there were periods that the Study Area was periodically submerged. Although the potential for archaeological remains in these facies is very low, fine-grained sediments and organic remains have been found within the Formation indicating potential for palaeoenvironmental remains[124].

8.4.7 Correlation of Unit 9 with the Aberdeen Ground Formation had not been confidently ascertained by the time of writing and further geotechnical investigation of this Unit would be required. Furthermore, the Aberdeen Ground Formation comprises several facies, each a product of a particular depositional environment and conditions. With the current limited understanding of Unit 9, it is not possible to postulate the archaeological or palaeoenvironmental potential.

8.4.8 The Coal Pit Formation is likely to occur throughout much of the Study Area (despite omission from the integrated report[125]). The Formation is mapped widely throughout the central North Sea by the BGS and lower elements have been attributed speculative Anglian (MIS 12) or Cromerian (MIS 21 to 13) origins. Much of the Formation is interpreted as glaciomarine deposits laid down during the Wolstonian complex (MIS 10 to 6), infilling Wolstonian age (or possibly Early Hoxnian (MIS 11)) channels incised into the underlying Aberdeen Ground, Ling Bank and Fisher formations.

8.4.9 Upper parts of the Coal Pit Formation, such as sampled from BGS borehole BH81/27, *c*. 6.8 km north from the intersection of the RLB and the Scottish Adjacent Waters boundary, has been postulated as intertidal or shallow inner shelf sediments[126]. Related sediments may feasibly be present within the Study Area.

[119] Vaughan-Hirsch and Phillips. 2017.
[120] Saville, A. 1997. 'Palaeolithic handaxes in Scotland'. *Proceedings of the Society of Antiquaries of Scotland*. **127**, pp. 1-16.
[121] Saville, A. 1998. 'Musselburgh (Inveresk parish): Palaeolithic flint handaxe'. *Discovery and Excavation in Scotland*. **33**.
[122] Holmes, R. 1977. 'Quaternary deposits of the central North Sea, 5. The Quaternary geology of the UK sector of the North Sea between 56° and 58°N.' *Report of the Institute of the Geological Sciences*. **77**.
[123] Gatliff *et al*. 1994.
[124] Holmes. 1977.
[125] NextGeo. 2025b.
[126] Gatliff *et al*. 1994.

8.4.10 Data from BH75/33 and BH81/37, *c*. 145 km northeast and *c*. 127 km east from the Study Area, respectively, are suggestive of warmer depositional conditions of the Ipswichian interglacial (MIS 5e)[127] and other parts of the Formation may have been laid down during the Early to Mid-Devensian (MIS 5d to 3)[128].

8.4.11 The Study Area lay beneath glacial ice during much of the Wolstonian and Devensian glaciations (Figure 4) and was therefore unlikely to have been inhabited by hominins. Although the larger part of the Coal Pit Formation is likely glaciomarine in origin, the potential for MIS 5e deposits cannot be dismissed at this stage. The Ipswichian interstadial (MIS 5e) is understood to be characterised by global mean temperatures of *c*. 1.5°C warmer than present and polar temperatures 3 to 5°C warmer[129], resulting in widespread higher RSL and marine inundation of the North Sea, similar to, or perhaps slightly greater, than at present[130] [131]. Limiting points and SLIPs from the southern North Sea, Flamborough Head and Coningsby dated to MIS 5e to 5d suggest an RSL range of -2.75 to 5.29 m, correlating with the current broad understanding of MIS 5e sea level[132]. As such, the Study Area was likely characterised by open marine conditions for much of MIS 5e, further precluding hominin occupation.

8.4.12 Palaeoenvironmental evidence may be contained within the Coal Pit Formation which may contribute to our understanding of the depositional timeline and conditions of the Formation, such as foraminifera, dinoflagellates and wood fragments. The latter were identified within basal elements of the Coal Pit Formation from borehole BH81/37. Similar basal elements of the Formation, characterised as basal channel infill, have not been interpreted within the Study Area.

8.5 Upper Palaeolithic (c. 60,000 to 11,700 BP; MIS 3 to 1)

8.5.1 The Upper Palaeolithic (57,000 to 11,700 BP; MIS 3 to 2) spans the Mid to Late Devensian, including the Dimlington and Loch Lomond stadials. There is evidence of hominin activity in Britain in the Mid to Late Devensian, following a period yet to be associated with occupation (180,000 to 60,000 BP). Flint artefacts and skeletal remains indicating the presence of Neanderthals or *h. sapiens* (modern humans) have been identified in Kent's Cavern (Devon)[133],

[127] Gregory and Bridge. 1979.
[128] Holmes. 1977.
[129] Rovere, A., Raymo, M.E., Vacchi, M., Lorscheid, T., Stocchi, P., Gómez-Pujol, L., Harris, D.L., Casella, E., O'Leary, M.J. and Hearty, P.J. 2016. 'The analysis of Last Interglacial (MIS 5e) relative sea-level indicators: Reconstructing sea-level in a warmer world.' *Earth-Science Reviews*. **159**, pp. 404-427.
[130] Streif, H. 2004. 'Sedimentary record of Pleistocene and Holocene marine inundations along the North Sea coast of Lower Saxony, Germany.' *Quaternary International*. **112**(1), pp. 3-28.
[131] Rohling, E.J., Grant, K., Bolshaw, M., Roberts, A.P., Siddall, M., Hemleben, C. and Kucera, M. 2009. 'Antarctic temperature and global sea level closely coupled over the past five glacial cycles.' *Nature Geoscience*. **2**, pp. 500-504, results reproduced by Flemming, N.C., Çağatay, M.N., Chiocci, F.L., Galanidou, N., Jöns, H., Lericolais, G., Missiaen, T., Moore, F., Rosentau, A., Sakellariou, D., Skar, B., Stevenson, A. and Weerts, H. 2014. 'Land Beneath the Waves: Submerged landscapes and sea level change. A joint geoscience-humanities strategy for European Continental Shelf Prehistoric Research', in Chu, N.C. and McDonough, N. (eds.) *Position Paper 21 of the European Marine Board*, Ostend, Belgium.
[132] Cohen, K.M., Cartelle, V., Barnett, R., Busschers, F.S. and Barlow, N.L.M. 2021. 'Last Interglacial sea-level data points from Northwest Europe.' *Earth System Science Data* https://doi.org/10.5194/essd-2021-390
[133] Higham, T., Compton, T., Stringer, c., Jacobi, R., Shapiro, B., Trinkaus, E., Chandler, B., Groning, F., Collins, c., Hillson, S., O'Higgins, P., Fitzgerald, c. and Fagan, M. 2011. 'The Earliest Evidence for Anatomically Modern Humans in Northwestern Europe.' *Nature*. **479**, pp. 521-524.

Dartford (Kent)[134], Gower (Wales)[135] and Creswell (Derbyshire)[136].

8.5.2 The earliest human artefacts within a secure Scottish context (a large assemblage of flint tools from Kilmelfort Cave, Argyll) have been relatively dated by comparison with other Northwest European lithic typologies to suggest a Late Upper Palaeolithic date. In the absence of organic preservation at that site, a broad date range of 12,000 to 11,500 BP is currently accepted[137]. A further site (Howburn Farm, South Lanarkshire) is suggestive of activity slightly prior to this[138]. Recent research has identified lithics comparable to those of the Northwest European Ahrensburgian culture at South Cuidrach, Isle of Skye[139]. Though this site too has not produced evidence suitable for absolute dating, the Ahrensburgian sites in Europe have produced dates from *c*. 12,200 BP[140] and in southern England from 12,400 to 10,500 BP[141], hinting at a possible earlier human presence in Scotland than currently evidenced.

8.5.3 Several units provisionally identified within the Study Area date to MIS 2, however, these largely indicate depositional environments unsuitable for human occupation.

8.5.4 Unit 4B has been provisionally correlated with the Wee Bankie Formation, characterised as basal till of Late Devensian age, perhaps in part as lodgement till[142]. As a glacial deposit, this Unit is very unlikely to contain archaeological remains and samples have been noted for their lack of *in situ* palaeoenvironmental evidence[143].

8.5.5 Unit 3 has been provisionally correlated with the Marr Bank Formation, although initial interpretation did not explicitly interpret Marr Bank Formation sediments within the Study Area and the integrated report does not mention the Formation. The Marr Bank Formation is mapped widely throughout the Study Area by the BGS, however, and associated deposits may remain unidentified due to the difficulty of distinguishing these from underlying Unit 4B and/or overlying Unit 2B and 2D sediments.

8.5.6 The Marr Bank Formation was laid down in shallow glaciomarine conditions of the Late Devensian (MIS 2), unsuitable for human occupation and therefore indicating a negligible archaeological potential for Unit 3. Wood fragments have been encountered in samples of the Formation, understood to have been introduced to the depositional environment during storm events[144]. Such remains, alongside the general potential for diatomic and ostracod remains from marine and glaciomarine deposits, may inform our understanding of Late Devensian

[134] Wenban-Smith, F., Bates, M. and Schwenninger, J. 2010. 'Early Devensian (MIS 5d–5b) occupation at Dartford, southeast England.' *Journal of Quaternary Science*. **25**(8), pp. 1193-1199.
[135] Dinnis, R. 2012. 'Identification of Longhole (Gower) as an Aurignacian site.' *Lithics: The Journal of the Lithic Studies Society*. **33**, pp. 17–29.
[136] Pike, A.W.G., Gilmour, M., Pettitt, P., Jacobi, R., Ripoll, S., Bahn, P. and Munoz, F. 2005. 'Verification of the age of the Palaeolithic cave art at Creswell Crags, UK.' *Journal of Archaeological Science*. **32**(11), pp. 1649–1655.
[137] Saville, A. and Ballin, T.B. 2009. 'Upper Palaeolithic evidence from Kilmelfort Cave, Argyll: a re-evaluation of the lithic assemblage.' *Proceedings of the Society of Antiquities for Scotland*. **139**, pp. 9-45.
[138] Ballin, T.B., Saville, A., Tipping, R., Ward, T., Housley, R., Verrill, L., Bradley, M., Wilson, C., Lincoln, P. and MacLeod, A. 2018. *Reindeer hunters at Howburn Farm, South Lanarkshire: A Late Hamburgian settlement in southern Scotland – its lithic artefacts and natural environment*. Oxford: Archaeopress Publishing Ltd.
[139] Hardy, K., Barlow, N.L.M., Taylor, E., Bradley, S.L., McCarthy, J. and Rush, G. 2025. 'At the far end of everything: A likely Ahrensburgian presence in the far north of the Isle of Skye, Scotland.' *Journal of Quaternary Science*. **40**(3), pp. 1-15.
[140] Crombé, P., Pironneau, C., Robert, P., van der Sloot, P., Boudin, M.,De Groote, I., Verheyden, S. and Vandendriessche, H. 2024. 'Human response to the Younger Dryas along the southern North Sea basin, Northwest Europe.' *Scientific Reports*. **14**(1): 18074.
[141] Lewis, J.S.C. and Rackham, J. 2011. *Three Ways Wharf, Uxbridge: A Lateglacial and Early Holocene Hunter-Gatherer Site in the Colne Valley*. London: Museum of London.
[142] Gatliff *et al*. 1994.
[143] Gatliff *et al*. 1994.
[144] Stoker *et al*. 1985.

proximal marine environments and Unit 3 therefore holds a low to moderate palaeoenvironmental potential.

8.5.7 Unit 4C likely comprises elements of Units 3 and 4B, characterising the infill of a series of palaeochannels. The formation process of these features remains unclear and, at present, there is little to suggest formation during periods of sub-aerial exposure. As such, human occupation of these environments was unlikely and a negligible archaeological potential is therefore considered. Palaeoenvironmental evidence, however, may be held within Unit 4C deposits and a low to moderate potential is considered.

8.5.8 Unit 2D has been provisionally correlated with the Largo Bay Member of the Forth Formation. The Member was laid down in estuarine to offshore marine environments of the Late Devensian and mapped principally within 12 NM. The range of depositional environments and age of the Member suggests that it began to be laid down in estuarine environments after the LGM, when ameliorating climatic conditions and watercourses creating those environments would have allowed the development of vegetation and the theoretical supporting of faunal and human populations. Upper elements, however, exhibit a decreasing faunal diversity, reflecting cooling conditions leading up to the Loch Lomond stadial[145].

8.5.9 Unit 2D has been interpreted throughout Blocks B068 to B077 within the Study Area. Sea level modelling suggests this area of deposition had experienced marine inundation by 18,000 BP, at the latest (Figure 6). The period from 25,000 to 18,000 BP has not yet been attributed to evidence of human activity in Britain and the earliest evidence in Scotland has been attributed a Late Upper Palaeolithic date (*c*. 12,400 to 11,500 BP)[146] [147] [148] [149]. The circumstantial evidence therefore suggests a negligible potential for *in situ* archaeological remains within Unit 2D.

8.5.10 Microfauna assemblages derived from the top of the Largo Bay Member demonstrate the potential for palaeoenvironmental remains and estuarine deposits generally have the potential to contain palaeoenvironmental evidence derived from inland and coastal environments. The microfauna assemblages have been used to identify a deterioration of climatic conditions around 11,000 BP[150].

8.5.11 Stage 1 geoarchaeological analysis identified deposits of interest from four vibrocore samples. Stage 2 analysis correlated these deposits, generally comprising horizontally bedded sands and silty clays, with the Largo Bay Member and therefore with Unit 2D. Stage 2 concluded, however, that these deposits were likely laid down in proximal glaciomarine to marine conditions and have a low potential for palaeoenvironmental remains.

8.6 Mesolithic (11,700 to 6,000 BP; MIS 1)

8.6.1 The Mesolithic period (11,700 to 6,000 BP; MIS 1) correlates with the start of the Holocene and the culmination of the last glacial period. As climatic conditions ameliorated during the onset of the Holocene, carr woodland would have developed in stable terrestrial areas which could support a much greater variety and density of fauna. Meltwater from the recently retreated

[145] Gatliff *et al*. 1994.
[146] Saville and Ballin. 2009.
[147] Ballin *et al*. 2018.
[148] Hardy *et al*. 2025.
[149] Lewis and Rackham. 2011.
[150] Gatliff *et al*. 1994.

Devensian glaciers shaped the landscape with river valleys and lakes, which, in turn, supported new and extensive flora and fauna. These fluvial and adjacent environments provided ideal conditions for human exploitation. Available resources would have increased as the local flora and fauna became more diverse, and the range of environmental conditions would have presented more varied opportunities for exploitation.

8.6.2 Units 2A and 2B, both provisionally correlated with the St Andrews Bay Member of the Forth Formation, were laid down during the Early Holocene. Their lithology suggests a broadly shallow marine depositional environment; however, some parts are suggestive of beach and/or fluviomarine sediments. Sea level modelling suggests that the part of the North Sea where the St Andrews Bay Member is recognised (north of 55° N) was inundated to a greater extent by 18,000 BP, prior to known human occupation of Scotland and northeast England after the LGM. Units 2A and 2B have been provisionally identified irregularly throughout the Study Area, particularly further offshore. As Units 2A and 2B were laid down in marine environments, a negligible potential for archaeological is considered.

8.6.3 These Units were sampled by numerous vibrocores and no associated deposits were progressed forward from the Stage 1 geoarchaeological analysis. Units 2A and 2B therefore hold a low potential for palaeoenvironmental evidence.

8.6.4 Unit 1 comprises Holocene marine sediments and post-dates marine inundation of the North Sea palaeolandscape. Although *in situ* archaeological remains are highly unlikely to be present, artefacts eroded from their primary contexts and redeposited within Unit 1 may exist. Such occurrences, however, are very difficult to predict and a low overall potential can be considered.

8.6.5 Palaeoenvironmental remains typically draw much of their significance from their primary context and, therefore, redeposition can diminish this considerably. Discoveries of peat and submerged forests, both *in situ* and redeposited, within the foreshore zone present a high potential for palaeoenvironmental remains. However, no such remains have been identified within the Study Area, either through review of the desk-based sources or during the walkover survey at the landfall.

8.6.6 Surficial sediments were laid down throughout the Holocene, contemporarily with known prehistoric occupation in Scotland. The potential for archaeological remains deposited within the marine environment during the Mesolithic and later periods is examined in Section 11.0.

8.7 Summary

8.7.1 This Section has examined the initial interpretations of the geophysical survey alongside wider evidence, describing nine geological units within the Study Area. The geological assessment has informed the assessment of archaeological potential.

Summary of archaeological potential

8.7.2 Most provisionally correlated units have been interpreted as marine or glaciomarine in origin, thus precluding the potential for *in situ* archaeological remains relating to prehistory prior to or during the Flandrian marine transgression. Units 2A, 2B, 2D, 3, 4B and 5 have been attributed a negligible or very low archaeological potential.

8.7.3 Unit 1 has been attributed a low archaeological potential. Deposition of related sediments correlates with human activity in Scotland and, although marine deposits would not hold *in situ* remains, *ex situ* artefacts may feasibly be present.

Summary of palaeoenvironmental potential

8.7.4 Non-glacigenic deposits hold a broad potential for evidence such as diatoms, ostracods and dinoflagellates, which can be used to infer palaeoenvironmental conditions. Units 3, 4C and 5 have therefore been attributed a low to moderate potential for palaeoenvironmental remains.

8.7.5 Units 2A, 2B and 2D were sampled and analysed by a specialist geoarchaeologist. All were concluded to warrant no further investigation and have been attributed a low overall potential for palaeoenvironmental remains.

8.7.6 As a glacigenic deposit, Unit 4B has been attributed a very low potential for palaeoenvironmental remains.

8.7.7 Unit 1 has been attributed a negligible potential for palaeoenvironmental remains, as this comprises Holocene marine sediments with no local indication of features such as peat beds or submerged forests.

8.7.8 The Aberdeen Ground Formation (Unit 9) was deposited over a considerable period of time, spanning a range of depositional environments. As such, the archaeological and palaeoenvironmental potential is particularly to each facies. Further analysis is required to characterise Unit 9 and determine the lithology, age and depositional environment(s) of any confidently interpreted Aberdeen Ground Formation deposits.

8.7.9 A summary of provisionally identified units and their attributed archaeological and palaeoenvironmental potential is presented by Table 8.

Unit	MIS	Depositional environment	Potential	
			Prehistoric archaeology	Palaeo-environmental
1	1	Marine	Low	Negligible
2A	1	Shallow marine	Very low	Low
2B	1	Shallow marine, possibly beach and/or fluviomarine	Very low	Low
2D	2	Estuarine to offshore marine	Negligible	Low
3	2	Shallow glaciomarine	Negligible	Low to moderate
4B	2	Glacigenic	Negligible	Very low
4C	2	Likely glacigenic and glaciomarine	Negligible	Very low to moderate

Unit	MIS	Depositional environment	Potential	
			Prehistoric archaeology	Palaeo-environmental
5	6 to 3	Mostly glaciomarine; upper member locally interpreted as intertidal.	Very low	Low to moderate
9	100 to 13	Delta-front/pro-delta/nearshore/open marine; sub-glacial, proximal glaciomarine, distal glaciomarine and marine facies	Uncertain	Uncertain

Table 8: Summary of the archaeological and palaeoenvironmental potential of identified geological units

9.0 Results of geophysical anomalies

9.0.1 For the avoidance of confusion, the results of magnetic anomalies with no surface expression are presented in Section 10.0 and the palaeolandscape assessment in Section 8.0.

9.0.2 A total of 82 surface anomalies of potential archaeological interest were identified within the geophysical survey data extents, all of which are within the RLB. The anomalies are categorised by potential in Table 9.

Archaeological potential	Count
Low	77
Medium	4
High	1
Total	82

Table 9: Number of geophysical anomalies of archaeological potential

9.0.3 The distribution of anomalies is shown in Figure 7. The distribution is heavily weighted towards the inshore section of the RLB.

9.0.4 The distribution of anomalies within the geophysical data shows a consistent approach to the assessment. The high, medium and low potential anomalies are discussed below according to their assessed potential.

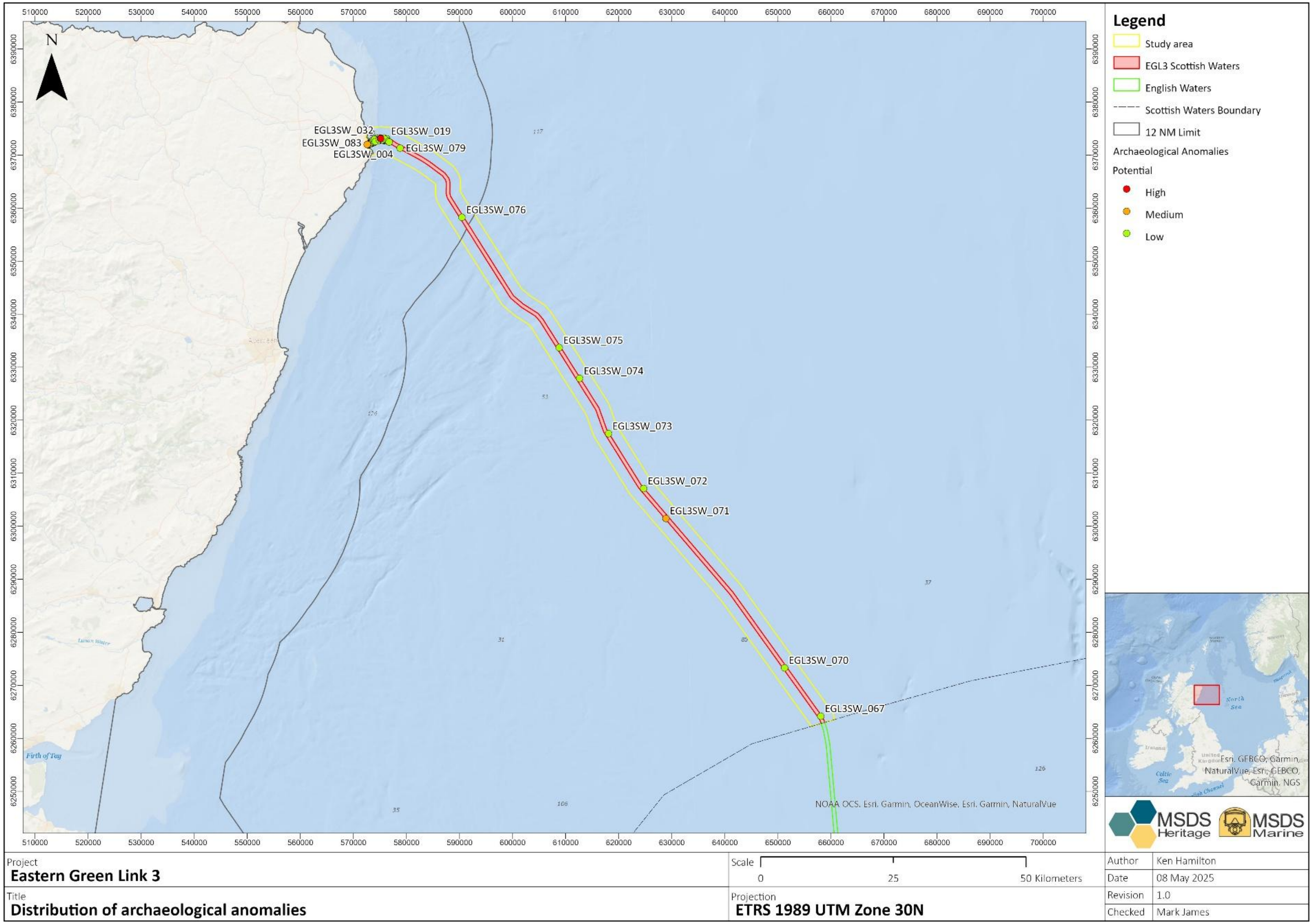


Figure 7: Distribution of archaeological anomalies.

9.1 Low potential anomalies

9.1.1 Seventy-seven (77) anomalies interpreted as of low archaeological potential were identified within the geophysical survey data extents. The anomalies can be categorised as follows in Table 10.

Anomaly category	Count
Chain, cable or rope	15
Linear	5
Potential debris	57
Total	**77**

Table 10: Low potential anomaly categories.

9.1.2 The anomalies interpreted as of low archaeological potential are a mixture of small features, often boulder-like, or likely to represent modern debris or small items of debris with no features indicating archaeological potential. Each anomaly was reviewed and interpreted to be of low archaeological potential.

9.1.3 Table 11, below, provides a brief justification for the interpretation of each category of low potential anomaly. To note, the descriptions below are generalised and each anomaly is interpreted based on individual characteristics, other anomalies within the wider area and seabed characterisation. Cables and pipelines have not been identified in this report.

Anomaly category	Description
Chain, cable or rope	Features identified as chain, cable or rope are, as the name suggests, long thin anomalies likely to be caused by discarded or lost pieces of chain, cable or rope.
Infrastructure	Features identified as infrastructure are modern features associated with undersea cables and pipelines. Please note that the cables and pipelines themselves have not been reported in this report.
Likely geological	Features identified as likely geological, are generally precautionary identifications where the form is indictive of a geological feature but may be of a size, or form, which is unusual in the surrounding area.
Linear	Features identified as linear will generally be far longer in one direction than in others, suggesting an anthropogenic origin. The potential will be determined based on the size, associated magnetic anomalies, and the surrounding environment.

Anomaly category	Description
Mound	Features identified as mounds are where the main characteristic is a raised area of the seabed surface that may indicate either low lying material, or partially buried material. The potential will be determined based on the size, associated magnetic anomalies, and the surrounding environment.
Potential debris	Features identified as potential debris will generally display characteristics indicating anthropogenic origin, such as straight or angular edges. Boulder like features, with associated magnetic anomalies can also be categorised as potential debris.
Seabed disturbance	Features identified as seabed disturbances are where the main characteristic is a change in the seabed surface that may indicate either low lying material, or partially buried material. The potential will be determined based on the size, associated magnetic anomalies, and the surrounding environment.

Table 11: Low potential anomaly descriptions.

9.1.4 Low potential anomalies have been assessed against all available evidence and are deemed unlikely to be of archaeological significance and as such are not discussed further within the results section of this report.

9.1.5 The distribution of low potential anomalies is shown in Figure 8. A gazetteer of low potential anomalies, including positions and dimensions, can be found in Section 15.0 - Annex A.

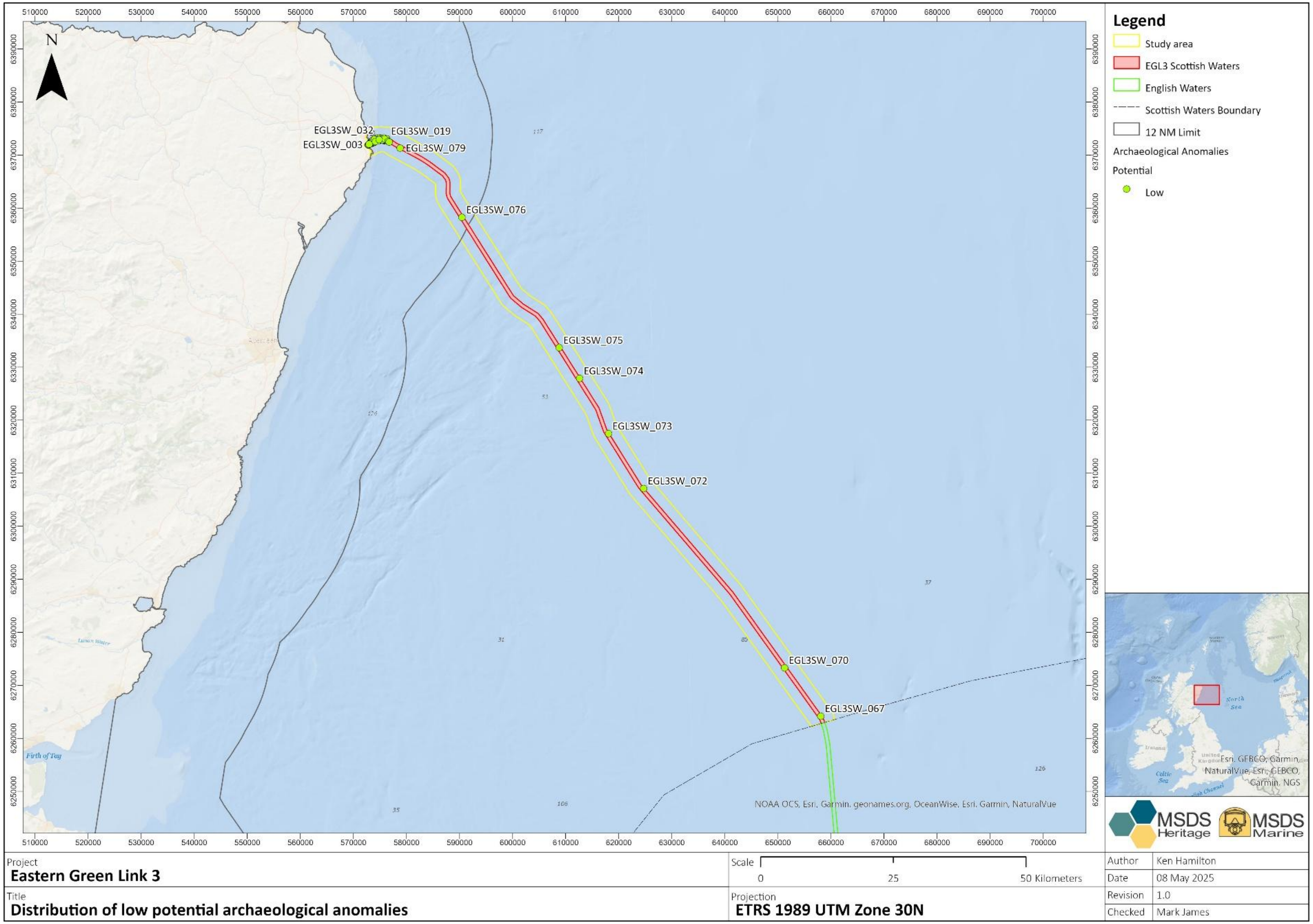


Figure 8: Distribution of low potential archaeological anomalies

9.2 Medium potential anomalies

9.2.1 Four (4) anomalies interpreted as of medium archaeological potential were identified within the geophysical survey data extents, one of which lies close to shore. The anomalies can be categorised as follows in Table 12, the distribution is presented in Figure 9.

Anomaly category	EGL 3
Potential wreck debris	2
Debris	1
Linear	1
Total	4

Table 12: Medium potential anomaly categories.

9.2.2 The anomalies interpreted as of medium archaeological potential have characteristics that indicate a likelihood of representing anthropogenic material that has the potential to be of archaeological interest, or where a precautionary approach has been taken for anomalies where the identification isn't clear.

9.2.3 With the exception of EGL3SW_068 and EGL3SW_069, each medium potential anomaly is discussed, along with an image, within this section of this report. EGL3SW_068 and EGL3SW_069 are discussed along with High Potential EGL3SW_065, in Section 9.3, due to the likely relationship between the anomalies. A gazetteer of medium potential anomalies, including positions and dimensions can be found in Section 15.0 - Annex A.

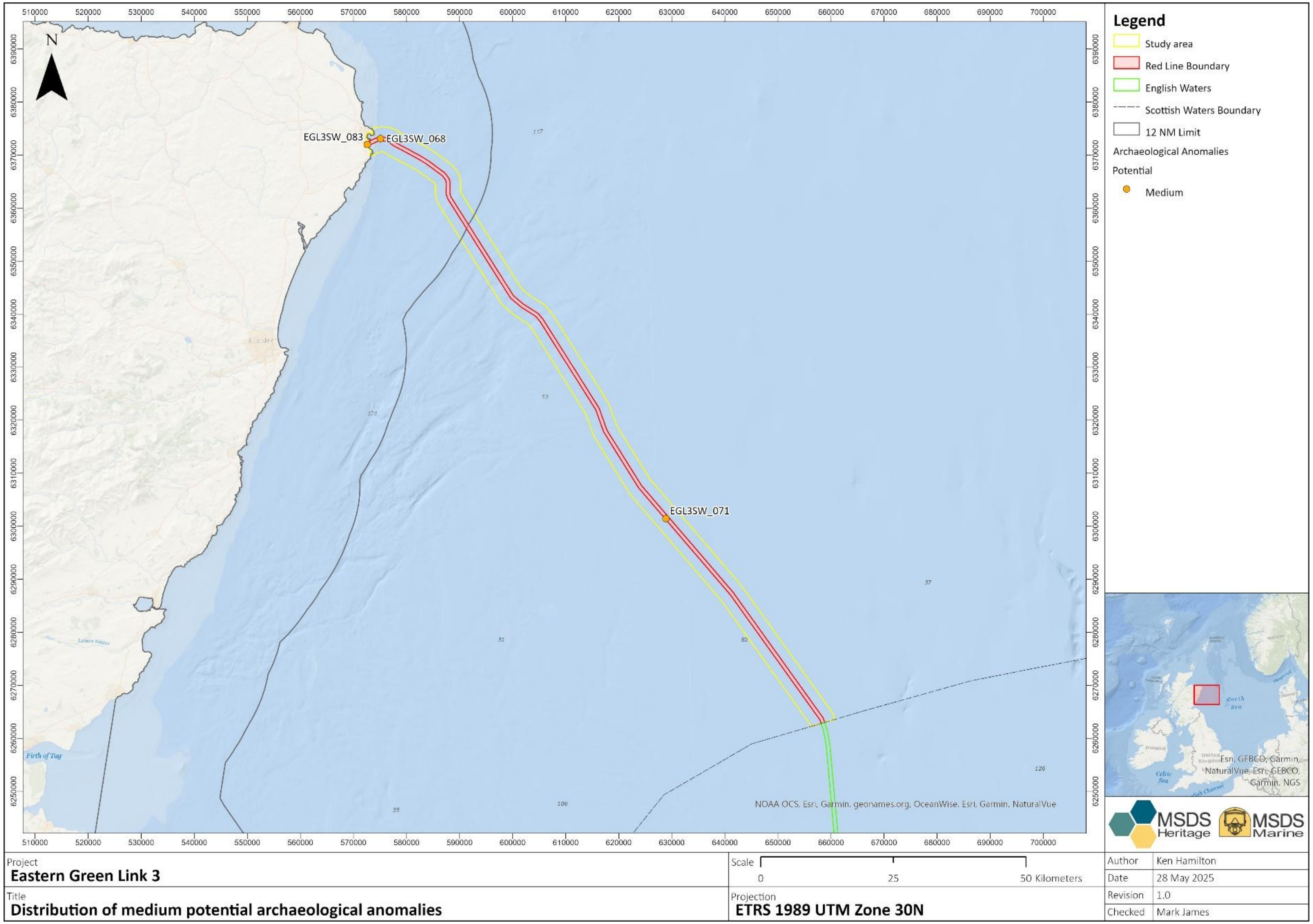


Figure 9: Distribution of medium potential archaeological anomalies.

Medium potential EGL3SW_071

9.2.4 Medium potential EGL3SW_071 (Figure 10) lies 752 m northwest of KP 484. The anomaly is visible in both the SSS and MBES data but has no corresponding magnetic anomaly. The anomaly does not correspond with any records identified during the desk-based assessment.

9.2.5 The anomaly is visible with the MBES data as a crescent shaped feature with an associated scour approximately 11.0 m x 6.3 m with a height of 0.7 m. The origin of the material is unclear, however, the overall size and form of the anomaly may represent material of archaeological interest and a medium potential rating is considered appropriate. Further assessment by Remotely Operated Vehicle (ROV) would be required to better understand the origin and archaeological potential.

Medium potential EGL3SW_083

9.2.6 Medium potential EGL3SW_083 (Figure 11) lies 225 m west-northwest of KP 580. No SSS data were available for this area. The anomaly is visible in the MBES data and has a corresponding magnetic anomaly of 91 nT, with a calculated mass of 29.9 tonnes. The anomaly does not correspond with any records identified during the desk-based assessment.

9.2.7 The anomaly is visible in the MBES data as two linear pieces of debris measuring 9.7 m x 2.7 m, with a measurable height of 0.5 m. The anomaly is characterised by two parallel linear features orientated east-west. The origin of the anomaly is unclear, however, the overall size and form may indicate material of archaeological interest and a medium potential rating is considered appropriate. It should be noted, however, that the anomaly lies near two low potential anomalies (EGL3SW_081 and EGL3SW_082), identified as large sections of pipe and EGL3SW_083 may be related. Further assessment by ROV would be required to better understand the origin and archaeological potential.

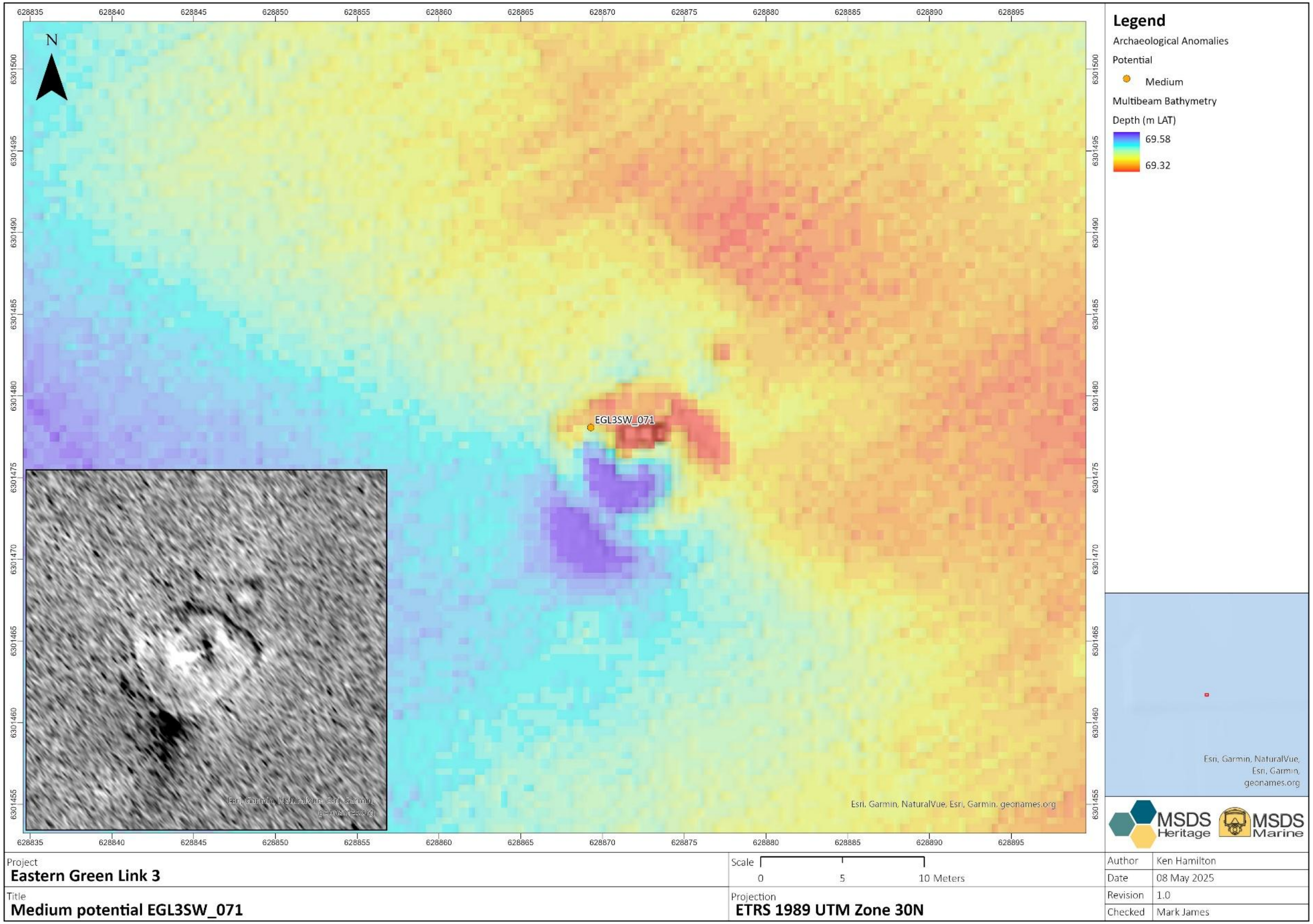


Figure 10: Medium potential EGL3SW_071.

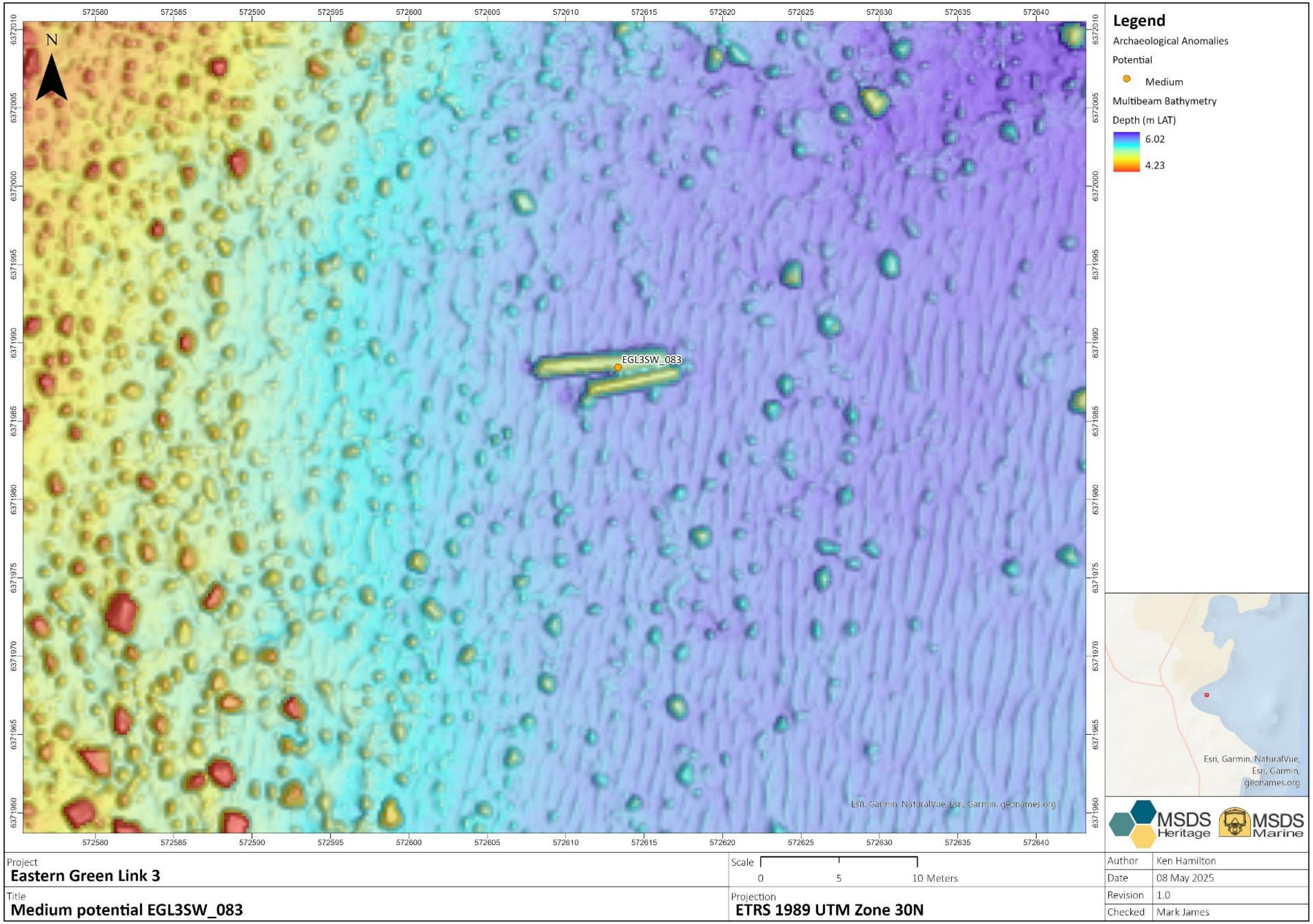


Figure 11: Medium potential EGL3SW_083.

9.3 High potential anomalies

9.3.1 One anomaly interpreted as of high archaeological potential was identified within the geophysical survey data extents. The anomaly can be categorised as follows in Table 13 and the location is presented in Figure 12.

Anomaly category	EGL3
Wreck	1
Total	**1**

Table 13: High potential anomaly categories.

9.3.2 Anomalies interpreted as of high archaeological potential have characteristics that indicate a high likelihood of representing anthropogenic material of archaeological interest or where a precautionary approach has been taken for anomalies where the identification isn't clear.

9.3.3 Each high potential anomaly is discussed, along with an image, within this section of this report. A gazetteer of high potential anomalies, including positions and dimensions can be found in Section 15.0 - Annex A.

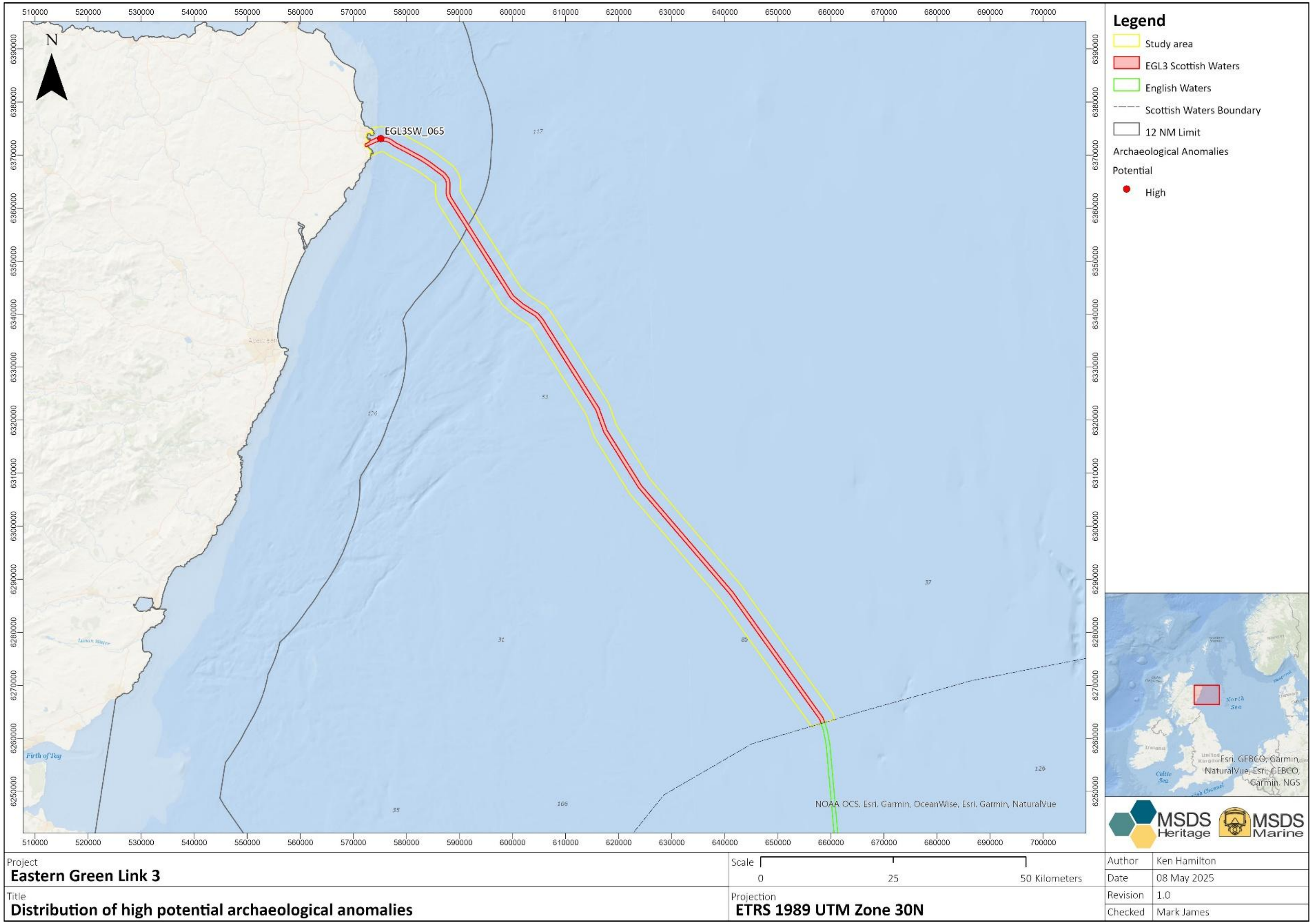


Figure 12: Distribution of high potential archaeological anomalies.

High potential EGL3SW_065

9.3.4 High potential EGL3SW_065 (Figure 13) lies 225 m west of KP 577. The anomaly is visible in both the SSS and MBES data but has no corresponding magnetic anomaly.

9.3.5 The anomaly is the possible remains of a wrecked vessel measuring 29.8 m x 9.0 m, with a measurable height of 0.3 m. The wreck is orientated east-west. It is unclear as to whether it lies upright and the orientation of the bows is not certain. Scour is visible all around the wreck but is less prominent to the west. A separate piece of possibly related debris lies immediately to the east and may be related to the main feature. Similarly, a linear feature extending from the western end may represent associated debris.

9.3.6 The anomaly has been interpreted as a possible wreck based on its size and shape. The lack of a corresponding magnetic anomaly can be explained by three possibilities:

- The wreck is an early wooden vessel, with few metal fixtures or fittings;
- Any associated magnetic anomalies are too small to have been recorded by the Magnetometer (the nearest Magnetometer line is 9.6 m away, meaning any single ferrous object would have to weigh more than 440 kg to register an anomaly of greater than 5 nT); or
- The anomaly represents a natural feature that is morphologically similar to a vessel hull.

9.3.7 Further assessment by ROV would be required to better understand the origin and archaeological potential of this anomaly.

Medium potential EGL3SW_068 and EGL3SW_069

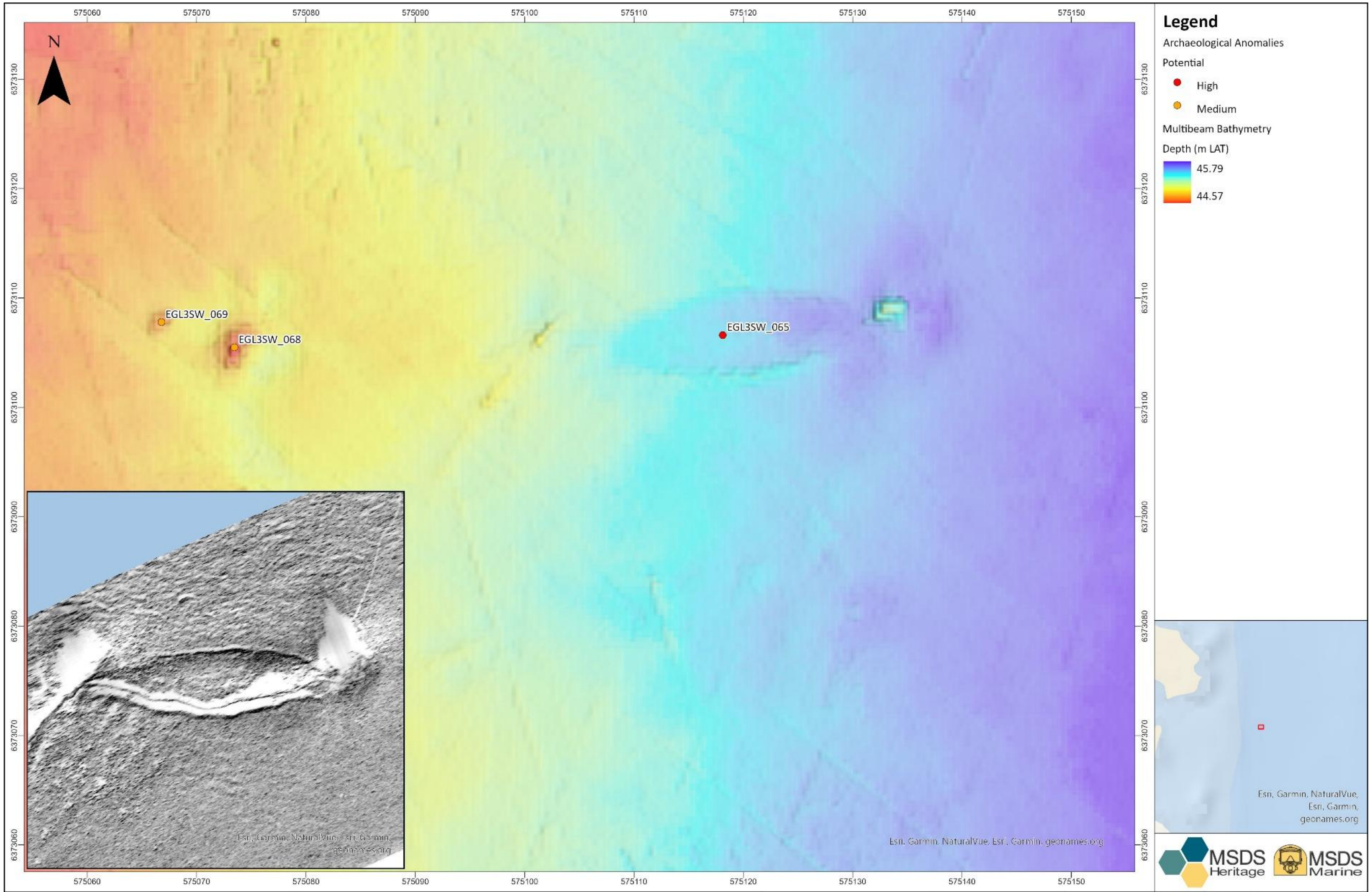
9.3.8 Medium potential EGL3SW_068 and EGL3SW_069 (Figure 14) lay 260 m and 274 m west of KP 577, respectively. The anomalies are visible in both the SSS and MBES data but have no corresponding magnetic anomaly.

9.3.9 EGL3SW_068 is the possible remains of material relating to the potential wrecked vessel EGL3SW_065. The debris measures 4.5 m x 1.3 m with a measurable height of 1.1 m. The debris is orientated northeast-southwest. Scour is visible to the southeast of the anomaly. EGL3SW_069 may represent the remains of material relating to wrecked vessel EGL3SW_065. The debris measures 3.2 m x 1.0 m with a measurable height of 0.5 m. The debris is orientated northeast-southwest.

9.3.10 The anomalies have been interpreted as possible wreck debris, based on the size and proximity to the potential wreck EGL3SW_065. The lack of a corresponding magnetic anomaly can be explained by three possibilities:

- The debris comprises non-magnetic material, such as wood or stone;
- Any associated magnetic anomalies are too small to have been recorded by the Magnetometer (the nearest Magnetometer line is 9.6m away, meaning any single ferrous object would have to weigh more than 440 kg to register an anomaly of greater than 5 nT); or
- The anomalies are natural features.

9.3.11 Further assessment by ROV would be required to better understand the origin and archaeological potential of these anomalies.



Project **Eastern Green Link 3**	Scale 0 12.5 25 Meters	Author	Ken Hamilton
		Date	08 May 2025
Title **High potential EGL3SW_065**	Projection **ETRS 1989 UTM Zone 30N**	Revision	1.0
		Checked	Mark James

Figure 13: High potential EGL3SW_065.

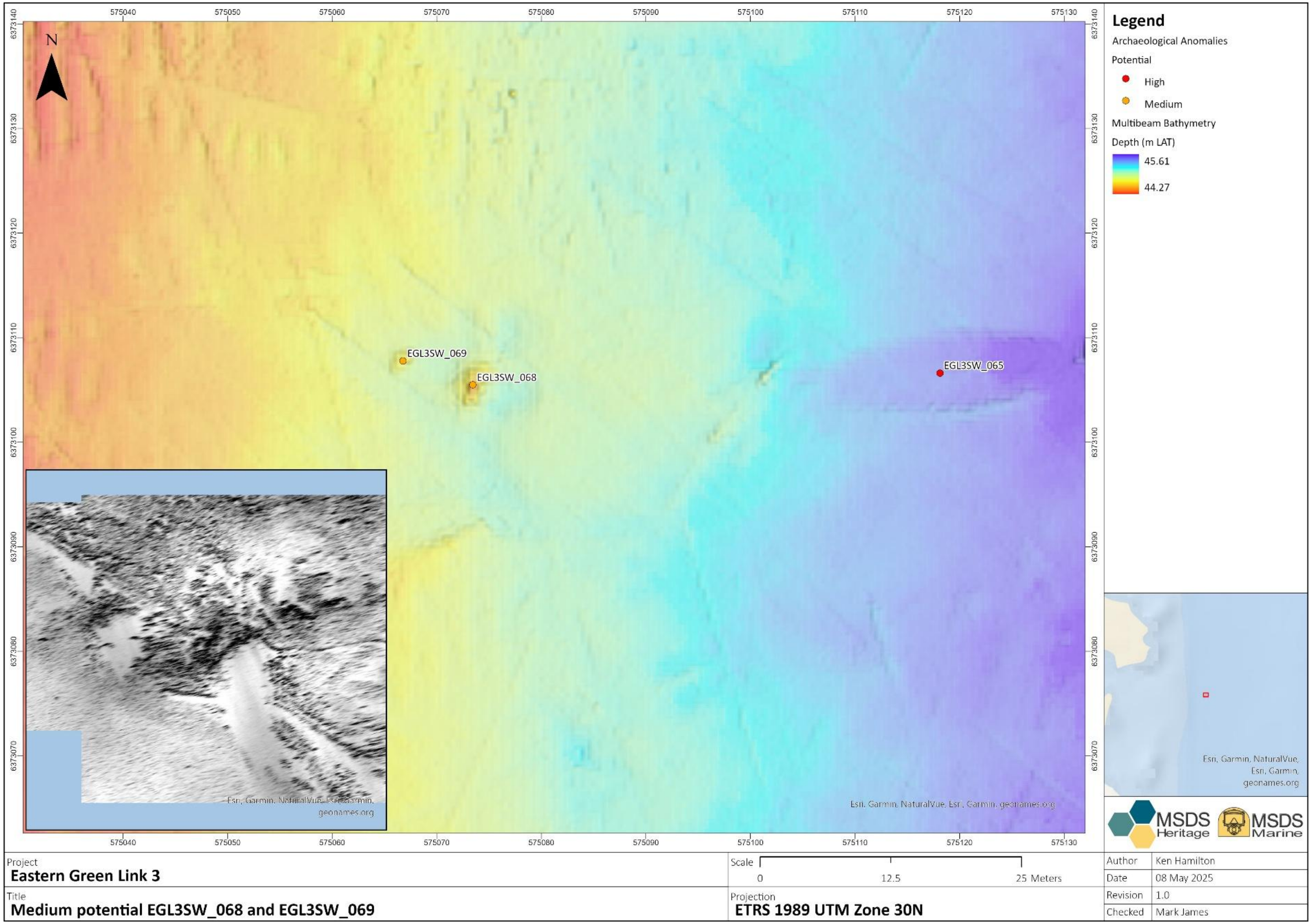


Figure 14: Medium potential EGL3SW_068 and EGL3SW_069.

10.0 Magnetic anomalies

10.1 Assessment of magnetic anomalies

10.1.1 A total of 848 magnetic anomalies, ranging between 1.4 nT and 5,431.8 nT, were identified within the Magnetometer data and within the geophysical survey data extents. Of these, 681 are over 5.0 nT and do not correlate with known or visible features or infrastructure and have therefore been taken forward for assessment within this Section. The distribution of anomalies by amplitude is shown below in Table 14 with their spatial distribution presented in Figure 15.

Amplitude (nT)	EGL3
5 to 50	384
50 to 100	141
100 to 200	99
200 +	57
Total	**681**

Table 14: Magnetic anomalies by amplitude (nT).

10.1.2 Anomalies identified from the Magnetometer data are ferrous and thus generally anthropogenic in origin. They can be associated with geological features, however, there is no visual interpretation, as with other geophysical data.

10.1.3 The Magnetometer data collection methodology across the geophysical survey data extents was to run lines concurrently with the SSS and MBES, thus, the line spacing is not sufficient for the detailed assessment of small, ferrous features on or below the seabed. The position of a magnetic anomaly can only be determined from directly below a single sensor or where lines are run close enough together to be able to confidently position an anomaly seen on two or more lines. In combination with SSS and MBES data, the Magnetometer specification is considered sufficient to develop a broad understanding of the potential of the survey area and to identify larger features of potential archaeological significance.

10.1.4 The positions of magnetic anomalies were viewed in the available datasets and, where there was a strong correlation with a seabed anomaly, they were assessed for archaeological potential. All remaining anomalies have been included within this Section.

10.1.5 All isolated magnetic anomalies of 50 to 100 nT or less are considered to be of limited potential to be of archaeological significance, however, this is dependent on the calculated ferrous mass of the anomaly and the distance from the sensor.

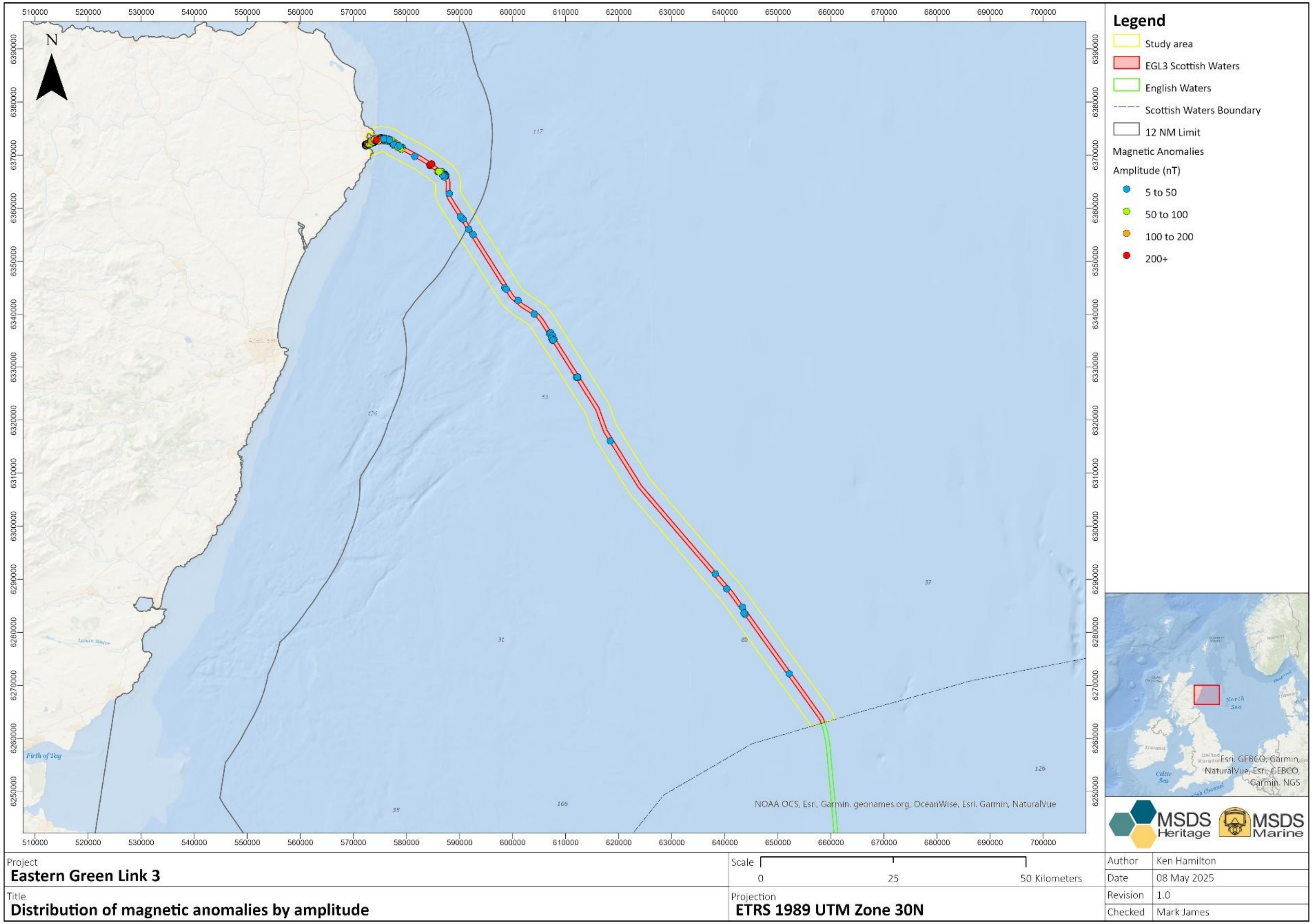


Figure 15: Distribution of magnetic anomalies by amplitude.

10.2 Calculation of mass

10.2.1 The presentation and categorisation of magnetic anomalies by amplitude (nT) provides an effective way to gain a broad understanding of the distribution of ferrous material on, or just below, the seabed. However, to understand the data more comprehensively, the ferrous mass needs to be calculated, which is based on the amplitude and the distance from the Magnetometer. With a line spacing of 70 m, this is not possible to undertake accurately for anomalies that are not visible on the surface or visible on two lines of data, due to the potential distance of an anomaly from the Magnetometer ranging from the altitude to the slant range of 50% of the line spacing.

10.2.2 Therefore, all calculations of mass are made using the assumption the anomaly lies directly below the Magnetometer, with the distance used for the calculation being equal to the recorded altitude of the Magnetometer. Furthermore, calculations are made assuming an anomaly ratio of 1:1. One block of data (Block B008) was missing data recording the altitude of the sensor. An arbitrary altitude of 3.5 m was assigned to these data, derived from the average sensor height exhibited in other inshore blocks. The distribution of anomalies by estimated mass is shown below in Table 15 with their spatial distribution presented in Figure 16.

Estimated mass (kg)	EGL3
1 to 100	193
100 to 500	279
500 to 1,000	100
>1,000	109
Total	**681**

Table 15: Magnetic anomalies by ferrous mass (kg).

10.2.3 The distribution of anomalies by mass covers a broader range than that by amplitude (Figure 15). This is primarily related to an approximate Magnetometer altitude of 3.5 m across the survey extents. At 3.5 m, small fluctuations in amplitude equate to large differences in calculated mass.

10.2.4 Typically, and dependent on the survey specification and the distance from the target, isolated anomalies under 100 nT or 500 kg are considered to be of limited potential to be of archaeological significance.

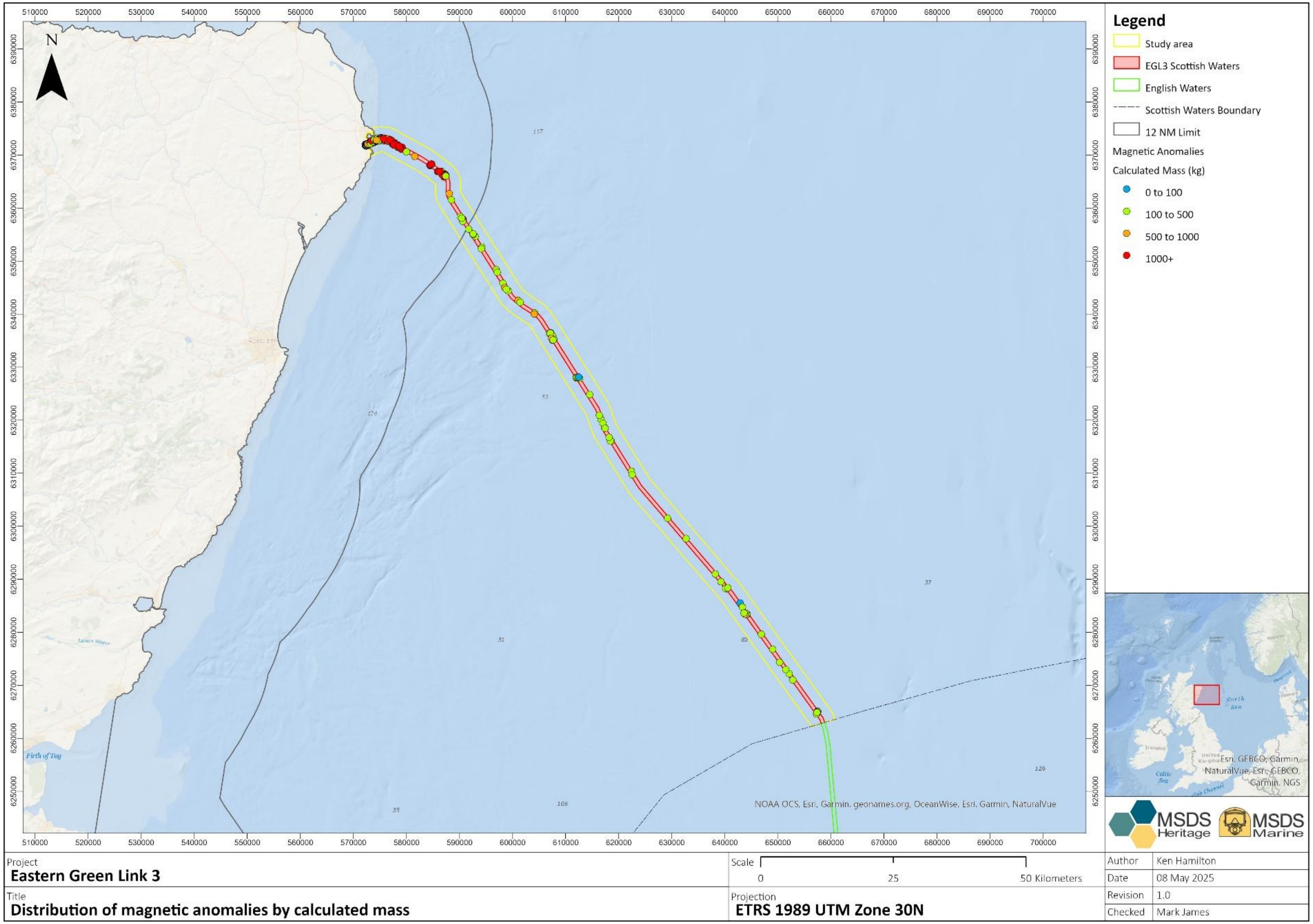


Figure 16: Distribution of magnetic anomalies by calculated mass.

10.3 Overview of magnetic anomaly distribution

10.3.1 The distribution of magnetic anomalies is uniform within the extents of the Magnetometer data, exhibiting greater density in inshore waters and primarily consisting of anomalies <50 nT and <1,000 kg. Due to the 70 m line spacing used during data collection, this is a typical distribution, both geographically and in terms of recorded amplitude and mass.

10.3.2 The size (in nT) of a magnetic anomaly is dependent on both the mass of ferrous material and the distance from the sensor. Therefore, unless there is a strong correlation between a magnetic anomaly and a seabed feature perpendicular to the track, it is not possible to accurately position or determine the mass of an anomaly. For example, an anomaly of <50 nT relating to a feature direct below the track could, and often does, represent small pieces of debris, steel cable, fishing gear or other ferrous material, whilst an anomaly of <50 nT 100 m from the track could indicate a much larger feature. If that feature is not visible in the other geophysical datasets (potentially due to being buried), the position is unable to be reconciled. As such, a bias towards anomalies <50 nT is expected, as the range to the sensor is greater than 17.5 m for 50% of the seabed at a 70 m line spacing.

10.4 Discussion of potential

10.4.1 Magnetic anomalies of >100 nT are typically described as large and have the potential to be of archaeological significance. It should be noted that these anomalies, and any interpretations, are based on a magnetic signature rather than a visible image of the anomaly on the seabed. It is often the case that, during intrusive investigations, these anomalies are identified as modern marine debris, such as cable, chain, modern anchors, fishing gear, outboard engines and other detritus, either deliberately discarded or accidentally lost. Where anomalies are largely isolated or relating to a single feature, the most commonly identified material of archaeological interest are isolated anchors, often of indeterminate age. The difficulties in determining the age of concreted anchors and the lack of a wider context means these are often classed as of low or medium potential to be of archaeological significance. However, whilst the chances of isolated magnetic anomalies being of archaeological interest is potentially low, this does not reduce the potential of anomalies to be of archaeological significance.

10.4.2 As discussed, given the vagaries with positioning and size, it would not be proportional to assign potential and mitigation of avoidance to all magnetic anomalies where there is no correlating seabed feature. Therefore, a broad statement of potential is provided below:

Six hundred and eighty-one (681) magnetic anomalies of between 5.0 and 4,189.3 nT and 2.9 kg to 54,035 kg, with no definitive correlation with archaeological anomalies, seabed features or infrastructure, have been identified within the survey corridor. Magnetic anomalies are ferrous and thus generally anthropogenic in origin. All anthropogenic material has the potential to be of archaeological significance, therefore, there is broad potential to identify additional material of potential archaeological interest within the extents of the geophysical survey data.

10.4.3 At the line spacing of the survey (*c*. 70 m) the potential for anomalies of a significant mass to lie undetected or underestimated is high. For example (using Hall's Equation and a minimum reliable detection limit of 5.0 nT), the minimum mass that can be identified at 5.0 nT at a range of 27.0 m is calculated as 10.0 tons[151]. Holt also notes that the results of field-testing using divers has demonstrated that Hall's Equation can have errors in the calculation of mass in some instances by a factor of three, potentially due to the magnetism of the anomaly, known as permanent or residual magnetism. Therefore, calculations should be considered as estimations of mass, not precise measurements of mass. However, they remain a more robust indication of archaeological potential than the presentation of amplitude with no supporting distance from the anomaly data.

10.4.4 Based on the experience of MSDS Marine within the North Sea and the visual inspection of a significant number of magnetic anomalies, it is suggested that a mass range of 500 to 1,000 kg (and above) presents a robust but proportional mass from which mitigation recommendations can be based, when positions can be identified.

10.4.5 The above discussion highlights the importance of the archaeological assessment of high specification (low altitude, tighter line spacing) Magnetometer data, to identify the presence of anomalies of potential archaeological interest in areas that will be directly impacted by development.

[151] Holt, P. 2019. *Marine Magnetometer Processing*. 3H Consulting Ltd.

11.0 Coastal and maritime archaeology

11.0.1 This Section considers the potential for remains relating to coastal and maritime cultural landscapes to be present within the Study Area, defined as evidence of "*human utilisation of maritime space by boat, settlement, fishing, hunting, shipping and its attendant subcultures, such as pilotage, lighthouse and seamark maintenance*"[152]. Remains considered range from shipwrecks or other durable evidence, such as cargo and ballast, to features including navigational aids, sailing marks, ports, harbours and jetties. Navigational hazards such as shallow reefs or sand banks influence archaeological potential (particularly for wrecks), as does the preservation environment. All can inform our understanding of the archaeological potential.

11.0.2 Other coastal remains which do not necessarily relate to boat use are also considered, including fish traps and other evidence of human interaction with the sea. In addition, other coastal features are reported on where they inform the archaeological potential of the Study Area, such as eroded remains from nearby coastal features or settlements.

11.1 Preservation environment

Seabed characteristics

11.1.1 The physical characteristics of an area can determine the rate of preservation of materials and thus archaeological potential. The '*Areas of Maritime Archaeological Potential 2 – Characterising the Potential for Wrecks (AMAP2)*' project assessed the environmental factors affecting the preservation of maritime archaeological remains on the seabed[153]. These factors included: sediment type, sediment thickness, water depth and sediment transport. The project concluded that the best preservation environment was burial in fine-grained sediments. However, it was also concluded that this environment can cause instability in archaeological materials, as even low-energy sediment transport can cause the repeated covering and uncovering of remains by shifting sediment.

11.1.2 On the scale provided by the AMAP2 project, 1 represents the best preservation environment (i.e. finest grain sediments) and 19 the least favourable (greater gravel inclusions).

11.1.3 Although the AMAP2 project data does not include Scottish waters, its model can be applied to seabed sediment mapping produced by the BGS[154] [155]. The Study Area expresses a general trend from sand-dominated sediments within the southern part of the RLB transitioning to slightly gravelly sand and gravelly sand further north. The southern section would be attributed a preservation score of 1 to 4, indicating a good preservation environment, whereas the northern section would be attributed a moderate score of 5 to 11.

[152] Westerdahl, C. 1992. 'The maritime cultural landscape.' *The International Journal of Nautical Archaeology*. **21**(1), pp. 5-14.
[153] SeaZone Solutions Ltd. 2012. *AMAP2 – Characterising the Potential for Wrecks*. University of Southampton project for English Heritage. https://archaeologydataservice.ac.uk/archives/view/amap2_eh_2011/
[154] BGS. 1984. "Marr Bank" Map Sheet 56°N-00°E. Seabed Sediment 1:250,000 Series.
[155] BGS. 1984. "Peterhead" Map Sheet 57°N-02°W. Seabed Sediment 1:250,000 Series.

Historic coastline development

11.1.4 The National Library of Scotland online historic map viewer[156] was examined for evidence of coastal erosion or remodelling. Ordnance Survey maps dating to the late 19th and early 20th centuries (1868 to 1924) illustrate little change to the coastline at the Landfall.

11.2 Prehistoric (*c*. 10,000 BC to AD 400)

11.2.1 The following sub-sections provide a chronological discussion of the potential for maritime and coastal remains from each period, specifically focussing on human interaction with the marine environment and the potential for physical evidence of these activities. This sub-section on prehistory begins with the Mesolithic period, at a time when the coastline lay largely as at present (Figure 6). Discussion relating to the pre-transgression prehistoric landscape and archaeological potential therein is presented by Section 8.0.

11.2.2 Although human activity in Scotland has been dated to the Late Upper Palaeolithic, no firm evidence for seafaring or the use of watercraft has been attributed to this period or earlier. Studies have indicated a theoretical potential for humans to have had the technology and ability to do so[157] [158], however, these theories have not been introduced further into this assessment.

11.2.3 Trade networks and maritime travel are evidenced throughout prehistory by the movement of ideas, goods and people[159] and the Mesolithic and later occupation of offshore islands, such as the Outer Hebrides (Scotland)[160], indicate that their vessels were seaworthy.

11.2.4 While there is evidence of trade networks, maritime travel and marine exploitation throughout prehistory (albeit at low levels), direct physical evidence in the form of vessels is extremely rare. From a wider context, logboats and paddles are known from the Mesolithic period onward and planked vessels were in use from the 1st millennium BC (the Bronze Age). The known examples of logboats in Scottish contexts demonstrate a long history of use, from the Bronze Age (and potentially earlier) to the medieval period and historical evidence demonstrates their continued use into the 19th century[161] [162]. It has been suggested that skin vessels (coracles and curraghs) were used, though no direct evidence has yet been found[163].

11.2.5 In Scotland, logboats are mostly encountered in lacustrine sediments and those from Aberdeenshire (and elsewhere in Scotland) are typically associated with lochs and crannogs. Examples from river terraces are also well known[164], such as those associated with the rivers Clyde, Forth and Tay. Examples from riverine contexts are also represented within the Aberdeenshire landscape, for example at the Glen of Craigston, where fragments of a Bronze Age logboat (dating to *c*. 1,890 to 1,600 cal. BC) were identified[165]. While lacustrine and riverine

---

[156] https://maps.nls.uk/ Accessed 14 May 2025.
[157] Heyerdahl, T. 1978. *Early Man and the Ocean: The beginning of navigation and seaborn civilizations*. London: George Allen & Unwin Ltd.
[158] McGrail, S. 2001. *Boats of the World: from the Stone Age to Medieval Times*. New York: Oxford University Press.
[159] Cassen, S., Rodriguez-Rellan, C., Valarce, R.F., Grimaud, V., Pailler, Y. and Paulsson, B.S. 2019. 'Real and ideal European maritime transfers along the Atlantic coast during the Neolithic.' *Documenta Praehistorica*. **46**.
[160] Blankshein, S.L. 2021. '(Sea)ways of Perception: an Integrated Maritime-Terrestrial Approach to Modelling Prehistoric Seafaring.' *Journal of Archaeological Method and Theory*. **29**, pp. 723-761.
[161] Mowat, R. J. C. 1998. 'The logboat In Scotland.' *Archaeonautica*. **14**, pp. 29-39.
[162] Cunliffe, B. *Facing the Ocean: The Atlantic and its Peoples*. New York: Oxford University Press. Pp. 65.
[163] Bosnall, C., Pickard, C. and Groom, P. 2013. 'Boats and Pioneer Settlement: The Scottish Dimension.' *Norwegian Archaeological Review*. **46**(1), pp. 87-90.
[164] Gregory, N.T.N. 1997. *Comparative study of Irish and Scottish logboats*. University of Edinburgh: unpublished PhD thesis.
[165] https://www.scran.ac.uk/database/record.php?usi=000-299-995-037-C&scache=2tzzh27f2f&searchdb=scran&PHPSESSID=443r7ms66aanheemldmcdcuk86 Accessed 08 October 2024.

deposits have produced most examples of logboats in Scottish contexts, maritime finds are absent in the known record, likely due largely to unfavourable preservation in marine environments.

11.2.6 Faunal assemblages indicate that maritime activities, such as fishing, took place in coastal areas during the prehistoric periods from the Mesolithic onwards[166 167]. Evidence also indicates that some of these activities were not consistently practiced, for example the sharp decrease in marine-sourced food which marked the onset of the Neolithic period[168 169].

11.2.7 The known prehistoric resource within the Study Area is sparse. Findspots of an unspecified number of undated flints (Canmore ID: 21185), two Neolithic polished axeheads (Canmore ID: 21195; HER ID: NK14NW0017) and a Bronze Age flanged axehead (Canmore ID: 21199) are recorded within the vicinity of Peterhead. No findspots or sites of Palaeolithic, Mesolithic or Iron Age date lie within the Study Area.

11.2.8 Prehistoric groups may have utilised the intertidal zone at the landfall, such as for foraging and launching of small craft, however, no evidence is currently available to indicate which activities, if any, were undertaken and during which period. Prehistoric vessels were likely mostly employed in nearshore activities, such as fishing and transportation, and are unlikely to have traversed deeper water areas of the Study Area.

11.3 Early medieval and medieval (AD 400 to 1536)

11.3.1 Maritime technology and activity continued to develop in the early medieval and medieval periods. Raiders, invaders and settlers from Ireland, Scandinavia and northern Europe brought new boat building technologies and opportunities for trade which led to the growth of several major ports on the east coast of Britain[170 171]. Improvements in shipbuilding and seafaring technology, coupled with expanding trade, fishing and commercial activity, gave rise to new vessel types, such as cogs, hulks and carracks and the expansion of fisheries[172].

11.3.2 A further catalyst for increased commercial shipping activity and the development and growth of ports across northwestern Europe, including Scotland, was the establishment of the Hanseatic League around 1169. This multinational economic alliance encouraged and facilitated trade between northwestern European nations, utilising seaborne links between the North Sea and the Baltic. At its height, the League represented some 84 cities, including ports on the eastern coast of England and Scotland, which developed rapidly to accommodate the growing trade in cargos such as coal, timber and wine[173]. Aberdeen was an early member of

[166] Bell, M. 2007. *Prehistoric Coastal Communities: The Mesolithic in western Britain*. Council for British Archaeology Research Report 149. York: CBA.
[167] Astrup, P.M., Benjamin, J., Stankiewicz, F., Woo, K., McCarthy, J., Wiseman, C., Baggaley, Jerbić, K., Fowler, M., Skriver, C. and Bailey, G. 2021. 'A drowned Mesolithic shell midden complex at Hjarnø Vesterhoved, Denmark and its wider significance.' *Quaternary Science Reviews*. **258**: 106854.
[168] Cramp, L.J.E., Evershed, R.P., Lavento, M., Halinen, P., Mannermaa, K., Oinonen, M., Kettunen, J., Perola, M., Onkamo, P. and Heyd, V. 2014. 'Neolithic dairy farming at the extreme of agriculture in northern Europe.' *Proceedings of the Royal Society.* **281**.
[169] Richards, M., Schulting, R. and Hedges, R. 2003. 'Sharp shift in diet at onset of Neolithic.' *Nature.* **425**, pp. 366.
[170] Hutchinson, G. 1997. *Medieval Ships and Shipping.* Leicester: Leicester University Press.
[171] Friel, I. 2003. *Maritime History of Britain and Ireland.* London: British Museum Press.
[172] Müldner, G. 2016. 'Marine fish consumption in medieval Britain: the isotope perspective from human skeletal remains', in Barrett, J. and Orton, D. (eds.) *Cod and herring: the archaeology and history of medieval sea fishing*. Oxford: Oxbow Books. Pp. 239-249.
[173] Hutchinson. 1997.

the League, providing trading links throughout northern Europe, including the key member city of Bergen in Norway[174].

11.3.3 The most direct sea route between Aberdeen and Bergen would take vessels through the Study Area, although the potential for physical evidence of this, such as wrecks or lost cargo, is very low.

11.3.4 Peterhead is believed to have been founded in the 6th century AD by St Columba's monks near the mouth of the River Ugie (which lies to the north of Peterhead, at Buchanhaven). Archaeological evidence for early medieval settlement is not recorded, if extant.

11.3.5 Much of the postulated core of the medieval settlement at Peterhead lies within the Study Area (HER ID: NK14NW0095), though archaeological remains are scarce, comprising only a single, ceramic vessel whose exact findspot is uncertain (Canmore ID: 21183). Further evidence of medieval activity lies slightly beyond the Study Area, including the 12th century Norman elements of the parish church of St Peter and settlement evidence slightly further north, dating to the 13th to early 14th centuries[175].

11.3.6 Boddam Castle, situated in the southwest corner of the Study Area, also has medieval origins (SM ID: 3252; HER ID: NK14SW0002). Constructed by the Keiths of Ludquharn in the 15th or early 16th century (or possibly the late 16th to early 17th centuries), the ruinous remains currently comprise parts of the curtain wall, entrance archway and foundations. A trench cutting made at the entrance in 1868 recovered what may have been the hinges of a drawbridge, though a watching brief undertaken for the laying of a new access path in 2006 encountered no archaeological remains[176].

11.3.7 Small craft may have traversed the nearshore part of the Study Area and domestic and continental traders in deeper waters, though this is speculative in lieu of firmer evidence. Common coastal activities such as fishing and foraging likely took place within the Study Area during the medieval period and the proximity of settlement suggests a potential for background evidence of occupation, possibly within beach sediments and above MHWS.

11.4 Post-medieval to modern (1536 to present)

11.4.1 Peterhead was created a Burgh of Barony by a Royal Charter in 1587, prompted by George, 5th Earl Marischal, whose ancestors had built Boddam Castle. Six years later, a feu (land tenure) contract was produced for 14 plots, situated to the north of present Longate. Peterhead Harbour was constructed by 1593, again by the 5th Earl Marischal, comprising the North Harbour and South Harbour.

11.4.2 The significance of Peterhead during the post-medieval period is demonstrated by several improvements of the harbour layout and infrastructure and defensive works. South Harbour was reconstructed and improved throughout the 17th and 18th centuries and a military survey of the town undertaken in 1795 illustrates two batteries on Keith Inch (although one had no guns) and recommended a third to the north of the town and North Harbour.

---

[174] https://www.hanse.org/en Accessed 08 October 2024.

[175] Brown, T. and James, M. 2024. *Cenos Offshore Windfarm: Marine Archaeology Technical Report*. MSDS Marine report MSDS24300/1 prepared for Flotation Energy.

[176] https://canmore.org.uk/site/21292/boddam-castle Accessed 09 October 2024.

11.4.3 During the first half of the 19th century, scientific and opportunistic exploration of the northern seas, particularly around Greenland and in search of the Northwest Passage, and maritime stability in the wake of the Napoleonic Wars, was followed by an expansion of Great Britain's fishing and whaling fleets. Peterhead became associated with Greenland whaling fleets and its harbours were expanded to accommodate larger vessels in greater numbers. This industry is evidenced by the documented stranding of two whaling ships in the Study Area during the 19th century (Table 17).

11.4.4 Boddam village may have been founded in the 17th century, developing in association with Boddam Castle. It experienced further development during the 18th and 19th century east coast fishing booms. On a map of 1826, the small settlement is labelled as both 'Fishtown of Boddom' and 'Buchan Ness'[177]. A plan for a new, grid-patterned extension to Boddam is illustrated in 1824, along with several sites for the drawing up of boats onto the beach[178]. Although the planned extension was not enacted, a new harbour was created to the north of the extant village prior to 1844, involving the excavation of exposed bedrock[179].

11.4.5 Most post-medieval and modern heritage records, including parts of three Conservation Areas and associated Listed Buildings (see Section 7.1), relate to Peterhead and Boddam. Several 19th century assets directly relate to the use of the maritime landscape, including the 1827 Buchan Ness Lighthouse (HER ID: NK14SW0010) and harbours at Boddam (HER ID: NK14SW0011) and Peterhead (HER ID: NK14NW0029). A small part of the former Peterhead Prison is situated within the Study Area, *c*. 90 m north from the RLB (HER ID: NK14SW0162). The prison was constructed from 1886 to 1888, using prisoners serving hard labour to construct the breakwaters of Peterhead Harbour.

11.4.6 The small village of Burnhaven was formerly situated to the immediate north of the RLB. The First Edition Ordnance Survey (surveyed in 1868) illustrates parallel rows of buildings to the north and south of the east-west aligned main street, a meeting house and a harbour and jetty (HER ID: NK14SW43). An HER record exists relating to the discovery of the remains of structures on the beach at Sandford Bay. Shaped stones, an embedded metal hook and other "*remains of structures*" were found by a member of the public, however, no further detail was available (HER ID: NK14SW0228). No such structures were encountered during the walkover survey.

11.4.7 Assets from the 20th century include military installations directly associated with the sea, including the site of a former coastal battery at Salthouse Head, to the immediate north of the RLB (HER ID: NK14SW0020).

11.4.8 The Study Area was traversed by a range of maritime craft during the 17th to 20th centuries, engaged in trade, transportation, fishing and warfare. These activities and the evidence for them are examined in Section 11.5.

---

[177] Thomson, J. 1826. *Northern Part of Aberdeen & Banff Shires. Southern Part.* https://maps.nls.uk/view/74400157 Accessed 08 October 2024.

[178] Whyte, W. 1824. *Boddam – Buchanness and intended village*. https://maps.nls.uk/view/218516975 Accessed 08 October 2024.

[179] Smith, W. 1844. *Plan and sections of the Harbour at Boddam with proposed improvements; 1844.* https://maps.nls.uk/view/216443493 Accessed 08 October 2024.

11.5 Wreck records and documented losses

11.5.1 This sub-section examines the known wreck and documented loss records within the Study Area. Data derived from the UKHO, Canmore database and Aberdeenshire HER has provided information for 351 maritime losses within the Study Area from the 17th to 21st centuries, however, the actual figure is likely higher due to variation in the quality of sources and record keeping.

11.5.2 The recording of maritime history became common practice by the 19th century and our knowledge of contemporary and later maritime activity is therefore much more robust than for earlier periods. Documentary evidence of vessels lost during these periods provides evidence of maritime activity in the waters surrounding, and within, the Study Area.

11.5.3 The UKHO dataset for the Study Area holds records for 21 wreck sites, the Canmore database holds records for 281 maritime losses and the Aberdeenshire HER holds records for 314 maritime losses. The majority of the maritime losses represent 'documented losses' – losses of vessels or aircraft recorded often from coastguard or witness reports, or even floating or beached wreckage, often attributed a very broad location. Furthermore, some records group several losses, generally over a specific timespan or at a certain location, and others record incidents where the vessel was successfully recovered or where the outcome is unknown. Documented losses can be used to glean broad understanding of maritime activity, however, they are unlikely to indicate the location of physical remains or provide definitive loss numbers.

11.5.4 Where wrecks and/or losses are identifiable across multiple UKHO, Canmore and HER records, these have been condensed into a single entry for the purposes of this assessment. A small number of instances occur where multiple records exist and have been retained for the same wreck or loss, as there remains some doubt as to the true location.

Date lost	Vessels reported lost	Wreckage washed ashore	Totals
17th century	2	0	**2**
18th century	25	0	**25**
19th century	219	7	**226**
20th century	75	1	**76**
21st century	1	0	**1**
Totals	**324**	**8**	**332**

Table 16: Documented losses by period

11.5.5 Section 1.0 - Annex B and Section 17.0 – Annex C present the full gazetteers for the Study Area, correlating all UKHO, Canmore and HER records for wrecks and documented losses. Table 16 presents wrecks, losses and wreckage recorded in the 17th to 21st centuries, excluding records of unknown date and those relating to other losses (e.g. aircraft and non-vessel debris). Table 17 presents the range of vessel types represented within the dataset, highlighting past activities undertaken within the Study Area.

Vessel type/rig	17th century	18th century	19th century	20th century	Totals
Auxiliary lugger	0	0	0	1	**1**
Barge/crane barge/hopper barge	0	0	0	3	**3**
Barque	0	0	4	1	**5**
Brig	0	0	14	0	**14**
Brigantine	0	2	3	0	**5**
Carrier	0	0	0	1	**1**
Craft (unspecified)	1	15	71	2	**89**
Cutter	0	0	1	0	**1**
Drifter	0	0	0	2	**2**
East Indiaman	0	0	1	0	**1**
Fishing vessel	0	3	3	3	**9**
Full-rigged ship	1	0	1	0	**2**
Galliot	0	0	5	0	**5**
Hermaphrodite brig	0	0	2	0	**2**
Hermaphrodite schooner	0	0	1	0	**1**
Ketch	0	0	2	4	**6**
Lugger	0	0	17	7	**24**
Mine sweeper trawler	0	0	0	4	**4**
Motor Fishing Vessel	0	0	0	5	**5**
Schooner	0	0	53	1	**54**
Sloop	0	5	32	0	**37**
Smack	0	0	7	0	**7**
Snow	0	0	1	0	**1**
Steam Drifter	0	0	0	3	**3**
Steam Trawler	0	0	0	14	**14**
Steam Tug	0	0	1	0	**1**
Steamship	0	0	4	19	**23**
Submarine	0	0	0	1	**1**
Trawler	0	0	0	3	**3**

Vessel type/rig	17th century	18th century	19th century	20th century	Totals
Tug	0	0	1	1	2
Whaler	0	0	1	1	2
Unknown	0	0	1	1	2
Totals	2	25	226	78	331

Table 17: Vessel types indicated by documented losses and wrecks

11.5.6 Examination of the documented losses can reveal broad patterns of maritime activity within the Study Area and surrounding seascape.

11.5.7 No records pre-date the 17th century and only two losses are recorded for that century. Actual losses for this period and earlier were likely unrecorded, due to undeveloped local maritime administration and record keeping practices. The number of documented losses increases for the 18th and 19th centuries (peaking in the latter), though these totals are also likely affected by varying diligence in record keeping.

11.5.8 Associated information for documented losses, derived from insurance documents and ship's manifests, express a prevalence of vessels engaged in trade; domestic, continental and trans-Atlantic. Developing trade links may also account for the higher numbers of shipping represented by the 19th and 20th century losses. Technological advances are also demonstrated, as the numbers of fast-moving 19th century schooners, brigs, barques, sloops and their derivatives are significantly reduced in the 20th century record, replaced by steamships. The second most-represented activity, fishing, also expresses technological developments, as fishing vessels are replaced by steam trawlers and motor fishing vessels.

11.5.9 The Study Area as a vignette of 20th century naval warfare is demonstrated by the loss records of three mine sweepers (all requisitioned and converted trawlers) and a submarine.

11.5.10 The remainder of this Section summarises the UKHO records and wreck records from other datasets within the Study Area, illustrated by Figure 17. UKHO records are presented as they have been based on physical remains and use the most accurate coordinates available, with Canmore and the HER deriving much of their data from the UKHO records. Canmore wrecks with no corresponding UKHO record are also included, as these have been recorded as 'wrecks' separately from the more common 'casualty' records, usually based on visual observation and may therefore related to physical remains at the given location.

11.5.11 Numbering of the wreck records has continued from those attributed for the English waters assessment for the Project[180] and thus begins here at 'W_120'. This is to allow correlation of records and assessments whilst avoiding confusion.

[180] National Grid. 2025.

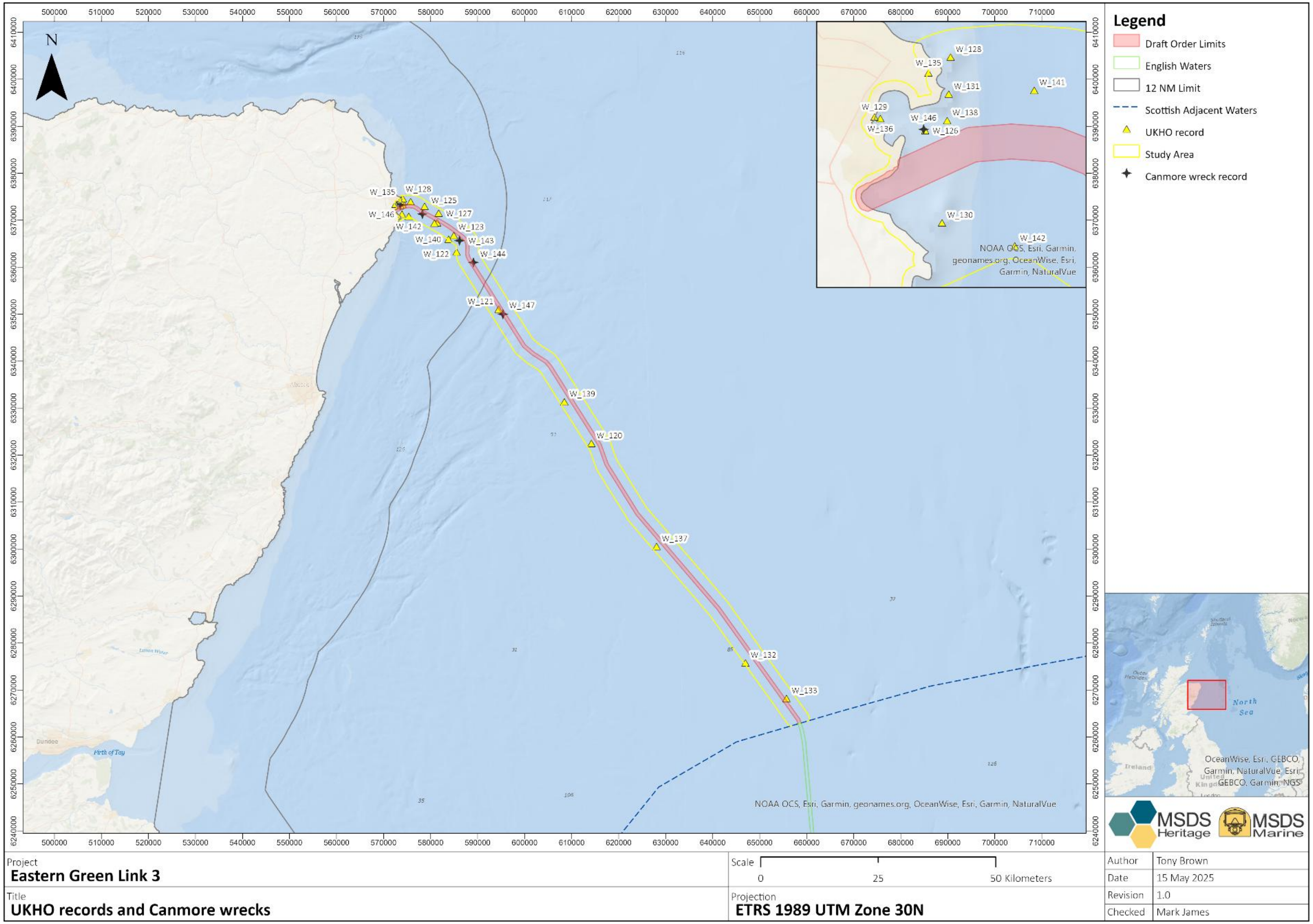


Figure 17: UKHO records and Canmore wrecks.

W_120

11.5.12 W_120 (UKHO ID: 2220) represents the Norwegian-flagged steamship *Kaparika*, built in 1894 and lost on 6 May 1917. The non-dangerous wreck is given measurements as 71.6 m (L) by 10.4 m (W) by 4.6 m (H), in waters 45 m deep, though it is also recorded as a 'dead' position.

W_121

11.5.13 W_121 (UKHO ID: 2242) possibly represents the British-flagged steamship *Ennismore*, built in 1880 and torpedoed by a German submarine on 30 December 1917. The non-dangerous wreck is recorded as intact, upright and with bows to the southwest, measing (on sonar) 33 m (L) by 8 m (W) by 4.5 m (H), in waters 93 m deep.

W_122

11.5.14 W_122 (UKHO ID: 2258) represents the Finnish-flagged steamship *Mercator*, torpedoed by a submarine on 1 December 1939. The UKHO record holds no measurements for the non-dangerous wreck, which lies in waters 64 m deep and is also recorded as 'dead'.

W_123

11.5.15 W_123 (UKHO ID: 2263) represents a non-submarine contact first identified in 1941, last in 2010. The UKHO record holds no measurements for this contact, which lies in waters 66 m deep and is also recorded as 'dead'.

W_124

11.5.16 W_124 (UKHO ID: 2268) may represent the wreck of the HMS *Flotta*, an Isles-class mine sweeper trawler, which grounded on 29 October 1941 and foundered on 6 November. The position is noted as for filing only, however, the UKHO record also notes a highly degraded, non-dangerous wreck at this location last detected in 2009 and sonar measurements of 15 m (L) by 13 m (W) by 2.8 m (H).

W_125

11.5.17 W_125 (UKHO ID: 2272) represents an unknown wreck first detected in 1945 and last in 2009. The non-dangerous wreck is reported upright and intact, with bows to the south, measuring 36 m (L) by 10 m (W) by 4.9 m (H).

W_126

11.5.18 W_126 (UKHO ID: 2273) represents the wreck of the British-flagged fishing vessel *Ben Tarbet*, which sank following a collision with *FV Venturer* at the entrance to Peterhead Harbour on 28 November 1975. The wreck is recorded by the UKHO as 'foul ground' and 'not fully surveyed' but gives sonar measurements of 40 m (L) by 30 m (W) by 1.37 m (H) and having been last detected in 2019 with the bows visible.

W_127

11.5.19 W_127 (UKHO ID: 2276) represents the wreck of the *Atland*, a Swedish-flagged steamship built in Britain in 1910 and lost on 25 March 1943 following a collision with the steamship *Carso*. The non-dangerous wreck is reported largely intact, measuring 119 m (L) by 24 m (W) by 10.2 m (H).

W_128

11.5.20 W_128 (UKHO ID: 2277) represents the wreck of the Italian-flagged steamship *Marzocco*. The vessel was carrying a cargo of coal from Sunderland to Civita Vecchia, passing St Abbs Head on 9 June 1940. Italy formally declared war on Great Britain on 10 June, prompting patrol trawlers to be sent to intercept the Marzocco on the 11 June. The Italian crew purposely ran the vessel aground on the 14 June and abandoned her on the beach 1.5 miles north of Peterhead.

11.5.21 The UKHO notes that the vessel was last detected in 1958 and is a 'dead' position, however, the HER specifically notes that no remains were identified during a search in that year and that the harbourmaster stated the wreck broke up some years previously. Other reports mentioned but not elaborated on by the HER suggest that the *Marzocco* was towed away in two parts for use as a blockship at Scapa Flow.

W_129

11.5.22 W_129 (UKHO ID: 2378) represents the remains of a burnt hulk resting against a rocky outcrop on the beach in Peterhead Bay. The wreck was first recorded in 1987, however, no further detail on its origin is known. The UKHO notes that the wreck has been lifted.

W_130

11.5.23 W_130 (UKHO ID: 2379) represents the wreck of the British-flagged fishing vessel *Constant Star*, which ran aground in high winds on 26 August 1987 at Sandford Bay. The wreck is recorded as intact, lying on beam ends and conspicuous, measuring 28.3 m (L) by 6.7 m (W). The record was last updated in 2004 and the last sighting of the wreck noted as 1989, therefore, it is unclear if the vessel remains at this location.

W_131

11.5.24 W_131 (UKHO ID: 2385) represents the wreck of *Sea Reefer*, a possibly Angolan-flagged carrier ship which was holed and sunk on 22 August 1992 whilst waiting for a berth outside of Peterhead Harbour. Measuring 95.7 m (L) by 14.5 m (W) by 8.5 m (draught), the vessel is noted as having been lifted.

W_132

11.5.25 W_132 (UKHO ID: 3199) represents the British-flagged steamship *Ailsa*, captured by a German submarine and scuttled on 18 June 1915. The UKHO record holds no measurements for the non-dangerous wreck, which lies in waters 67 m deep.

W_133

11.5.26 W_133 (UKHO ID: 3201) represents the location of wreckage sighted by a helicopter on route to an oil rig on 4 August 1978. A subsequent search was unable to relocate the wreckage due to poor visibility. The UKHO records the wreckage as that of a British aircraft, having crashed *c*. 50 miles east of Aberdeen.

W_134

11.5.27 W_134 (UKHO ID: 59197) represents the site of the loss of nine empty 30' containers from the *MV Sardinia* in February 2001. The UKHO record notes that the position is for filing only, the containers have not been identified at this position (or elsewhere) and this location is 'dead'.

W_135

11.5.28 W_135 (UKHO ID: 65022) represents the British-flagged steamship *Columbine,* built in 1934 and lost on 24 December 1957. The wreck broke up ashore and was subsequently lifted.

W_136

11.5.29 W_136 (UKHO ID: 65023) represents the wreck of the *Smit-Lloyd 47*, a Dutch-flagged tug lost on 19 January 1979. The wreck is reported as holed, with bows to the beach, measuring 54.9 m (L) by 12.2 m (W) by 4.6 m (draught). The UKHO record is situated within the intertidal zone at the western end of Peterhead Harbour and is also recorded as 'lifted' and last detected in 2013.

W_137

11.5.30 W_137 (UKHO ID: 71576) represents an unknown wreck first detected in 2007. The small, non-dangerous wreck is reported upright with scour at each end, measuring (on sonar) 34 m (L) by 7 m (W) by 2.8 m (H).

W_138

11.5.31 W_138 (UKHO ID: 73699) represents the wreck of the *Ijsselstroom*, a tug lost on 14 June 2009 whilst towing a stone barge into Peterhead. Only a length measurement is provided in the UKHO record (19.5 m (L)) and the wreck is reported as 'dead', having last been detected in 2012. The UKHO record is situated within the Study Area, at the entrance to Peterhead Harbour.

W_139

11.5.32 W_139 (UKHO ID: 73921) represents an unknown wreck first detected in 2009. The non-dangerous wreck is reported as collapsed, buried and with one high point (possibly a boiler), measuring (on sonar) 100 m (L) by 30 m (W) by 5.2 m (H).

W_140

11.5.33 W_140 (UKHO ID: 74769) represents an unknown wreck first detected in 2009. The non-dangerous wreck is reported as degraded, in two parts and partially buried by a sandwave, measuring (on sonar) 71 m (L) by 40 m (W) by 9.6 m (H).

W_141

11.5.34 W_141 (UKHO ID: 78420) is recorded as a heap of wire hawsers, dumped sometime prior to 2011 and having fouled anchors of more than one vessel since. This foul ground record lies within the Study Area near Peterhead Harbour.

W_142

11.5.35 W_142 (UKHO ID: 79296) represents an unnamed, dangerous wreck, first reported in 2012. No further details or measurements are given and the UKHO records the position as 'dead'.

W_143

11.5.36 W_143 (Canmore ID: 196053) represents the location of reported wreckage, with no correlating UKHO record. No further information is provided by the Canmore record, though it references a national diving guide, suggesting this record may have come from a diver sighting.

W_144

11.5.37 W_144 (Canmore ID: 202064) represents the location of the sighting of an upturned, wooden schooner, drifting north on 3 February 1922, with no correlating UKHO record. Although recorded by Canmore as a 'wreck' rather than a 'casualty', the nature of this position suggests a very low likelihood for physical remains to be present.

W_145

11.5.38 W_145 (Canmore ID: 202068) represents the location of reported wreckage, with no correlating UKHO record. No further information is provided by the Canmore record, though it references a national diving guide, suggesting this record may have come from a diver sighting.

W_146

11.5.39 W_146 (Canmore ID: 202086) represents the location of reported wreckage, with no correlating UKHO record. No further information is provided by the Canmore record, though it references a national diving guide, suggesting this record may have come from a diver sighting.

W_147

11.5.40 W_147 (Canmore ID: 202030) represents the location of reported wreckage, with no correlating UKHO record. No further information is provided by the Canmore record, though it references a national diving guide, suggesting this record may have come from a diver sighting.

11.6 Intertidal walkover survey

11.6.1 A walkover of the intertidal zone of the RLB was conducted on 5 August 2024, in clear weather conditions and with good access to the whole of the survey area (Figure 18). The beach comprised fine sand in some areas and stone blocks in others, the latter possibly represented in a large part by local Peterhead Pluton granite. It was unclear if the stone blocks were naturally occurring or had been placed as protection against erosion. Extensive kelp growth obscured visibility in the southeast part of the intertidal survey area.

11.6.2 A linear stone structure was identified on the northern beach of Sandford Bay within the RLB, constructed of the local granite blocks in two, or possibly three, courses (Figure 18; Figure 19; Figure 20). This location corresponds with historic mapping illustrating a "harbour", consisting of an inlet and possible stone-built jetty, linked with a path leading north to the village of Burnhaven. This feature is illustrated by the First[181] and Second[182] Edition Ordnance Survey Aberdeenshire Sheets (surveyed in 1868 and 1924, respectively) but appears to have fallen out of use and is not illustrated by the Revised Edition (surveyed 1924)[183]. A large, ferrous spike embedded in a larger rock nearby may have been historically used as a mooring point (Figure 18; Figure 21).

11.6.3 A single, weathered and split piece of wood was encountered on the western beach of Sandford Bay. This may represent wreckage, however, a natural origin could not be refuted (Figure 18, Figure 22).

11.6.4 A gazetteer of intertidal assets, comprising those identified by the walkover survey and those represented by HER records but not identified during the survey, is presented within Section 18.0 – Annex D.

---

[181] https://maps.nls.uk/view/228775498 Accessed 15 May 2025.
[182] https://maps.nls.uk/view/75258949 Accessed 15 May 2025.
[183] https://maps.nls.uk/view/75258946 Accessed 15 May 2025.

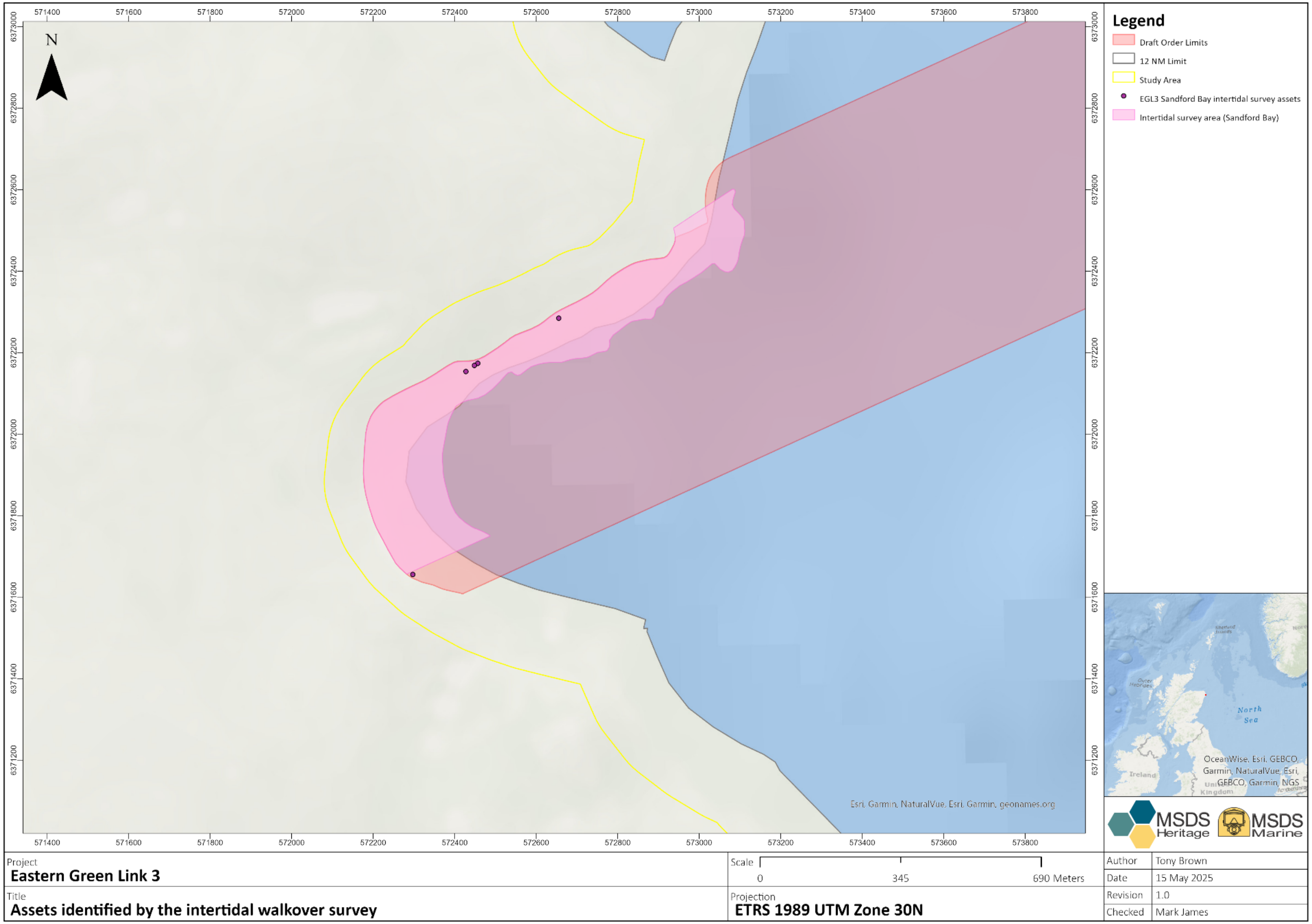


Figure 18: Assets identified by the intertidal walkover survey.

Figure 19: Stone jetty (TI_002), facing south (2 m scale)

Figure 20: Stone jetty (TI_002), facing east (2 m scale)

Figure 21: Iron spike (TI_003) (8 cm scale)

Figure 22: Wooden object (TI_005) (0.5 m scale)

11.7 Summary

11.7.1 The Study Area are its surrounding landscape and seascape have experienced human interaction since at least late prehistory. Documentary evidence of traversal of the Study Area begins in the 17th century, although this seascape was likely fished and traversed during late prehistory and the medieval periods. Physical remains, reported by UKHO records, date to the 20th and 21st centuries, however, earlier remains, including wreck and cargo, may feasibly be buried within seabed sediments.

11.7.2 In consideration of the preservation environments, earlier remains are less likely to be encountered within the northern half of the RLB and are less likely to be present in deeper waters due to expected lower volumes of maritime traffic here prior to the 20th century.

11.7.3 Modern wreckage and other debris are likely to be present but may be considered of limited archaeological value if unable to be associated with a wreck.

11.7.4 The remains of a former stone jetty of possible post-medieval date have been identified within the RLB, along with a possible iron mooring fixture. Elements of wreck may be present in the intertidal zone, as suggested by the findspot of a single, possibly worked piece of wood.

12.0 Aviation archaeology

12.0.1 Aviation technology has been available since the early 20th century, though air travel became more prevalent after the First World War. During the inter-war years, commercial air travel significantly expanded and, during the Second World War, the skies were dominated by military aircraft. After the war, commercial aviation steadily increased and improved. The remains of thousands of aircraft casualties, both civil and military, are present in UK waters.

12.1 Aviation archaeological remains and potential

12.1.1 There are no known aviation remains within the Study Area. Three documented loss records, however, relate to aircraft casualties.

12.1.2 Two of these have the same positional coordinates, near Peterhead Harbour. One represents the loss of an Armstrong Whitworth Whitley training aircraft on 24 October 1943 and the other of a loss on 18 June 1946 (with no further detail). The shared position likely indicates an arbitrary location, rather than the exact crash site for both, therefore, the presence of physical remains here is unlikely.

12.1.3 The third loss is situated within the Study Area and recorded by the UKHO (W_133; Figure 17). This record concerns the sighting of wreckage from a helicopter which could not be subsequently relocated (see paragraph 11.5.26 for further detail). The traumatic mechanism of aircraft crashes, identification of surface wreckage and inability to relocate this suggest that any debris may have travelled on the surface or laterally through the water column before settling on the seabed. As such, physical remains are unlikely to be present at this location.

12.1.4 Further potential for aviation remains is suggested by the site of the former First World War seaplane base at Peterhead, *c*. 90 to 750 m north from the RLB (HER ID: NK14SW0022).

12.2 Summary

12.2.1 No aviation remains have been identified within the Study Area. There is a very limited potential for remains to be present, in consideration of documented loss records and nearby historic activities.

13.0 Assessment of significance

13.0.1 The Section summarises the identified archaeological potential within the Study Area and examines the anticipated significance of any remains.

13.1 Submerged prehistory

13.1.1 No findspots or sites relating to prehistoric hominin activity have been identified within the Study Area. While a series of Quaternary formations have been identified, these deposits indicate a succession of glaciomarine and marine environments (with a slight potential for estuarine deposits), unsuitable for hominin occupation. Where an identified unit has a broader archaeological potential, this has been reduced by one or a combination of other factors, such as RSL modelling indicating a marine depositional environment or a wider absence of hominin evidence in the regional or national record.

13.1.2 It is feasible that hominins occupied parts of the Study Area and central North Sea region and/or its periphery during as-yet unidentified periods of sub-aerial exposure. A broad, if low, potential for translocated archaeological remains, eroded from their primary contexts, may be considered, though, at the time of writing, no such evidence is recorded within the Study Area. Any *ex situ* remains may be of moderate significance, given their potential to indicate an early prehistoric presence in the central North Sea, however, their significance would be limited by their loss of primary context.

13.1.3 A broad low to moderate potential has been identified for all Early and pre-Holocene, non-glacigenic units to contain palaeoenvironmental remains. Such remains may comprise dinoflagellates, ostracods and other microfauna.

13.1.4 A slightly greater, moderate potential for palaeoenvironmental remains has been identified for Unit 2D as the correlated formation (the Largo Bay Member of the Forth Formation) may comprise estuarine deposits, which may contain organic remains translocated from Late Devensian palaeolandscapes further inland. Furthermore, this Formation has produced palaeoenvironmental remains from samples elsewhere within the central North Sea.

13.1.5 Any palaeoenvironmental evidence within the Study Area may be able to contribute to regional research frameworks, such as the *North Sea Prehistory Research and Management Framework*[184], which consider such remains a priority subject, and may be considered of moderate significance.

13.2 Coastal and maritime archaeology

Designated heritage assets

13.2.1 The baseline assessment identified the following designated heritage records within the Study Area:

- Part of the Scheduled Monument of Boddam Castle (Designation Ref: SM3252);
- Part of Boddam Conservation Area (Des. Ref: CA428);
- Part of Peterhead Central Conservation Area (Des. Ref: CA427);

[184] Research Frameworks Network. 2024. *North Sea Prehistory Research and Management Framework*. https://researchframeworks.org/nsprmf/management-framework/ Accessed 09 October 2024.

- Part of Peterhead Roanheads Conservation Area (Des. Ref: CA426); and
- One hundred and four (104) Listed Buildings.

13.2.2 Designated heritage assets have been formally assessed by set criteria and found to be of moderate to high heritage significance, able to contribute to local, regional and national (sometimes also international) research objectives.

Non-designated heritage assets

13.2.3 The assessment has identified 998 non-designated heritage assets within the Study Area, comprising:

- Twenty-three (23) UKHO records;
- Two hundred and eighty-one (281) Canmore maritime records;
- One hundred and seventy (170) Canmore point records;
- Two (2) Canmore area records;
- Two hundred (200) Aberdeenshire HER records;
- Three hundred and fourteen (314) HER records for maritime losses (documented losses); and
- Eight (8) NRHE areas.

13.2.4 The walkover survey identified two structures relating to an HER record (a stone jetty and mooring fixture) and a single wooden element possibly representing part of a wreck (may alternatively be naturally occurring driftwood).

13.2.5 The assessment of geophysical data identified:

- One (1) high potential anomaly (likely a wreck);
- Four (4) medium potential anomalies (possibly representing debris or parts of wreck);
- Seventy-seven (77) low potential anomalies (likely representing anthropogenic material of limited to no archaeological interest); and
- Six hundred and eighty-one (681) magnetic anomalies.

13.2.6 Wreck remains can be of high significance, at times warranting designation as Historic Marine Protected Areas. However, this level of significance is dependent on several factors including rarity, age and level of preservation, the latter of which may be influenced by coastal or marine erosion. Further investigation at each identified wreck site would enable further confirmation of this significance. As a precautionary measure all wrecks are therefore considered to be of high significance in lieu of further investigation. High and medium potential anomalies have been provisionally identified as wrecks or associated wreck material/debris and therefore may hold up to high significance.

13.2.7 Low potential anomalies are a mixture of small features, often boulder-like, or likely to represent modern debris such as chain, cable, or rope, or small items of debris with no features indicating archaeological potential.

13.2.8 Six hundred and eighty-one (681) magnetic anomalies of between 5.0 and 4189.3 nT and 2.9 to 54,035 kg, with no definitive correlation with archaeological anomalies, seabed features or infrastructure, have been identified within the survey corridor. Magnetic anomalies are ferrous and thus generally anthropogenic in origin. Anthropogenic material has the potential to be of archaeological significance and there is broad potential to identify additional material of potential archaeological interest within the extents of the geophysical survey data.

13.2.9 Isolated findspots may be encountered for remains dating from the Mesolithic to Modern periods. Isolated findspots typically comprise cultural material which is no longer *in situ*. The key contributors to significance of this material are typically held within its physical fabric, where many other contributors to significance, such as original context, have been lost. While such finds do hold some significance, this is generally limited.

13.3 Aviation archaeology

13.3.1 No known aircraft crash sites are recorded within the Study Area and the small number of documented loss records relate to broad areas or imprecise coordinates, rather than physical remains. Therefore, the overall potential for aircraft material to be present within the Study Area is very low.

13.3.2 Any physical remains relating to, or suspected to relate to, aircraft losses would automatically fall under the Protection of Military Remains Act 1986 and therefore be considered of the highest significance.

14.0 Conclusion

14.0.1 This assessment has considered desk-based sources, geophysical and geotechnical data visual observation to provide a baseline review of the known and potential marine archaeological remains within the Study Area, up to MHWS. The assessment has then considered the potential significance of these remains.

14.0.2 Nine (9) Quaternary geological units have been identified or suggested within the Study Area by examination of the integrated seismic interpretation and geotechnical results and review of wider studies and investigations. All have been correlated with known geological units of the central North Sea, with varying degrees of confidence.

14.0.3 The identified units principally represent a succession of glaciomarine and temperate marine depositional environments, suggesting a very low potential for *in situ* archaeological remains to be contained within. A slight potential for redeposited archaeological remains within secondary contexts may be considered, however, the wider body of evidence suggests this may be unlikely. Any such remains would likely be considered of moderate significance, for their potential to suggest some degree of hominin activity within the central North Sea, however, this significance would be limited by the anticipated loss of primary contextual evidence.

14.0.4 The units generally have been attributed a low to moderate potential for containing palaeoenvironmental evidence. The *North Sea Prehistory Research and Management Framework* prioritises the accumulation and study of offshore palaeoenvironmental evidence to advance submerged palaeolandscape studies and reconstruction[185]. Glacigenic deposits of Unit 4B (and possibly elements of 4C) and modern marine deposits of Unit 1A have been attributed very low and negligible potential, respectively.

14.0.1 The assessment has identified 998 non-designated heritage assets within the Study Area, comprising:

- Twenty-three (23) UKHO records;
- Two hundred and eighty-one (281) Canmore maritime records;
- One hundred and seventy (170) Canmore point records;
- Two (2) Canmore area records;
- Two hundred (200) Aberdeenshire HER records;
- Three hundred and fourteen (314) HER records for maritime losses (documented losses); and
- Eight (8) NRHE areas.

14.0.2 The walkover survey identified two structures relating to an HER record (a stone jetty and mooring fixture) and a single wooden element possibly representing part of a wreck (may alternatively be naturally occurring driftwood).

14.0.3 The assessment of geophysical data identified:

- One (1) high potential anomaly (likely a wreck);
- Four (4) medium potential anomalies (possibly representing debris or parts of wreck);

[185] Research Frameworks Network. 2024. *North Sea Prehistory Research and Management Framework*. https://researchframeworks.org/nsprmf/management-framework/ Accessed 09 October 2024.

- Seventy-seven (77) low potential anomalies (likely representing anthropogenic material of limited to no archaeological interest); and
- Six hundred and eighty-one (681) magnetic anomalies without correlating seabed features.

14.0.5 A broader potential for debris, wreckage and lost cargo is suggested by the numerous documented loss records within the Study Area, dating from the 17th to 21st centuries, and evidence of coastal habitation from at least the Neolithic period.

14.0.6 No known aircraft crash sites lie within the Study Area, though three aircraft documented losses are reported. There is a limited potential for remains to be present, in consideration also of nearby early to mid-20th century aviation activities.

15.0 Annex A – Anomalies of archaeological potential

Name	Potential	Description	Mag (nT)	Length (m)	Width (m)	Height (m)	X	Y	Survey block
EGL3SW_001	Low	Chain cable or rope		44.46	0.28	0.09	573662.7	6372335	B024
EGL3SW_002	Low	Potential debris		0.55	0.22	0.24	573467.8	6372203	B024
EGL3SW_003	Low	Potential debris		1.81	0.89	1.01	572831.8	6371968	B008
EGL3SW_004	Low	Potential debris		1.74	0.51	1.56	572793.8	6371904	B008
EGL3SW_005	Low	Potential debris		1.14	0.46	0.65	572836.5	6371959	B008
EGL3SW_006	Low	Chain cable or rope		48.13	0.2	0.04	574982.8	6373157	B024
EGL3SW_007	Low	Potential debris		1.1	0.47	0.7	575019.4	6373118	B024
EGL3SW_008	Low	Chain cable or rope		33.24	0.5	0.33	575034.9	6373122	B024
EGL3SW_009	Low	Potential debris		1.93	0.72	0.49	574984.2	6372854	B024
EGL3SW_010	Low	Potential debris		1.82	0.7	0.41	575059.4	6372843	B024
EGL3SW_011	Low	Chain cable or rope		28.9	0.11	0.03	575011.2	6372789	B024
EGL3SW_012	Low	Potential debris		1.59	0.77	0.48	573497.7	6372253	B024
EGL3SW_013	Low	Potential debris		1.75	0.48	0.3	573759.4	6372340	B024
EGL3SW_014	Low	Potential debris		2.28	0.87	1.17	573293.1	6372359	B024
EGL3SW_015	Low	Potential debris		6.77	1.3	1.33	573286.3	6372355	B024
EGL3SW_016	Low	Potential debris		1.47	0.56	0.39	573122.3	6372310	B008
EGL3SW_017	Low	Potential debris		1.61	1.01	0.5	573920.8	6372437	B024
EGL3SW_018	Low	Potential debris		2.64	0.7	0.82	573813.3	6372392	B024
EGL3SW_019	Low	Potential debris		19.75	0.14	0.07	576307.8	6373088	B082
EGL3SW_020	Low	Potential debris		1.94	0.29	0.6	574934.3	6372779	B024
EGL3SW_021	Low	Potential debris		2.83	1.29	0.63	575434.3	6372850	B024
EGL3SW_022	Low	Potential debris		1.36	1.06	0.24	575483.6	6372859	B024
EGL3SW_023	Low	Chain cable or rope		13.81	0.16	0.1	573718	6372815	B024
EGL3SW_024	Low	Potential debris		4.17	0.48	0.07	573882.2	6372862	B024
EGL3SW_025	Low	Potential debris		2.73	1.34	0.16	573885.2	6372939	B024
EGL3SW_026	Low	Chain cable or rope		20.65	0.26	0.12	575106.8	6373203	B024
EGL3SW_027	Low	Potential debris		3.43	0.33	0.1	575138	6373137	B024
EGL3SW_028	Low	Chain cable or rope		44.09	0.64	0.38	575067.3	6373115	B024

Name	Potential	Description	Mag (nT)	Length (m)	Width (m)	Height (m)	X	Y	Survey block
EGL3SW_029	Low	Potential debris		3.17	0.73	0.44	574834.8	6373092	B024
EGL3SW_030	Low	Potential debris		3.6	1.12	1.1	573751.2	6372607	B024
EGL3SW_031	Low	Potential debris		4.18	3.04	0.77	573346.9	6372395	B024
EGL3SW_032	Low	Potential debris		2.16	0.59	0.41	574441.9	6373190	B024
EGL3SW_033	Low	Potential debris		1.42	0.43	0.36	574994.4	6373113	B024
EGL3SW_034	Low	Potential debris		1.39	0.85	0.47	575000.8	6373106	B024
EGL3SW_035	Low	Potential debris		1.23	0.41	0.41	574868.9	6372866	B024
EGL3SW_036	Low	Linear		15.76	1.24	0.89	575527	6373188	B024
EGL3SW_037	Low	Potential debris		2.33	0.55	0.48	574708.9	6372886	B024
EGL3SW_038	Low	Potential debris		2.01	0.87	0.95	574360	6372907	B024
EGL3SW_039	Low	Potential debris		0.7	0.34	0.29	574710.2	6373070	B024
EGL3SW_040	Low	Potential debris		1.52	0.48	0.53	574719.8	6373058	B024
EGL3SW_041	Low	Potential debris		1.13	0.5	0.54	574720.4	6372778	B024
EGL3SW_042	Low	Potential debris		1.53	0.49	0.21	574940	6373226	B024
EGL3SW_043	Low	Potential debris		6.22	0.8	0.35	574889.6	6373210	B024
EGL3SW_044	Low	Potential debris		2.21	0.69	1.01	574743.1	6373145	B024
EGL3SW_045	Low	Potential debris		3.76	1.47	0.38	575771.3	6372735	B024
EGL3SW_046	Low	Chain cable or rope		14.25	0.2	0.09	574151.4	6372955	B024
EGL3SW_047	Low	Potential debris		1.68	0.79	0.28	573606.1	6372737	B024
EGL3SW_048	Low	Potential debris		1.29	0.85	0.24	575760.2	6372831	B024
EGL3SW_049	Low	Potential debris		2.19	0.43	0.3	573944	6372920	B024
EGL3SW_050	Low	Potential debris		3.19	1.25	0.48	574048.8	6372653	B024
EGL3SW_051	Low	Potential debris		1.64	0.92	0.47	573958	6372950	B024
EGL3SW_052	Low	Potential debris		5.68	0.42	0.17	573109.7	6372182	B008
EGL3SW_053	Low	Potential debris		8.66	0.94	1.31	573131.5	6372211	B008
EGL3SW_054	Low	Potential debris		1.75	0.46	0.63	573179.9	6372207	B008
EGL3SW_055	Low	Chain cable or rope		9.04	0.21	0.12	575762.8	6372871	B024
EGL3SW_056	Low	Chain cable or rope		0	6.19	0.1	575756.8	6372883	B024
EGL3SW_057	Low	Potential debris		2.31	0.31	0.53	575727.6	6372854	B024

Name	Potential	Description	Mag (nT)	Length (m)	Width (m)	Height (m)	X	Y	Survey block
EGL3SW_058	Low	Potential debris		1.11	0.4	0.24	572948.4	6372045	B008
EGL3SW_059	Low	Chain cable or rope		72.75	0.37	0.09	575559	6373164	B024
EGL3SW_060	Low	Potential debris		1.16	0.39	0.36	575414.6	6373156	B024
EGL3SW_061	Low	Potential debris		3.4	0.51	0.3	575370.3	6372818	B024
EGL3SW_062	Low	Potential debris		4.5	1.05	0.36	575734.1	6373203	B024
EGL3SW_063	Low	Potential debris		1.42	0.53	0.19	574146.3	6372561	B024
EGL3SW_064	Low	Potential debris		1.65	0.75	1.52	575856.2	6373076	B024
EGL3SW_065	High	Wreck		29.85	8.96	0.25	575118.1	6373107	B024
EGL3SW_066	Low	Linear		10.28	0.35	0.1	574839.8	6372908	B024
EGL3SW_067	Low	Chain cable or rope		17.78	0.31	0.06	658084.4	6264162	B069
EGL3SW_068	Medium	Wreck debris		4.5	1.31	1.08	575073	6373105	B024
EGL3SW_069	Medium	Wreck debris	224.5	3.18	0.97	0.53	575066	6373107	B024
EGL3SW_070	Low	Chain cable or rope		21.17	10.09	0.14	651277.4	6273273	B069
EGL3SW_071	Medium	Potential debris		11.03	8.74	0.73	628869.3	6301478	B072
EGL3SW_072	Low	Linear		7.42	0.7	0.12	624689.7	6307104	B072
EGL3SW_073	Low	Potential debris		0.77	0.33	0.16	618057.7	6317453	B073
EGL3SW_074	Low	Potential debris		2.63	0.67	1.69	612625.1	6327860	B074
EGL3SW_075	Low	Potential debris		1.41	0.58	0.32	608790	6333666	B075
EGL3SW_076	Low	Chain cable or rope		7.62	2.93	0.1	590471.2	6358254	B078
EGL3SW_077	Low	Potential debris		1.64	0.58	0.43	576518.2	6372601	B082
EGL3SW_078	Low	Chain cable or rope		72.71	0.29	0.08	576737.4	6372442	B082
EGL3SW_079	Low	Potential debris		2.24	0.71	0.53	578807.2	6371311	B082
EGL3SW_081	Low	Linear	371	12.26	1.54	0	572707.5	6372064	B008
EGL3SW_082	Low	Linear	2432	40.26	1.39	0	572691.6	6372046	B008
EGL3SW_083	Medium	Linear	91	9.65	2.65	0	572613.3	6371988	B008

16.0 Annex B – Gazetteer of UKHO records

Records in blue are situated within 12 NM, others beyond.

MSDS ID	Description/ name	Vessel type	Extended description	Period	Latitude	Longitude	Canmore ID	HER ID	UKHO ID	Position taken from
W_120	KAPARIKA	STEAMSHIP	Ex-TENTO, ex-WOODHORN. Built in 1894, lost in 1917. On the 6th May 1917, the steamship KAPARIKA, carrying a cargo of coal, in convoy, from Blyth to Sarpsborg (Norway) was torpedoed and sunk by the German submarine UC-77 (Reinhard von Rabenau), 30 miles east of Aberdeen. One of crew lost.	20th century	57 1.96 N	1 7.1 W	208196, 321908	NP59SW0001	2220	UKHO
W_121	ENNISMORE (POSSIBLY)	STEAMSHIP	Built in 1880, lost in 1917 (torpedoed by German submarine). Intact, upright. The iron steamship ENNISMORE, carrying a cargo of coal and coke from Tyne to Christiania, was torpedoed and sunk 15 miles SE 1/2 E of Buchan Ness on the 29th December 1917 by the German submarine UC-58 (a UC II type submarine).	20th century	57 17.614 N	1 25.938 W	298310, 321915		2242	UKHO

MSDS ID	Description/ name	Vessel type	Extended description	Period	Latitude	Longitude	Canmore ID	HER ID	UKHO ID	Position taken from
W_122	MERCATOR	STEAMSHIP	Torpedoed by German submarine on 01 December 1939. Possible site of the wreck of the MERCATOR. In the early hours of the 1st December 1939, the MERCATOR, carrying a cargo including 1270 tons of coffee, maize, wheat, linseed, casein and groundnut meal, under Captain Gunnar Nilsson-Olland, was hit near the foremast by one G7a torpedo from U-21 about 12 miles southeast of Buchan Ness and sank after six minutes. One crew member was lost, with the 35 survivors rescued by the RNLI lifeboat JULIA PARK BARRY OF GLASGOW and the motor fishing vessel BREAD WINNER, and landed at Peterhead and Boddam. The exact location of the wreckage is not clear.	20th century	57 24.287 N	1 34.603 W	101742, 101833, 115523	NK23NE0001, NK23NE0002	2258	UKHO
W_123	Unknown	Unknown	Non-submarine contact first identified in 1941, last in 2010.	Unknown	57 26.187 N	1 35.104 W			2263	UKHO
W_124	HMS FLOTTA (POSSIBLY)	MINESWEEPER TRAWLER	Built in 1941, foundered after grounding on 29 October 1941. Highly degraded remains. On the 6th November 1941, the Isles class minesweeper FLOTTA foundered on Buchan Ness after grounding on 29th October 1941.	20th century	57 27.629 N	1 39.189 W	101836	NK24SW0008	2268	UKHO
W_125	Wreck	Unknown	Non-submarine contact first identified in 1945, last in 2009. Intact, upright wreck.	Unknown	57 29.597 N	1 41.199 W	321923		2272	UKHO

MSDS ID	Description/ name	Vessel type	Extended description	Period	Latitude	Longitude	Canmore ID	HER ID	UKHO ID	Position taken from
W_126	BEN TARBET	FISHING VESSEL	Sank after collision in 1975 at entrance to Peterhead Harbour. Bows visible, marked to NE and SW by light buoys. The steel motor trawler BEN TARBERT(A418), with a crew of 11, was RAMMING amidships by the MT ABERDEEN VENTURER (A488) while at anchor on the 28th November 1975 and sank within three minutes in the entrance to Peterhead Harbour.	20th century	57 29.746 N	1 46.355 W	194226, 321924	NK14NW0115	2273	UKHO
W_127	ATLAND	STEAMSHIP	Built in 1910, lost in 1943 following collision. Largely intact. The steamship ATLAND, carrying a cargo of iron ore, collided with the steamship CARSO off Peterhead on the 25th March 1943, and sank with the loss of 19 lives.	20th century	57 28.777 N	1 38.244 W	101838	NK24SW0007	2276	UKHO
W_128	MARZOCCO	STEAMSHIP	Ex-NERVIER, ex-WAR ARYAN. Beached on 14 June 1940. No trace of wreck at position in 1959. The SS MARZOCCO, travelling from Sunderland to Falmouth, was intercepted by patrol trawlers and was purposely ran aground by her crew one and a half miles north of Peterhead on the 14th June 1940.	20th century	57 30.536 N	1 45.819 W	101839	NK14NW0113	2277	UKHO
W_129	Wreck	Unknown	Burnt-out hulk, visible at low tide. In August 1987, a burnt-out hulk, which dries at low water, was reported at position bearing 284 degree, 852 metres from Peterhead south breakwater light. It was reported in January 1988 that the wreck had been removed.	Unknown	57 29.903 N	1 47.369 W	101873	NK14NW0114	2378	UKHO

MSDS ID	Description/ name	Vessel type	Extended description	Period	Latitude	Longitude	Canmore ID	HER ID	UKHO ID	Position taken from
W_130	CONSTANT STAR	FISHING VESSEL	Ran aground in high winds on 29 September 1987. Stranded and intact, on beam ends. The Motor Fishing Vessel CONSTANT STAR (PD 172), under Captain Wood, was stranded on The Skerry, 1 mile South of Peterhead, on the 27th August 1987 during a storm.	20th century	57 28.744 N	1 46.051 W	292343	NK14SW0142	2379	UKHO
W_131	SEA REEFER	CARRIER	Built in 1970, ran aground on 04 September 1992. The motor vessel SEA REEFER, carrying a cargo of fish, was stranded on South Head, Peterhead, on the 22nd August 1992.	20th century	57 30.136 N	1 45.869 W	208634	NK14NW0317	2385	UKHO
W_132	AILSA	STEAMSHIP	Captured by German submarine and scuttled 30 miles NE from Bell Rock (presumably in 1915).	20th century	56 36.244 N	0 36.359 W	322394, 325117		3199	UKHO
W_133	Wreckage	AIRCRAFT	Wreckage sighted and fixed by helicopter en route to oil rig. Could not be relocated during subsequent searches.	Unknown	56 31.995 N	0 28.11 W	322396		3201	UKHO
W_134	Containers	N/A	Nine 30-ft, empty containers lost on 12 February 2001 by MV SARDINIA. Not subsequently located.	21st century	57 27.686 N	1 38.603 W	323827		59197	UKHO
W_135	COLUMBINE	STEAMSHIP	Ex-THORNE '54. Built in 1934, lost in 1958 and broke up. Not subsequently identified. The steamship COLUMBINE (formerly named THORN), carrying a cargo of serpentine stone, ran aground on the North Head, Peterhead, on the 24th December 1957.	20th century	57 30.369 N	1 46.269 W	208528, 324037	NK14NW0190	65022	UKHO
W_136	SMIT-LLOYD 47	TUG	Dragged anchor seeking refuge in gale. Beached and subsequently refloated.	20th century	57 29.886 N	1 47.252 W	324038		65023	UKHO
W_137	Wreck	Unknown	Small wreck, possibly upright, with scour at each end.	Unknown	56 49.927 N	0 54.076 W	324371		71576	UKHO
W_138	IJSSELSTROOM	TUG	Sank on 18 June 2009 whilst towing a stone barge into Peterhead.	21st century	57 29.85 N	1 45.91 W	324450		73699	UKHO
W_139	Wreck	Unknown	Collapsed, buried wreck, possibly with boiler protruding from wreckage.	Unknown	57 6.812 N	1 12.555 W	324465		73921	UKHO

MSDS ID	Description/ name	Vessel type	Extended description	Period	Latitude	Longitude	Canmore ID	HER ID	UKHO ID	Position taken from
W_140	Wreck	Unknown	Degraded wreck in two halves, partly buried within sandwave.	Unknown	57 25.765 N	1 36.236 W	324508		74769	UKHO
W_141	Hawsers	N/A	Dumped wire hawsers. Recorded as having snagged anchors.	Unknown	57 30.16 N	1 44.15 W	101841	NK14NE0002	78420	UKHO
W_142	Wreck	Unknown	Unsurveyed wreck identified in 2012.	Unknown	57 28.48 N	1 44.6 W			79296	UKHO
W_143	Unknown	Unknown	No details. Wreckage reported at this location. No further information. Record references a national diving guide, suggesting this record may have come from a diver sighting.	Unknown	426100	837300	196053	NK27SE0001		Canmore
W_144	Wreck	SCHOONER	Upturned, wooden schooner sighted drifting north on 03 February 1922. Position indicates location of sighting.	Unknown	429000	832600	202064	NK23SE0001		Canmore
W_145	Unknown	Unknown	No details. Wreckage reported at this location. No further information. Record references a national diving guide, suggesting this record may have come from a diver sighting.	Unknown	418400	843100	202068	NK14SE0002		Canmore
W_146	Unknown	Unknown	No details. Wreckage reported at this location. No further information. Record references a national diving guide, suggesting this record may have come from a diver sighting.	Unknown	413700	845100	202086	NK14NW0116		Canmore
W_147	Unknown	Unknown	No details. Wreckage reported at this location. No further information. Record references a national diving guide, suggesting this record may have come from a diver sighting.	Unknown	435100	821500	202030	NK32SE8001		Canmore

17.0 Annex C – Gazetteer of Canmore and HER documented loss records

Description/name	Vessel type	Period	Easting	Northing	Canmore ID	HER ID	Position taken from	Extended description (from HER)
SANCT MARIE	CRAFT	17th century	415000	845000	292166	NK14NE0016	Canmore	The SANCT MARIE, under Captain Schutt, carrying a cargo of wine, raisins and sugar, was stranded near Peterhead in January 1628.
Unknown	FULL-RIGGED SHIP	17th century	413000	845000	292090	NK14NW0338	Canmore	A full-rigged ship, under Captain Richesone, was reportedly 'cast away' at Peterhead in 1648. No further information.
UNKNOWN 1731	BRIGANTINE	18th century	420000	841000	329214		Canmore	
Unknown	BRIGANTINE	18th century	418000	843020	292401	NK14SE0005	HER	An Arbroath registered brigantine, under Captain Spink, foundered off Buchan Ness in October 1731.
FRIENDSHIP	CRAFT	18th century	414000	845000	328629		Canmore	Wrecked at the entrance to Peterhead, under Capt. Souter.
RESOLUTION	CRAFT	18th century	420000	845000	289694, 328609	NK14NE0006	Canmore	The RESOLUTION, under Captain Brown, was taken and burnt by a privateer 12 leagues ExN of Buchan Ness on the 11th September 1778.
ROBERT AND BETTY	CRAFT	18th century	413580	845400	292046	NK14NW0327	HER	The ROBERT AND BETTY, under Captain Mill, was wrecked between the West Pier and Wine Well, Peterhead, on the 14th January 1774.
ANN	CRAFT	18th century	413600	845200	292142	NK14NW0351	Canmore	The ANN, carrying a cargo of tea, was wrecked entering Peterhead harbour in January 1767.
CLEMENTINA	CRAFT	18th century	413000	845000	292139	NK14NW0348	Canmore	The CLEMENTINA, under Captain Fraser, carrying a cargo of spirits and tea, was stranded at Peterhead Harbour in October 1740.
CONCORD	CRAFT	18th century	413000	845000	292138	NK14NW0347	Canmore	The CONCORD, under Captain Forbes, carrying a cargo of rice, was stranded at Peterhead on the 19th December 1740.
ELIZABETH AND PEGGY	CRAFT	18th century	413800	846100	292136	NK14NW0345	Canmore	The ELIZABETH AND PEGGY, under Captain Scolley, was wrecked at the East Pier, Peterhead, in November 1754.
EXPEDITION	CRAFT	18th century	413000	845000	261490	NK14NW0216	Canmore	The EXPEDITION, under Captain Marshal, travelling from St. Petersburg to Newry, Northern Ireland, was stranded in Peterhead harbour in January 1785, but was subsequently got off.
HERCULES	CRAFT	18th century	420000	845000	292185		Canmore	

Description/name	Vessel type	Period	Easting	Northing	Canmore ID	HER ID	Position taken from	Extended description (from HER)
JOHAN AND ERNST	CRAFT	18th century	413000	845000	292145	NK14NW0353	Canmore	The JOHAN AND ERNST (or JOHANNA ERNST), carrying a cargo of wood, was stranded at Belhelvie, drifted off, and found bottom-up at Peterhead in January 1776.
MARGARET AND MARY	CRAFT	18th century	413000	845000	292043	NK14NW0324	Canmore	The MARGARET AND MARY, carrying a cargo of coal, was wrecked at the back of the pier, Peterhead, on the 7th October 1761.
Unknown	CRAFT	18th century	413000	845000	292174	NK14NW0377	Canmore	Two Peterhead fishing boats capsized near the harbour, with a loss of 10 lives, on the 9th December 1796.
ANNIE	CRAFT	18th century	413700	842060	245037	NK14SW0115	HER	The ANNIE was said to have been wrecked on the East coast of Scotland, possibly near Boddam, sometime in 1772, with tradition stating that the sole survivor of the wreck was a monkey who was subsequently hanged.
PEGGY	CRAFT	18th century	412700	845150	205906	NK14NW0117	HER	The PEGGY, under Captain Hutton, carrying a cargo of iron and deals from Gothenberg to Dundee, was wrecked near Peterhead on the 9th December 1794.
YOUNG SYMON	CRAFT	18th century	412520	845120	292309	NK14NW0381	HER	The YOUNG SYMON, carrying a cargo of wood and hoops, was stranded on the Sands of Invernettie, Peterhead, on the 10th November 1779.
UNKNOWN 1796	FISHING VESSEL	18th century	416000	845000	328488		Canmore	
Unknown	FISHING VESSEL	18th century	413680	841940	292389	NK14SW0151	HER	A fishing boat reportedly capsized off Boddam in November 1773. Four of the crew were lost.
Unknown	FISHING VESSEL	18th century	413800	842020	292396	NK14SW0153	HER	A Fishing Boat reportedly capsized off Boddam in April 1792. Four of the crew were lost.
FORTUNE	SLOOP	18th century	413900	845800	291584	NK14NW0312	Canmore	The sloop FORTUNE, under Captain Brebner, carrying a cargo of wool, leather, porter and sugar, was wrecked on Keith Inch, Peterhead on the 6th January 1778.
HAPPY CHRISTIAN	SLOOP	18th century	413000	845000	292113	NK14NW0343	Canmore	The sloop HAPPY CHRISTIAN, under Captain Watt, carrying a cargo of spirits and tobacco, was stranded at the back of Peterhead Pier on the 10th January 1754.
HELEN AND ISOBEL	SLOOP	18th century	413900	845800	291594	NK14NW0313	Canmore	The sloop HELEN AND ISOBEL, under Captain Houston, carrying a cargo of spirits and tobacco, was stranded at the back of Keith Inch, Peterhead, on the 14th January 1754.
JEAN AND BELL	SLOOP	18th century	416000	845000	292175	NK14NE0021	Canmore	The sloop JEAN AND BELL foundered one mile off Peterhead on the 21st October 1771.

Description/name	Vessel type	Period	Easting	Northing	Canmore ID	HER ID	Position taken from	Extended description (from HER)
Unknown	SLOOP	18th century	413000	845000	292039	NK14NW0320	Canmore	A sloop, under Captain Reid, carrying a cargo of coal, was stranded at Peterhead on the 8th November 1785.
PASHA	BARQUE	19th century	414200	845800	285396	NK14NW0279	Canmore	The barque PASHA, under Captain Taylor, carrying a cargo of timber from Quebec to Shields, sprung a leak in heavy weather on the 3rd January 1865 and was wrecked at South Head, Peterhead. The crew were saved.
ARTHURSTONE	BARQUE	19th century	413700	841980	258798	NK14SW0121	HER	The iron barque ARTHURSTONE, with a crew of 26 under Captain J. Hughes, carrying a cargo of jute from Calcutta to Dundee, was struck by heavy sea off Buchan Ness Lighthouse on the 7th February 1879. She was damaged, and one life was lost, but it is not known if she was recovered.
BEHREND	BARQUE	19th century	413450	841840	257960	NK14SW0120	HER	The barque BEHREND, with a crew of 11 under Captain Kohler, carrying a cargo of timber from Memel for Belfast, was wrecked at Waterhaven, South of Buchan Ness, on the 22nd October 1875. All hands were lost.
BRITANNIA	BARQUE	19th century	413600	845440	292164	NK14NW0367	HER	The barque BRITANNIA, under Captain Dun, was wrecked at the Boat Harbour, Peterhead, on the 20th January 1800.
HOPE	BRIG	19th century	420000	845000	326957		Canmore	
HELEN	BRIG	19th century	413260	845120	206161	NK14NW0132	HER	The brig HELEN, under Captain Boyd, carrying a cargo of tar from Newcastle to Bristol, was wrecked at Scotstoun Head on the 13th October 1815. The crew were saved.
ADLER	BRIG	19th century	413600	845200	248514	NK14NW0198	Canmore	The brig ADLER, with a crew of 9 men under Captain Traff, carrying a cargo of timber from Memel to Hull, arrived off Peterhead leaky on the 1st November 1852, and in taking the South Harbour grounded at the entrance and was left considerably exposed.
AFFIANCE	BRIG	19th century	420000	845000	205916	NK24NW0009	Canmore	The brig AFFIANCE, in ballast, under Captain Jackson, was driven ashore in January 1803.
EDWARD	BRIG	19th century	420000	841000	292406	NK24SW0005	Canmore	The brig EDWARD, under Captain Sims, carrying a cargo of iron ore, foundered off Buchan Ness on the 10th October 1791.
FLY	BRIG	19th century	413700	842200	206240	NK14SW0146	Canmore	The brig FLY, under Captain Duncan, carrying a cargo of flour from Dundee to Aberdeen, was wrecked at Boddam Point on the 1st December 1822. The crew were saved.

Description/name	Vessel type	Period	Easting	Northing	Canmore ID	HER ID	Position taken from	Extended description (from HER)
HENRY	BRIG	19th century	413000	845000	206300	NK14NW0105	Canmore	The brig HENRY, under Captain Wilson, carrying a cargo of slates from Conway to Sunderland, was driven ashore at Kirkton Head during a gale on the 29th November 1832. The crew were saved.
JEAN	BRIG	19th century	413530	845600	292112	NK14NW0342	Canmore	The brig JEAN was stranded on Horseback Rock, Peterhead, on the 3rd September 1817.
MACEDONIA	BRIG	19th century	420000	845000	292183	NK24NW0004	Canmore	The brig MACEDONIA was lost near Peterhead on the 4th September 1876.
PROVIDENCE	BRIG	19th century	413600	845200	274223	NK14NW0240	Canmore	The brig PROVIDENCE (or PROVIDENTIA), under Captain Helgsen, carrying a cargo of battens from Drammen to the Firth of Forth, was wrecked at the entrance of Peterhead harbour on the 24th March 1866.
ROBERT STEVENSON	BRIG	19th century	415000	845000	292167	NK14NE0017	Canmore	The brig ROBERT STEVENSON was stranded near Peterhead on the 4th September 1876.
RONTHO	BRIG	19th century	414000	845000	246939	NK14NW0194	Canmore	The brig RONTHO (or RANTHO) was wrecked in the South Bay, off Peterhead, on the 21st December 1847. All hands were lost.
SOPHIE	BRIG	19th century	413000	845000	206600	NK14NW0156	Canmore	The Norwegian brig SOPHIE, with a crew 6 under Captain Backer, in ballast, was stranded in South Bay, Peterhead, on the 23rd December 1876. All hands were lost.
PRIMROSE	BRIG (or SNOW)	19th century	413000	845000	206133	NK14NW0130	Canmore	The snow PRIMROSE, under Captain Humphrey, was totally lost near Peterhead harbour on the 5th November 1811.
SCOTSMAN	BRIGANTINE	19th century	412700	845370	275796	NK14NW0260	HER	The brigantine SCOTSMAN foundered off Buchan Ness on the 11th January 1849, and subsequently came ashore at the Ropeworks, Peterhead.
ZEPHYR	BRIGANTINE	19th century	413000	845240	292152	NK14NW0360	HER	The brigantine ZEPHYR, under Captain Cox, was lost near Peterhead in November 1833.
WHY NOT	BRIGANTINE (or BRIG)	19th century	414000	843200	206724	NK14SW0101	Canmore	The brig WHY NOT, with a crew of 7 under Captain T. Denty (or Denby), travelling from London for Newcastle-on-Tyne, in ballast, was lost with all hands after stranding on Skerry Rock, near Boddam in March 1881.
Unknown	CRAFT	19th century	413000	845000	292042	NK14NW0323	Canmore	An unknown number of fishing vessels were lost in Peterhead bay on the 17th August 1848.
UNKNOWN 1854	CRAFT	19th century	415000	845000	326634		Canmore	
UNKNOWN 1857	CRAFT	19th century	420000	845000	326524		Canmore	

Description/name	Vessel type	Period	Easting	Northing	Canmore ID	HER ID	Position taken from	Extended description (from HER)
UNKNOWN 1864	CRAFT	19th century	420000	845000	327237		Canmore	
BELLA SINCLAIR	CRAFT	19th century	413000	845180	292141	NK14NW0350	HER	The BELLA SINCLAIR was lost near Peterhead in July 1880.
CONCORDIA	CRAFT	19th century	412700	845290	268622	NK14NW0228	HER	The CONCORDIA, under Captain Cooper, was driven ashore near Peterhead on the 23rd October 1811.
FISHER	CRAFT	19th century	413700	842080	271791	NK14SW0128	HER	The FISHER of Lerwick, under Captain Anderson, carrying fish and kelp from Scalloway to Leith, lost her boats, bulwarks, compasses etc., and was run foul of by a Dutch fishing vessel, which stove in her starboard bow. She was abandoned by the crew on the 5th October 1823, who were picked up by the UNITY of Faversham and landed at Aberdeen. It is assumed that she must have gone down very soon after they left her.
GLENORA	CRAFT	19th century	412700	845350	275752	NK14NW0254	HER	Part of the side of a vessel, about 30 feet long, was washed ashore near Peterhead along with a handspike, marked 'GLENORA', on the 12th January 1848.
HELEN	CRAFT	19th century	413720	842020	274315	NK14SW0131	HER	The HELEN, of Stockton, under Captain Ricks, carrying coal from Hartlepool to Aberdeen, foundered off Buchan Ness on the 15th November 1865. The Captain was washed overboard. Two men were picked up in their boat and landed at Peterhead.
JANE	CRAFT	19th century	413180	845100	206323	NK14NW0110	HER	The JANE, under Captain Robertson, travelling from Peterhead, sprung a leak at sea, and was run on shore near Peterhead, and became a wreck on the 3rd August 1836. This may be a duplication of the JEAN, which was lost under identical circumstances.
JUNO	CRAFT	19th century	414060	847000	268621	NK14NW0227	HER	The JUNO, travelling from London to Londonderry, was driven ashore near Peterhead on the 23rd March 1810, after a stone had gone through her bilge, and she had three and a half feet water in her hold. The captain expected in a few tides to get her into a place of safety, and to be able to proceed on the voyage. It is not known if she was refloated.
MAESE PACKET	CRAFT	19th century	413760	842020	259004	NK14SW0123	HER	Part of the stern of a vessel, having 'MAESE PACKET, of Sunderland', painted on it in yellow letters, along with other wreckage, was washed ashore at Boddam on the 30th March 1850.

Description/name	Vessel type	Period	Easting	Northing	Canmore ID	HER ID	Position taken from	Extended description (from HER)
MANSFIELD	CRAFT	19th century	413000	845040	292068	NK14NW0328	HER	The MANSFIELD was wrecked near Peterhead in September 1859.
MARY	CRAFT	19th century	413400	845000	206386	NK14NW0147	HER	This MARY, which set sail from Peterhead for Bristol on 22 September 1852 with a crew of six under Captain Jones, was reported as lost in November 1852. It was not heard of again.
NANCY	CRAFT	19th century	413500	842100	275555	NK14SW0133	HER	On the 4th October 1844, the NANCY, of Kincardine, travelling from Alloa to Balintraid, foundered off Buchan Ness. The crew were saved.
NEPTUNUS	CRAFT	19th century	413023	845120	286780	NK14NW0291	HER	A head-board marked 'NEPTUNUS' was washed ashore in South Bay, Peterhead, on the 10th January 1864.
ACTIVE	CRAFT	19th century	420000	845000	205915	NK24NW0008	Canmore	The ACTIVE, under Captain Coleman, travelling from Danzig (Gdansk) to Liverpool, was lost near Peterhead in October 1802.
ADONIS	CRAFT	19th century	413000	845000	259038	NK14NW0213	Canmore	It was reported that on the 24th August 1861, the ADONIS, under Captain Williams, travelling from Perth to Gardenstown, put into Peterhead harbour after having parted from her anchor in Fraserburgh Bay earlier the same day and colliding with a schooner.
ALABAMA	CRAFT	19th century	413000	845000	286778	NK14NW0290	Canmore	The ALABAMA, recently launched out of Peterhead was struck by a gust of wind on leaving Peterhead Harbour and drifted on to the rocks on the 7th November 1863. It was thought she would become a wreck.
ALBION	CRAFT	19th century	413800	845700	205945	NK14NW0124	Canmore	The ALBION, under Captain Buchan, was wrecked under Peterhead Battery on the 2nd March 1804.
ALLIANCE	CRAFT	19th century	413000	845000	268493	NK14NW0225	Canmore	The ALLIANCE, under Captain Jackson, travelling from Bremen to Newcastle, was lost near Peterhead in January 1803. Two of the crew were lost.
BROTHERS AND SISTERS	CRAFT	19th century	413000	845000	272881	NK14NW0239	Canmore	The BROTHERS AND SISTERS, of Sunderland, bound to the Moray Firth, was run into Peterhead Harbour on fire, on the 22nd June 1835. She burnt to the water's edge and was completely destroyed.
COMMERCE	CRAFT	19th century	420000	845000	205920	NK24NW0007	Canmore	The COMMERCE, carrying a cargo of wheat, was wrecked near Peterhead in January 1803.
DEFIANCE	CRAFT	19th century	413000	845000	246590	NK14NW0193	Canmore	The DEFIANCE, carrying a cargo of lime, caught fire in Peterhead Harbour on the 30th March 1847 and was stranded.

Description/name	Vessel type	Period	Easting	Northing	Canmore ID	HER ID	Position taken from	Extended description (from HER)
EFFORT	CRAFT	19th century	420000	845000	275469	NK24NW0010	Canmore	A top-gallant quarter-board with the name 'EFFORT' on it and other wreckage, including cabin furniture and a long boat with painted sides, was noted off shore from Peterhead on the 31st March 1843.
ENIGHEDEN	CRAFT	19th century	413000	845000	268624	NK14NW0229	Canmore	The ENIGHEDEN, under Captain Ludberg, carrying a cargo of timber was driven ashore in Peterhead Bay on the 23rd October 1811.
ENTERPRISE	CRAFT	19th century	413000	845000	287003	NK14NW0295	Canmore	The ENTERPRISE, of London, carrying a cargo of barley from Burghead to Hartlepool, was stranded in Peterhead harbour on the 15th February 1865 and began discharging her cargo.
FAVORITE	CRAFT	19th century	413000	845000	292149	NK14NW0357	Canmore	The FAVORITE, carrying a cargo of coal, was driven ashore in Peterhead Bay in January 1803.
FAVOURITE	CRAFT	19th century	413000	845000	268494	NK14NW0226	Canmore	The FAVOURITE, of Sunderland, carrying a cargo of coal to London, was driven ashore in Peterhead Bay in February 1803.
FRIENDS	CRAFT	19th century	413600	845200	206317	NK14NW0107	Canmore	The FRIENDS was wrecked at the entrance to Peterhead harbour on the 7th November 1833.
FRIENDSHIP	CRAFT	19th century	413000	845000	292146	NK14NW0354	Canmore	The FRIENDSHIP, under Captain Murray, was wrecked at the back of 'the baths', Peterhead, on the 24th January 1806.
HERO	CRAFT	19th century	413000	845000	206285	NK14NW0104	Canmore	The HERO, carrying a cargo of lime from Sunderland to Dingwall, under Captain Anderson, was wrecked at South Head, Peterhead, on the 6th September 1831.
INDUSTRY	CRAFT	19th century	413600	845200	275799	NK14NW0262	Canmore	The INDUSTRY, under Captain Innes, travelling from London, was wrecked at the entrance to Peterhead Harbour on the 27th February 1849. The crew, and part of the materials and cargo, were saved.
JANE AND ISABELLA	CRAFT	19th century	413000	845000	266259	NK14NW0223	Canmore	The JANE AND ISABELLA, of Peterhead, was stranded on the 26th August 1876 in the outer basin of the North Harbour, Peterhead.
JANETS AND MARGARETS	CRAFT	19th century	413000	845000	274428	NK14NW0242	Canmore	The JANETS AND MARGARETS was driven ashore at Peterhead on the 5th October 1836. She was apparently got off undamaged.
JEAN	CRAFT	19th century	413000	845000	206322	NK14NW0109	Canmore	The JEAN, under Captain Noble, was driven ashore in Peterhead Bay on the 22nd October 1834.

Description/name	Vessel type	Period	Easting	Northing	Canmore ID	HER ID	Position taken from	Extended description (from HER)
JEAN	CRAFT	19th century	413000	846000	206324	NK14NW0111	Canmore	The JEAN, under Captain Robertson, travelling from Peterhead to Montrose, sprung a leak at sea on the 24th July 1836, and in putting back struck on the North Head, and was totally wrecked. This may be a duplication of the JANE, which was lost under identical circumstances.
JOHN	CRAFT	19th century	413000	845000	272642	NK14NW0236	Canmore	The JOHN, under Captain Short, of and for Newcastle was much damaged during a heavy squall outside Peterhead on the 8th December 1833.
JOHN O' GROAT	CRAFT	19th century	413000	845000	206258	NK14NW0100	Canmore	Supposed site of wreck.
JUNO	CRAFT	19th century	413000	845000	206130	NK14NW0129	Canmore	The JUNO, under Captain Foreman, travelling from London to Limerick, was stranded at Peterhead on the 5th March 1811.
LIVELY	CRAFT	19th century	413000	845000	272645	NK14NW0238	Canmore	The LIVELY, under Captain Watson, travelling from Portgordon to London, was much damaged during a heavy squall outside Peterhead on the 8th December 1833.
MARGARET	CRAFT	19th century	413000	845000	272644	NK14NW0237	Canmore	The MARGARET, under Captain Fowles, of Kirkwall, was much damaged during a heavy squall outside Peterhead on the 8th December 1833.
MARMADUKE	CRAFT	19th century	430000	827000	292720	NK32NW0001	Canmore	The MARMADUKE, carrying a cargo of lime, foundered off the Aberdeenshire coast on the 22nd September 1835.
MARY ANN	CRAFT	19th century	414200	845800	206344	NK14NW0318	Canmore	The mail packet MARY ANN, (or MARIANNE), under Captain Creighton, travelling from Peterhead to Shetland, was wrecked at the South Head, Peterhead on the 23rd February 1838.
NEWARK	CRAFT	19th century	420000	841000	292405	NK24SW0004	Canmore	The NEWARK was sunk by privateer off Buchan Ness in November 1800. No further information.
OCEAN	CRAFT	19th century	413000	846000	286256	NK14NW0283	Canmore	The OCEAN, of Rochester, carrying coal from Sunderland to Lossiemouth, was stranded at Peterhead on the 2nd November 1864.
ORIENT	CRAFT	19th century	413600	845200	274498	NK14NW0243	Canmore	The ORIENT, under Captain Smith, bound to Aberdeen, in making for Peterhead harbour during a heavy gale on the 19th February 1837, grounded at the entrance. The crew was saved.

Description/name	Vessel type	Period	Easting	Northing	Canmore ID	HER ID	Position taken from	Extended description (from HER)
POLAR STAR	CRAFT	19th century	413600	845200	256220	NK14NW0208	Canmore	It was reported that on the 27th February 1872, the POLAR STAR, bound to Greenland, in being towed out of Peterhead got out of the cut and grounded, and the efforts of the tug were insufficient to move her. A subsequent report indicates that she arrived at Lerwick on the 29th February 1872.
POMONA	CRAFT	19th century	413000	845000	272514	NK14NW0235	Canmore	The POMONA, under Captain Milne, was stranded on the rocks on the North side of the North Harbour, Peterhead on the 10th March 1831.
PROSPEROUS	CRAFT	19th century	413800	845700	206333	NK14NW0138	Canmore	The PROSPEROUS, under Captain McKenzie, travelling from Aberdeen, was stranded below the Battery, Peterhead, on the 19th April 1837 and filled with water.
SARAH	CRAFT	19th century	413000	845000	206365	NK14NW0140	Canmore	The SARAH, under Captain Dawson, carrying a cargo of wheat from Newcastle to Dublin was wrecked in Peterhead Bay on the 31st January 1840. The crew and cargo were saved but the SARAH went to pieces.
SEDULOUS	CRAFT	19th century	413000	845000	275878	NK14NW0266	Canmore	The SEDULOUS, under Captain Levie, of Aberdeen, travelling from Quebec to Peterhead, missed her stays, and was driven ashore near the North Harbour of Peterhead on the 27th July 1852. She was got off on the 30th July 1852, but was considerably damaged.
SOVEREIGN	CRAFT	19th century	430000	836000	285370	NK33NW0001	Canmore	The SOVEREIGN, under Captain Smith, carrying a cargo of coals from Sunderland to Dundee, was abandoned 8th December 1863 off Buchan Ness in a sinking state. The crew landed at Aberdeen.
TRITON	CRAFT	19th century	413000	845000	286763	NK14NW0289	Canmore	The TRITON, under Captain de Jonge, carrying a cargo of grain from Archangel (Arkhangelsk), was stranded at Peterhead on the 19th September 1863.
TWILLING BRODRENE	CRAFT	19th century	413600	845200	286796	NK14NW0294	Canmore	The TWILLING BRODRENE, under Captain Langgaard, foundered on entering Peterhead Harbour on the 17th September 1864, and made a good deal of water. It is not known if she was got off.
WAVE	CRAFT	19th century	413600	845200	286734	NK14NW0288	Canmore	The WAVE, under Captain Taylor, carrying coal from Sunderland, was stranded near the North entrance of Peterhead Harbour on the 31st December 1862.
WINDWARD	CRAFT	19th century	413000	845000	255104	NK14NW0207	Canmore	The WINDWARD, under Captain David Ewan, travelling from Peterhead to Greenland, for seal and whale fishing, was stranded on rocks outside Peterhead Harbour on the 25th February 1860. She

Description/name	Vessel type	Period	Easting	Northing	Canmore ID	HER ID	Position taken from	Extended description (from HER)
								was subsequently got off, but was considerably damaged.
ZEPHYR	CRAFT	19th century	413000	845000	274312	NK14NW0241	Canmore	The ZEPHYR, of Dundee, under Captain Herd, carrying a cargo of coal from Granton to Littleferry, was abandoned in the South Bay of Peterhead, drifting towards rocks, on the 27th October 1869.
ANDERSONS	CRAFT	19th century	413700	842000	206132	NK14SW0166	HER	The ship ANDERSONS, in ballast, under Captain Tait, travelling from London to New Brunswick, was stranded in a small creek near Boddam during a violent gale on the 20th April 1811. She may have been got off.
MEMEL	CRAFT	19th century	413680	841920	272430	NK14SW0130	HER	The wreck of a vessel, water-logged and abandoned, with timber on deck, and the word 'Memel' in the centre of the stern, was seen abandoned off Buchan Ness on the 1st December 1829.
NORMAN	CRAFT	19th century	412700	845330	274640	NK14NW0244	HER	The NORMAN, under Captain Lucklie, travelling from Memel to Dublin, was driven ashore on the North Head, Peterhead, on the 3rd June 1838. She was later got off and taken into the harbour, but was considerably damaged.
ORION	CRAFT	19th century	413000	845100	292089	NK14NW0337	HER	A small boat with 'ORION, of Sunderland, George Dunn master' painted on it was driven ashore at Peterhead during a gale on the 7th March 1866. No sign of crew or cargo. No further information.
ORNEN	CRAFT	19th century	413700	842050	275987	NK14SW0134	HER	On the 10th December 1860, a name board with 'ORNEN' cut into it, painted white on a black ground, was picked up at Peterhead in two pieces. It appeared to have been made of Norway fir. Part of the deck of a vessel was also washed ashore, while part of a hull was found at Boddam.
PORTLAND	CRAFT	19th century	412700	845310	268625	NK14NW0230	HER	The PORTLAND, under Captain Haywood, bound to North America, was driven ashore on rocks near Peterhead on the 8th April 1815.
RANGER	CRAFT	19th century	413000	845120	292111	NK14NW0341	HER	The RANGER was wrecked near Peterhead on the 19th December 1847. No further information.

Description/name	Vessel type	Period	Easting	Northing	Canmore ID	HER ID	Position taken from	Extended description (from HER)
Unknown	CRAFT	19th century	413120	845100	206315	NK14NW0106	HER	Part of the stern of a 'foreign schooner' was washed ashore North of Peterhead on the 15th March 1833.
Unknown	CRAFT	19th century	413700	842160	286419	NK14SW0139	HER	A waterlogged ship, with masts only above water, was seen off Peterhead by fishing boats on the 16th February 1871. Subsequent reports state that on the 13th February part of a vessel's mast, standing upright about twelve feet above the water, the heel of another mast and a large quantity of wreckage, belonging apparently to a vessel of about 100 tons were observed c. 5 miles off Buchan Ness.
Unknown	CRAFT	19th century	417040	847000	292182	NK14NE0010	HER	A vessel carrying a cargo of timber is presumed to have foundered off Peterhead, or between Peterhead and Collieston, on the 20th December 1864, as much of the cargo and parts of a vessel were washed ashore in this area.
Unknown	CRAFT	19th century	417060	847000	292187	NK14NE0014	HER	An unknown vessel was the second of two lost off Peterhead during 1857, the other being the FREDERICKE (NK14NW0271).
Unknown	CRAFT	19th century	413580	841840	292388	NK14SW0150	HER	Wreckage, including part of a hull, was washed ashore at Boddam on the 10th December 1860.
Unknown	CRAFT	19th century	413740	842020	292395	NK14SW0152	HER	A vessel carrying a cargo of mussels capsized and sank off Boddam Head (Buchan Ness) on the 14th August 1811. Four of the crew were lost.
URDUR	CRAFT	19th century	414040	847000	265859	NK14NW0221	HER	A report was received at Peterhead, on the 5th November 1875, that a board, painted black, with white letters 'URDUR', was washed ashore near Peterhead.
GLEANER	CUTTER	19th century	413700	842200	207028	NK14SW0104	Canmore	The trading cutter GLEANER, with a crew of 2 men under Captain and owner D. McLean, Peterhead, travelling from Peterhead to Methil, in ballast, was stranded at Buchan Ness on the 9th May 1891.
HOPE (possibly)	EAST-INDIAMAN	19th century	412700	845170	205919	NK14NW0121	HER	A vessel, supposed the HOPE, of Aberdeen, and a very large foreign ship, supposed a Dutch or Danish East-Indiaman, were lost near Peterhead in 1803, and all the crew of the latter.
UNKNOWN 1874 (BF 907)	FISHING VESSEL	19th century	420000	845000	327803		Canmore	
Unknown	FISHING VESSEL	19th century	413700	842120	292385	NK14SW0149	HER	A fishing boat capsized off Boddam on the 25th November 1823. No lives were lost.

Description/name	Vessel type	Period	Easting	Northing	Canmore ID	HER ID	Position taken from	Extended description (from HER)
Unknown (BF 907)	FISHING VESSEL	19th century	417020	847000	292181	NK14NE0009	HER	A fishing vessel was seen bottom-up off shore from Peterhead on the 26th August 1874. Registration number cited as BF 907. No further information.
ELIZA	FULL-RIGGED SHIP	19th century	412700	845230	206012	NK14NW0125	HER	The full-rigged ship ELIZA, under Captain Beatson, carrying a cargo of wood from Pictou, Nova Scotia, to London, was wrecked at Rattray Head on her maiden voyage on the 22nd July 1806.
ANNA MARIA	GALLIOT	19th century	413000	845000	286782	NK14NW0292	Canmore	The galliot ANNA MARIA, under Captain Duhn, carrying a cargo of bones from Libau to Peterhead, was wrecked at Peterhead on the 12th January 1864. The crew were saved.
FREDERICKE	GALLIOT	19th century	413600	845200	275934	NK14NW0271	Canmore	The galliot FREDERICKE, under Captain Schmidt, carrying a cargo of coal and herrings from Peterhead to Bremen, was stranded at the entrance to Peterhead Harbour on the 22nd August 1857. Part of her cargo was landed.
JOHANNES	GALLIOT	19th century	420000	845000	246944	NK24NW0005	Canmore	The galliot JOHANNES, carrying a cargo of wheat from Lubeck, Germany, to Leith, foundered and was abandoned in a sinking state off Peterhead on the 21st December 1847. The crew were saved.
SARAH MARIA	GALLIOT	19th century	413000	846000	248396	NK14NW0197	Canmore	The galliot SARAH MARIA, with a crew of 4 under Captain Bloom, carrying a cargo of cattle bones from Norden, Germany, to Port Gordon (or Port Glasgow), was wrecked 300 yards from North Head, Peterhead Harbour, on the 16th April 1852 in thick fog.
LADY ELEANOR	GALLIOT (or SCHOONER)	19th century	413600	845200	275880	NK14NW0268	Canmore	The schooner LADY ELEANOR, travelling from Peterhead to the Firth of Forth, was wrecked 100 yards from the entrance to Peterhead Harbour on the 31st October 1853 when trying to put back into the port during a gale.
MARY	HERAMPHRODITE BRIG	19th century	414000	847000	249463	NK14NW0203	HER	The hermaphrodite brig MARY, carrying a cargo of potatoes from Inverness to London, was abandoned off Peterhead in a sinking state on the 6th December 1853. The crew were saved.
FRIENDSHIP	HERMAPHRODITE BRIG	19th century	413000	845000	206318	NK14NW0108	Canmore	The hermaphrodite brig FRIENDSHIP, under Captain McDonald, travelling from Inverness to Newcastle, was stranded at the back of the South Quay, Peterhead, on the 8th December 1833.

Description/name	Vessel type	Period	Easting	Northing	Canmore ID	HER ID	Position taken from	Extended description (from HER)
VICTORIA	HERMAPHRODITE SCHOONER	19th century	414200	845800	275929	NK14NW0269	Canmore	The hermaphrodite schooner VICTORIA, under Captain Wilson, carrying a cargo of coal from Sunderland to Banff, was stranded on the rocks on the South Head, Peterhead, on the 2nd July 1856 in leaving the bay, and was wrecked.
CHARLOTTE	KETCH	19th century	413680	841900	256058	NK14SW0118	HER	The ketch CHARLOTTE, with a crew of 4 under Captain and Owner W. Johnson, carrying china clay from Charlestown (Fife) to Aberdeen, suffered the loss of her bulwarks about 2.5 miles S by W of Buchan Ness on the 26th February 1874. One life was lost. She may have been recovered.
GEREDINA	KETCH	19th century	413000	845000	207111	NK14NW0163	Canmore	The wooden ketch GEREDINA, with a crew of 4 men under Captain and owner G. Cheyne, Fraserburgh, carrying a cargo of coal from Bridgeness, Linlithgowshire, to Fraserburgh, was stranded in South Bay, Peterhead on the 31st January 1897.
ALASKA	LUGGER	19th century	416000	847000	207076	NK14NE0007	Canmore	The lugger ALASKA, with a crew of 4 men under Captain A. Winton, fishing out of Peterhead, in ballast, foundered 1.25 miles ENE of Peterhead on the 8th January 1896. Three of the crew were lost.
BANKS OF SPEY	LUGGER	19th century	413000	846000	206543	NK14NW0153	Canmore	The lugger BANKS OF SPEY, with a crew of 6 under Captain and Owner P. Geddes, Banff, returning to Peterhead from fishing grounds, in ballast, foundered off North Head, Peterhead, on the 3rd August 1876. Three of the crew were lost.
CHASE	LUGGER	19th century	414000	843200	207009	NK14SW0103	Canmore	The wooden lugger CHASE (BF230) with a crew of 7 men under Captain and owner A. Reid, fishing out of Peterhead in ballast, was stranded on Skerry Rock on the 31st July 1890.
CHILDREN'S FRIEND	LUGGER	19th century	415080	844530	207134	NK14SE0008	Canmore	The wooden lugger CHILDREN'S FRIEND, in ballast, with none of crew on board, was driven from her moorings in the South Harbour, Peterhead, and foundered just outside the harbour on the 29th November 1897.
EXCELLENT	LUGGER	19th century	413000	845000	292085	NK14NW0333	Canmore	The lugger EXCELLENT (BF 1346), under Captain Thom, was wrecked at Peterhead on the 1st September 1882.
HENRIETTA	LUGGER	19th century	413000	845000	292165, 328858	NK14NW0368	Canmore	The lugger HENRIETTA (KY 188) was wrecked and sunk in deep water at Peterhead on the 18th August 1899.

Description/name	Vessel type	Period	Easting	Northing	Canmore ID	HER ID	Position taken from	Extended description (from HER)
JESSIE AND ANN	LUGGER	19th century	413000	846000	207207	NK14NW0165	Canmore	The wooden lugger JESSIE AND ANN, in ballast, under Captain Buchan, registration number cited as PD 381, was stranded on North Head rocks, Peterhead, on the 17th August 1899.
LADY OF THE ISLES	LUGGER	19th century	413600	845400	207062	NK14NW0160	Canmore	The wooden lugger LADY OF THE ISLES, with a crew of 5 men under Captain and owner R. Taylor, Peterhead, in ballast, was driven from her moorings in Port Henry Harbour, Peterhead, on the 18th November 1893 and wrecked.
MARGARET AND MARY	LUGGER	19th century	418000	846100	206865	NK14NE0005	Canmore	The unregistered lugger MARGARET AND MARY, with a crew of 5 under Captain A. Stewart, fishing out of Boddam, was in collision with the unregistered fishing lugger FLYING SCOTCHMAN 2 miles east of Peterhead on the 24th August 1887.
MARY ANN	LUGGER	19th century	413100	844500	207133	NK14SW0140	Canmore	The lugger MARY ANN (PD 145), in ballast, was driven from anchor and stranded at Salthouse Head on the 28th November 1897.
PATRIOT	LUGGER	19th century	413000	845000	292159	NK14NW0362	Canmore	The lugger PATRIOT, PD 1016, was wrecked in South Bay, Peterhead, in September 1873.
SWEET HOME	LUGGER	19th century	413700	846600	253853	NK14NW0206	Canmore	It was reported that the wooden lugger SWEET HOME, with a crew of 5 under Captain and Owner A. Farquharson, fishing out of Peterhead, in ballast, lost one of the crew on the 15th July 1884 off Roan Head, Peterhead. The lugger may have been undamaged and the report may only be of the lost crew member.
YOUNGEST	LUGGER	19th century	413600	845200	250150	NK14NW0204	Canmore	The unregistered lugger YOUNGEST, with a crew of 7 men under Captain W. Pirie, fishing out of Peterhead, in ballast, was stranded near the entrance to the North Harbour, Peterhead, on the 29th July 1898.
PILOT FISH	LUGGER	19th century	413460	842700	207137	NK14SW0107	HER	The unregistered lugger PILOT FISH, with none on board, was driven from anchor, in ballast, and stranded at the entrance to Boddam harbour on the 29th November 1897.
SCOTCH BARD	LUGGER	19th century	413700	842020	207110	NK14SW0106	HER	The lugger SCOTCH BARD, with a crew of 5 men under Captain G. Buchan, fishing out of Peterhead in ballast, collided with the un-registered fishing lugger ABSTAINER of Peterhead and sank near Buchan Ness lighthouse on the 20th January 1897.

Description/name	Vessel type	Period	Easting	Northing	Canmore ID	HER ID	Position taken from	Extended description (from HER)
VOLUNTEER	LUGGER	19th century	413460	842740	207138	NK14SW0108	HER	The unregistered lugger VOLUNTEER, with a crew of 5 men under Captain and owner J.N. Stephen, fishing out of Boddam, in ballast, was stranded at the entrance to Boddam harbour on the 17th February 1898.
GOWAN	LUGGER (or ZULU)	19th century	413000	845000	207074	NK14NW0162	Canmore	The zulu GOWAN, with a crew of 7 men under Captain and owner W. Crawford, Banff, travelling from Banff to Eyemouth, in ballast, was stranded near the entrance to Peterhead harbour on the 17th February 1895.
ARIEL	SCHOONER	19th century	414000	846100	325542		Canmore	Stranded at North Harbour, Peterhead. Capt. Lund.
MARCHIONESS OF HUNTLY	SCHOONER	19th century	414000	842400	326994		Canmore	
SATURNIUS (or SATURNUS)	SCHOONER	19th century	412700	845500	206274, 292153, 327028	NK14NW0102	Canmore	The schooner SATURNUS, under Captain Talgrim, carrying a cargo of tar from Christianstadt, Poland, to Liverpool, was wrecked in Peterhead bay on the 27th August 1830. The crew were saved.
SUNSHINE	SCHOONER	19th century	420000	845000	327044		Canmore	
GEERTRUIDA SPEELMAN	SCHOONER	19th century	413460	842720	285997	NK14SW0137	HER	The Dutch schooner GEERTRUIDA SPEELMAN, under Captain Lever, bound to Stettin (Szczecin), was stranded leaving Boddam on the 8th October 1870 and expected to become a total wreck. The crew were saved.
HART	SCHOONER	19th century	413780	842020	274858	NK14SW0132	HER	The schooner HART, under Captain Carfrae, carrying a cargo of pimento from Grangemouth to Rotterdam was wrecked near Boddam on the 29th November 1839 during a tremendous gale. The crew were lost. Part of the cargo, consisting of pimento in bags, and two boats, were washed on shore.
HIGHLANDER	SCHOONER	19th century	413520	841840	247777	NK14SW0116	HER	The schooner HIGHLANDER, under Captain Reid, carrying a cargo of coal from Sunderland to Portgordon, whilst riding in Peterhead Bay during a snowstorm, drove from her anchors on to the rocks near Buchan Ness Lighthouse on the 24th March 1850 and was wrecked.
MARQUIS OF HUNTLY	SCHOONER	19th century	413500	841840	206184	NK14SW0099	HER	The schooner MARQUIS OF HUNTLY (or HUNTLEY), travelling from Aberdeen to Peterhead, was driven ashore on the rocks near Boddam on the 29th November 1817 and became waterlogged. The crew were saved.

Description/name	Vessel type	Period	Easting	Northing	Canmore ID	HER ID	Position taken from	Extended description (from HER)
SCOTTISH MAID	SCHOONER	19th century	413460	842710	262548	NK14SW0124	HER	The schooner SCOTTISH MAID, under Captain Smith, bound for Hamburg with a cargo of herring, was wrecked at the entrance to Boddam harbour on the 7th November 1872.
ACTIVE	SCHOONER	19th century	414200	845800	206489	NK14NW0150	Canmore	The ACTIVE, under Captain Moore, carrying a cargo of manure from Ipswich to Nairn, was stranded at South Head, Peterhead, on the 15th February 1872. The crew were saved.
ACTIVE	SCHOONER	19th century	413000	845000	292143	NK14NW0352	Canmore	The schooner ACTIVE was stranded at the back of the South Pier, Peterhead, on the 6th June 1872.
ALLIANCE	SCHOONER	19th century	414200	845800	286615	NK14NW0286	Canmore	The schooner ALLIANCE, under Captain Urquhart, travelling to Sunderland, in ballast, was wrecked at South Head, Peterhead, on the 26th February 1862. The crew were saved.
ANN FLEMING	SCHOONER	19th century	414000	846100	206499	NK14NW0151	Canmore	The schooner ANN FLEMING, carrying a cargo of coal to Gairloch, was wrecked at North Haven, Peterhead, on the 29th June 1874. The crew were landed in a pilot boat.
ARNOLD	SCHOONER	19th century	420000	845000	292186	NK24NW0006	Canmore	The schooner ARNOLD was lost near Peterhead on the 15th January 1889.
ARROW	SCHOONER	19th century	413600	845200	285892	NK14NW0282	Canmore	The schooner ARROW, under Captain Christie, carrying a cargo of hoops from London to Peterhead, was stranded at the entrance to Peterhead Harbour on the 18th October 1866 during a gale. The crew were saved.
AUGUSTA	SCHOONER	19th century	413700	842800	258943	NK14SW0122	Canmore	The Swedish schooner AUGUSTA, with a crew of 5 under Captain A. Christensen, carrying a cargo of pit props from Fiskebackskil, Sweden, to Bo'ness, was stranded and lost near Buchan Ness on the 16th February 1880. The crew were saved.
BAUMEISTER KRAEFT	SCHOONER	19th century	413600	845200	256583	NK14NW0209	Canmore	The schooner BAUMEISTER KRAEFT, with a crew of 6 under Captain J. Wilken, carrying a cargo of timber battens from Memel to Newcastle, was stranded at the entrance to Peterhead South Harbour on the 22nd October 1875. The crew were saved.
BLACK AGNES	SCHOONER	19th century	413000	845000	282281	NK14NW0276	Canmore	The schooner BLACK AGNES, under Captain Owens, travelling from Shields to the Moray Firth, was wrecked South of Peterhead on the 13th January 1866 during a gale. The crew were saved by lifeboat.

Description/name	Vessel type	Period	Easting	Northing	Canmore ID	HER ID	Position taken from	Extended description (from HER)
BROTHERS	SCHOONER	19th century	413000	845000	275748	NK14NW0253	Canmore	The schooner BROTHERS, carrying a cargo of grain was wrecked at the entrance to Peterhead Harbour on the 7th December 1847.
DEN GODE MENING	SCHOONER	19th century	415000	845000	275935	NK14NE0025	Canmore	The schooner DEN GODE MENING, under Captain Martensen, bound for Peterhead from Kristiania (Oslo) with spars, was stranded near Peterhead on the 14th April 1858. The crew and part of the cargo were saved.
EARL OF ABERDEEN	SCHOONER	19th century	413000	845000	246946	NK14NW0195	Canmore	The schooner EARL OF ABERDEEN, under Captain Scott, travelling from Aberdeen to Sunderland, was lost near Peterhead on the 31st December 1847 when trying to enter the South Harbour during a gale.
ELIZABETH WRIGHT	SCHOONER	19th century	413000	845000	292088	NK14NW0336	Canmore	The schooner ELIZABETH WRIGHT, under Captain Thomson, carrying a cargo of coal from Sunderland to Macduff, was stranded and wrecked off Peterhead on the 10th February 1868.
ENTERPRIZE	SCHOONER	19th century	413000	845000	271755	NK14NW0232	Canmore	The schooner ENTERPRIZE, under Captain Lowrie, carrying a cargo of lime, caught fire on the 12th May 1842 and burnt to the waterline when her cargo caught fire.
FAWN	SCHOONER	19th century	413000	845000	291560	NK14NW0305	Canmore	The schooner FAWN, carrying a cargo of lime, caught fire in the North Harbour, Peterhead, on the 13th October 1842.
HELEN	SCHOONER	19th century	413000	845000	206330	NK14NW0136	Canmore	The schooner HELEN, under Captain Robertson, was wrecked at the entrance to Peterhead Harbour on the 13th October 1836. The crew were saved.
HERO	SCHOONER	19th century	413530	845600	275794	NK14NW0259	Canmore	The schooner HERO, under Captain Milne, travelling from Sunderland or Newcastle to Fraserburgh, was driven ashore at the entrance to the South Harbour, Peterhead, on the 10th January 1849.
JAMES AND MARY	SCHOONER	19th century	413600	845200	206372	NK14NW0143	Canmore	The schooner JAMES AND MARY, under Captain Robertson, travelling from Sunderland to Peterhead was stranded at the entrance of Peterhead harbour on the 10th October 1840.
JOHANNA	SCHOONER	19th century	413600	845200	261672	NK14NW0218	Canmore	The schooner JOHANNA, under Captain Jacobson, carrying a cargo of timber from Mandal to Peterhead, was stranded at the entrance to the Peterhead harbour on the 12th March 1872. The crew were saved.

Description/name	Vessel type	Period	Easting	Northing	Canmore ID	HER ID	Position taken from	Extended description (from HER)
JOHN	SCHOONER	19th century	415000	845000	257546	NK14NE0024	Canmore	The schooner JOHN, under Captain Marshall, struck on the rocks near Peterhead on the 5th November 1834 and was wrecked. The crew were saved.
JOHN AND MADBY	SCHOONER	19th century	413000	845000	275537	NK14NW0249	Canmore	The schooner JOHN AND MADBY, carrying lime from Sunderland to Nairn caught fire in Peterhead Harbour on the 17th May 1844.
JULIE CASO	SCHOONER	19th century	413630	844070	265727	NK14SW0125	Canmore	A piece of wreckage marked 'JULIE GASO' was washed ashore near Peterhead on the 20th October 1875. No further information.
KATHERINE	SCHOONER	19th century	413000	845000	275793	NK14NW0258	Canmore	The KATHERINE, under Captain Ettersbanks, travelling from Newcastle to Aberdeen, was stranded at the South Shore, Peterhead, on the 10th January 1849. The crew were saved.
LADY KILMARNOCK	SCHOONER	19th century	413000	846000	258938	NK14NW0212	Canmore	The schooner LADY KILMARNOCK, with a crew of 5 under Captain W. C. Stephen, carrying a cargo of coal, bricks and glass from Sunderland to Boddam, was stranded 0.5 miles North of Peterhead on the 6th February 1880. The crew were saved.
LATONA	SCHOONER	19th century	413000	845000	247387	NK14NW0196	Canmore	The schooner LATONA , carrying a cargo of coal from Sunderland to Peterhead, under Captain Anderson, was stranded on the beach at Peterhead on the 9ht May 1850. The crew and part of the materials were saved.
LATONA	SCHOONER	19th century	413000	845000	285879	NK14NW0281	Canmore	The schooner LATONA, carrying a cargo of coal from the Firth of Forth to Findhorn, was wrecked near Peterhead on the 30th September 1867.
LONDON	SCHOONER	19th century	413530	845600	275797	NK14NW0261	Canmore	The schooner LONDON, under Captain Hay, was stranded at Horseback Rock, Peterhead, on the 10th January 1849 during a gale, and became a wreck. The crew were saved, along with part of her cargo.
MARY ANN	SCHOONER	19th century	413000	845000	258922	NK14NW0211	Canmore	The schooner MARY ANN, with a crew of 4 under Captain A. Shewan, carrying a cargo of coal from Methil to Peterhead, was stranded at Peterhead on the 15th January 1880 and was lost. The crew were saved.
NAPIER	SCHOONER	19th century	414200	845800	249401	NK14NW0202	Canmore	The schooner NAPIER, with a crew of 3 men under Captain Drummond, carrying a cargo of herrings from Helmsdale to Leith, was wrecked at the back of the pier at South Head, Peterhead, on the 31st October 1853 during a violent storm.

Description/name	Vessel type	Period	Easting	Northing	Canmore ID	HER ID	Position taken from	Extended description (from HER)
PEDESTRIAN	SCHOONER	19th century	413000	845000	286701	NK14NW0287	Canmore	The schooner PEDESTRIAN, under Captain Bruce, carrying a cargo of coal to Buckie, was stranded near the South entrance of Peterhead harbour during a gale on the 19th December 1862.
PENELOPE	SCHOONER	19th century	423000	843000	206830	NK24SW0009	Canmore	On the 24th May 1884, the schooner PENELOPE, with a crew of four under Captain R. Williams, carrying a cargo of slates from Bangor to Newcastle-on-Tyne, was in collision in fog with the SS PRINCESS ALICE of Glasgow circa 5 miles east of Buchan Ness.
RECIPROCITY	SCHOONER	19th century	413600	845200	274672	NK14NW0245	Canmore	The schooner RECIPROCITY, under Captain McKenzie, carrying a cargo of lime-shells from Sunderland, was wrecked at the entrance to North Harbour, Peterhead, on the 27th November 1838. The crew were saved.
RESULT	SCHOONER	19th century	413100	844500	298009	NK14SW0161	Canmore	Peterhead, 16th April. The schooner RESULT, under Captain Westlake, carrying a cargo of ice from Iceland to Grimsby (or Galway) was stranded at Salthouse Head, near Peterhead, on the 15th April 1869. It is thought she was got off some days later and towed into harbour.
SAINT ANDREW	SCHOONER	19th century	413600	845200	206371	NK14NW0142	Canmore	The schooner SAINT ANDREW (formerly named CAROLINE MATHIAS), under Captain Murray, carrying a cargo of salt from Liverpool to Fisherrow, was wrecked at the entrance to Peterhead Harbour on the 8th September 1840.
SIR ALEXANDER DUFF	SCHOONER	19th century	413000	845000	246911	NK14NW0252	Canmore	The schooner SIR ALEXANDER DUFF, under Captain Lovie, carrying a cargo of grain, was wrecked in Peterhead Bay on the 6th December 1847.
TRIUMPH	SCHOONER	19th century	413000	846000	260654	NK14NW0214	Canmore	The schooner TRIUMPH, with a crew of 6 under Captain and Owner J. McKenzie, carrying a cargo of herrings from Peterhead for Konigsberg, was stranded on North Head, Peterhead, on the 13th October 1881. The crew were saved.
UNION	SCHOONER	19th century	412800	843600	292316	NK14SW0141	Canmore	The schooner UNION, under Captain Watt, carrying a cargo of coal, was run ashore leaky and wrecked at Sandford Bay, one mile South of Peterhead, on the 26th April 1871.
Unknown	SCHOONER	19th century	460000	786000	282591	NP68NW0001	Canmore	A schooner reportedly foundered off Stonehaven on the 25th November 1852. No further information.

Description/name	Vessel type	Period	Easting	Northing	Canmore ID	HER ID	Position taken from	Extended description (from HER)
VIVID	SCHOONER	19th century	413600	845200	248532	NK14NW0199	Canmore	The schooner VIVID, with a crew of 6 men under Captain Johnstone, carrying a general cargo from London to Peterhead, broke her warp on the 26th November 1852 and drifted out of Peterhead harbour, when she was driven to the back of the west pier.
WAVE	SCHOONER	19th century	413000	845000	292070	NK14NW0330	Canmore	The wooden schooner WAVE was lost at Peterhead on the 21st December 1872.
AEOLUS	SCHOONER (or GALLIOT)	19th century	413510	845590	206536	NK14NW0152	Canmore	The Norwegian galliot AEOLUS, with a crew of 5 under Captain C. Mortensen, carrying a cargo of wooden staves from Norway to Peterhead, was wrecked on rocks at the mouth of the South Harbour, Peterhead, on the 27th February 1875. The crew were saved.
ROBERT GARDEN	SCHOONER (or HERMAPHRODITE BRIG)	19th century	416000	845700	206367	NK14NE0023	Canmore	A hermaphrodite brig ROBERT GARDEN, under Captain Charles, foundered 0.5 mile off Keith Inch, Peterhead, on the 25th May 1840. All hands were lost.
JAMES DUFF	SCHOONER (or HERMAPHRODITE SCHOONER)	19th century	413100	845800	286533	NK14NW0285	Canmore	The hermaphrodite schooner JAMES DUFF, under Captain Henry, carrying coal from Newcastle to Lossiemouth, was wrecked on the North side of Peterhead Bay on the 5th March 1861 during a gale.
BANFF	SLOOP	19th century	413000	845000	326247		Canmore	
BETSY	SLOOP	19th century	414000	845000	326902		Canmore	
ELIZA	SLOOP	19th century	413930	845740	326935		Canmore	
JOHN O'GROAT	SLOOP	19th century	413000	845000	326591		Canmore	
STORKHODDER	SLOOP	19th century	420000	845000	327043		Canmore	
UNKNOWN 1865	SLOOP	19th century	420000	843000	327246		Canmore	
BROTHERS AND SISTERS	SLOOP	19th century	413000	845160	292140	NK14NW0349	HER	The sloop BROTHERS AND SISTERS, carrying a cargo of lime, caught fire and was run ashore near Peterhead on the 28th June 1846.
FISHER	SLOOP	19th century	413540	841840	271970	NK14SW0129	HER	The sloop FISHER, under Captain Wood, carrying a cargo of wheat and flour from Dunbar to Aberdeen, was wrecked at Buchan Ness in December 1825. The crew and part of the cargo saved.
FRIENDSHIP	SLOOP	19th century	413000	845140	292135	NK14NW0344	HER	The sloop FRIENDSHIP was stranded near Peterhead on the 30th October 1811.

Description/name	Vessel type	Period	Easting	Northing	Canmore ID	HER ID	Position taken from	Extended description (from HER)
HAWK	SLOOP	19th century	412940	844880	275995	NK14SW0135	HER	The sloop HAWK (or HAWKE), under Captain Robinson, carrying a cargo of stucco and crockery from Gainsborough to Aberdeen, was stranded in Peterhead Bay near the brickworks on the 7th December 1828. The crew were saved.
ISBJORNEN	SLOOP	19th century	413700	842100	286328	NK14SW0138	HER	The sloop ISBJORNEN, of Bergen, under Captain Osmundsen, carrying a cargo of herrings from Boddam to the Baltic, was stranded off Boddam on the 23rd August 1865. She was got off after a few days and taken into Peterhead harbour.
JAMES AND THOMAS	SLOOP	19th century	412700	845250	206446	NK14NW0149	HER	The sloop JAMES AND THOMAS, with a crew of 4 men under Captain Morrison, carrying a cargo of coal from Inverkeithing to Peterhead, in taking the North Harbour on the 13th January 1854 during a gale, was driven on the rocks in the North Bay, floated off and sank in deep water. The crew escaped in their own lifeboat.
Unknown	SLOOP	19th century	418000	843000	292342	NK14SE0004	HER	A sloop was seen in distress off Buchan Ness on the 1st February 1865. Not known if she was lost.
AID	SLOOP	19th century	413000	845000	206215	NK14NW0134	Canmore	The sloop AID, under Captain Black, was wrecked on the west side of Peterhead Bay on the 24th October 1819.
ANN	SLOOP	19th century	413000	846000	206377	NK14NW0145	Canmore	The sloop ANN, under Captain Fowler, travelling from Peterhead to Leith, was wrecked on the North Head, Peterhead, on the 19th July 1841.
ANN	SLOOP	19th century	413000	845000	292160	NK14NW0363	Canmore	The sloop ANN, carrying a general cargo, under Captain McKay, was in collision and sank South of Peterhead harbour in August 1829.
BETSEY	SLOOP	19th century	413000	845000	206257, 292163	NK14NW0099, NK14NW0366	Canmore	The BETSEY, under Captain Cowie, carrying a cargo of coal, was stranded at the entrance to Peterhead North Harbour on the 4th May 1823.
BETSEY	SLOOP	19th century	414200	845800	291592	NK14NW0315	Canmore	The sloop BETSEY, under Captain Jackson, carrying a cargo of timber, was stranded at the South Head, Peterhead, on the 28th November 1828.
DAPHNE	SLOOP	19th century	413700	845700	292137	NK14NW0346	Canmore	The sloop DAPHNE, in ballast, was stranded at the Old Castle, Peterhead, on the 26th April 1814.

Description/name	Vessel type	Period	Easting	Northing	Canmore ID	HER ID	Position taken from	Extended description (from HER)
ELIZA	SLOOP	19th century	413550	845610	206263, 272058	NK14NW0101, NK14NW0233	Canmore	The sloop ELIZA, under Captain Mair, carrying a general cargo from Aberdeen to Inverness, in leaving Peterhead harbour on the 26th March 1828 missed her stays, went on the rocks, and was wrecked.
FORREST	SLOOP	19th century	413000	845000	206376	NK14NW0144	Canmore	The sloop FORREST, under Captain Baxter, travelling from Sunderland to Findhorn, was driven on shore and wrecked in Peterhead Bay during a gale on the 6th June 1841.
JENNIE	SLOOP	19th century	414200	845800	248537	NK14NW0200	Canmore	The sloop JENNIE, with a crew of 2 men under Captain Geddes, carrying a cargo of salt and herrings from Peterhead to Portgordon, missed her stays in Peterhead Harbour on the 26th November 1852 during a strong gale, and was stranded at the South Head.
KITTY	SLOOP	19th century	413000	846000	268620	NK14NW0307	Canmore	The sloop KITTY, under Captain Gill, carrying a general cargo from Peterhead to Leith, was stranded at the North Head, Peterhead, on the 14th April 1809.
LONDON PACKET	SLOOP	19th century	414200	845800	206325	NK14NW0314	Canmore	The sloop LONDON PACKET, under Captain Tytler, travelling from Aberdeen to Leith, was wrecked on South Head, Peterhead, on the 6th March 1836. The crew were saved.
MARY MCDONALD	SLOOP	19th century	413000	845000	286786	NK14NW0293	Canmore	The sloop MARY MCDONALD, under Captain McLeod, carrying a general cargo from Aberdeen to Wick, was stranded at Peterhead on the 24th May 1864.
NANNY	SLOOP	19th century	420000	841000	292403	NK24SW0003	Canmore	The sloop NANNY, under Captain Paterson, foundered off Buchan Ness on the 4th October 1844.
NORTHERN MAID	SLOOP	19th century	413000	846000	206399	NK14NW0148	Canmore	The sloop NORTHERN MAID, with a crew of 2 under Captain Burlase, carrying a cargo of oil and fish from Peterhead to Dundee, sprung a leak at sea and was stranded on the rocks outside Peterhead Harbour on the 31st October 1859. One of the crew was lost.
SURPRISE	SLOOP	19th century	413000	845000	206276	NK14NW0103	Canmore	The sloop SURPRISE, under Captain Reid, travelling from Belfast to London, was wrecked at the North Harbour, Peterhead, on the 1st February 1831. All hands were lost.
Unknown	SLOOP	19th century	413000	845000	292086	NK14NW0334	Canmore	A sloop, carrying a cargo of grain, was stranded at Peterhead on the 24th December 1806, and was expected to become a wreck.

Description/name	Vessel type	Period	Easting	Northing	Canmore ID	HER ID	Position taken from	Extended description (from HER)
WILLIAM AND MARY	SLOOP	19th century	413000	845000	206175	NK14NW0133	Canmore	The sloop WILLIAM AND MARY, under Captain Brown, in ballast, was wrecked at the Bath, Peterhead on the 14th November 1817. The crew were saved.
WILLIAM AND NICHOLAS	SLOOP	19th century	412980	845020	292045	NK14NW0326	HER	The sloop WILLIAM AND NICHOLAS was wrecked near Peterhead on the 24th April 1804.
BROTHERS' INCREASE	SLOOP (or SMACK)	19th century	413000	845000	275742	NK14NW0251	Canmore	The smack BROTHERS' INCREASE, under Captain Foster, was stranded in Peterhead Bay on the 4th November 1846.
ARCTIC	SMACK	19th century	413000	845000	292038	NK14NW0319	Canmore	The wooden smack ARCTIC was wrecked at Peterhead on the 15th January 1862.
BROTHERS	SMACK	19th century	420000	841000	206467	NK24SW0002	Canmore	The wooden smack BROTHERS, under Captain Sellar, was in collision with the ST CLAIR and sank off Buchan Ness on the 13th August 1869.
COURIER	SMACK	19th century	412800	843600	206349	NK14SW0100	Canmore	The smack COURIER, under Captain Dunn, carrying a general cargo to Aberdeen, was wrecked at Sandford Bay, near Peterhead, on the 7th January 1839. The crew were saved.
GLASGOW PACKET	SMACK	19th century	413600	845200	206332	NK14NW0137	Canmore	The smack GLASGOW PACKET, under Captain Smart, travelling from Aberdeen to Glasgow, was stranded at the entrance of Peterhead Harbour when trying to make for the harbour during a heavy gale. The crew were saved.
GOOD INTENT	SMACK	19th century	413000	845000	270244	NK14NW0231	Canmore	The smack GOOD INTENT, was stranded near Peterhead on the 13th October 1842.
WESTERN ROVER	SMACK	19th century	413000	845000	275753	NK14NW0255	Canmore	The smack WESTERN ROVER, from Montrose, was stranded near Peterhead on the 19th August 1848 during a severe gale. The crew were saved.
FRASER	SMACK (or SLOOP)	19th century	414200	845800	272422	NK14NW0234	Canmore	The FRASER, was classified as a smack, but reported as being a sloop (Inverness Journal and Northern Advertiser 2nd October 1829), registered in Blyth and built in 1799. Under Captain Hindmarsh, it was carrying a cargo of machinery, including a railway locomotive shipped on springs (partly dismantled) built by Robert Stephenson and Co. of Newcastle for the Boston and Providence Railroad USA, from Newcastle to Liverpool for onward shipment to America, when it was stranded near the entrance to the North Harbour, Peterhead, on the 26th September 1829 and wrecked in a gale. The crew were saved by Captain Manby, under the charge of the Coastguard, with some crates of machinery recovered but the steam locomotive was lost to the

Description/name	Vessel type	Period	Easting	Northing	Canmore ID	HER ID	Position taken from	Extended description (from HER)
								sea. This is the earliest known loss of a locomotive at sea.
ELIZA	SNOW	19th century	414200	845800	291586	NK14NW0316	Canmore	The snow ELIZA, under Captain Lawrence, was wrecked at the South Head, Peterhead, on the 19th October 1826.
PRIDE OF SCOTLAND	STEAM TUG	19th century	413000	845000	266200	NK14NW0222	Canmore	The tug steamer PRIDE OF SCOTLAND caught fire at Peterhead on the 21st February 1876.
EINAR	STEAMSHIP	19th century	413700	842200	207060	NK14SW0105	Canmore	The Norwegian iron steamship EINAR, with a crew of 9 men under Captain B. Helland, carrying a cargo of salt from Middlesbrough to Iceland, was stranded near Buchan Ness lighthouse on the 16th August 1893.
ENNISMORE	STEAMSHIP	19th century	413000	845000	252878	NK14NW0205	Canmore	The iron steamship ENNISMORE, with a crew of 10 and a pilot under Captain W. Geddes, travelling from Aberdeen to Peterhead, in ballast, was stranded on Mar Craig Rock, in the South Bay of Peterhead, on the 24th November 1885.
MARSHAL KEITH	STEAMSHIP	19th century	413000	845000	292307	NK14NW0380	Canmore	The iron steamship MARSHAL KEITH was stranded in the fairway of Peterhead Harbour on the 3rd February 1887.
MAZINTHIEN	STEAMSHIP	19th century	413000	845000	260919	NK14NW0215	Canmore	The iron whaling steamship MAZINTHIEN, with a crew of 30 under Captain D. Soutar, carrying a cargo of stores from Dundee to the Davis Strait, was stranded in South Bay, Peterhead, on the 17th March 1883 and wrecked. The crew were saved.

Description/name	Vessel type	Period	Easting	Northing	Canmore ID	HER ID	Position taken from	Extended description (from HER)
DOLPHIN	STEAMSHIP (or STEAM TRAWLER)	19th century	414000	843200	206915	NK14SW0102	Canmore	The iron steam trawler DOLPHIN, with a crew of 8 under Captain J. Watson, fishing out of Scarborough, in ballast, was stranded on Skerry Rock on the 4th December 1888 in foggy conditions. The Captain and crew were rescued.
STIRLING CASTLE	TUG	19th century	413600	845200	261654	NK14NW0217	Canmore	The tug STIRLING CASTLE sunk at the mouth of the North Harbour, Peterhead, on the 28th February 1872. She was moved to the bank later that day.
BANFF	Unknown	19th century	413240	845100	206152	NK14NW0131	HER	The BANFF, under Captain Morrison, travelling from Leith to Peterhead, was stranded at Peterhead on the 16th May 1814.
ARMSTRONG WHITWORTH WHITLEY	AIRCRAFT	20th century	415000	845000	292173	NK14NE0020	Canmore	An Armstrong Whitworth Whitley aircraft (BD386) of 19 OTU (Operational Training Unit, RAF) reportedly crashed close in shore near Peterhead on the 24th October 1943. No further information.
Unknown	AIRCRAFT	20th century	415000	845000	292172	NK14NE0019	Canmore	An aircraft was lost near Peterhead on the 18th June 1946. No further information.
ENERGY	AUXILIARY LUGGER	20th century	413000	845000	208064	NK14NW0180	Canmore	The auxiliary lugger ENERGY (FR 7), under Captain Mitchell, was stranded in Peterhead Bay on the 5th March 1917.
ARGUS	BARQUE	20th century	413000	845000	208036	NK14NW0179	Canmore	The wooden barque ARGUS, carrying a cargo of pit props, was stranded on a reef 20 yards from the South embankment, near a pier in South Bay, Peterhead, on the 19th November 1916.
UNKNOWN 1931	CRAFT	20th century	440000	817000	328283		Canmore	
ROSEBERRY	CRAFT	20th century	413600	845400	291562	NK14NW0306	Canmore	The ROSEBERRY sank at Port Henry quay, Peterhead, on the 13th August 1927.
Unknown	CRANE BARGE	20th century	414200	846400	291573	NK14NW0309	Canmore	A Floating Crane was abandoned at N58 48 W1 55, and stranded at Greenhill Point, Peterhead, on the 4th December 1920.
ISABELLA MCDONALD	DRIFTER	20th century	413000	845000	292040	NK14NW0321	Canmore	The drifter ISABELLA McDONALD was wrecked at Peterhead on the 8th November 1918.
LEVANTER	DRIFTER	20th century	413000	845000	292087	NK14NW0335	Canmore	The HM Drifter LEVANTER was wrecked in the Harbour of Refuge, Peterhead, on the 13th March 1926. The Peterhead lifeboat saved 11 people from the vessel.
BORING BARGE NO. 1	DUMB BARGE	20th century	413530	845600	207439	NK14NW0170	Canmore	A wooden barge, named as NO. 1 BORING BARGE, in ballast, was driven from her moorings and stranded at the South entrance to Peterhead Harbour on the 2nd May 1907.

Description/name	Vessel type	Period	Easting	Northing	Canmore ID	HER ID	Position taken from	Extended description (from HER)
UNKNOWN 1941	FISHING VESSEL	20th century	415000	845000	325253		Canmore	
UNKNOWN 1920	FLOATING CRANE	20th century	414630	846110	326026		Canmore	
RAYNER	KETCH	20th century	413600	845420	207227	NK14NW0364	HER	The wooden ketch RAYNER, carrying a cargo of coal, under Captain Maxwell, was stranded at the entrance to the South Harbour, Peterhead, on the 15th February 1900.
CANTICK HEAD	KETCH	20th century	413600	845200	292041	NK14NW0322	Canmore	The ketch CANTICK HEAD, carrying a cargo of coal, was stranded at the entrance to Peterhead Harbour on the 7th May 1938.
ENCHANTRESS	KETCH	20th century	413700	842200	292373	NK14SW0147	Canmore	The ketch ENCHANTRESS, in ballast, was wrecked at Buchan Ness on the 3rd November 1919.
ANNIE	KETCH (or DANDY)	20th century	413000	845000	207323	NK14NW0168	Canmore	The wooden dandy ANNIE, under Captain Davidson, carrying a cargo of coal, was driven from her anchor and stranded in South Bay, Peterhead, on the 9th February 1904.
HOPE	LUGGER	20th century	413460	842750	292361	NK14SW0144	HER	The lugger HOPE, under Captain Stephen, in ballast, was damaged by heavy seas whilst moored in Boddam harbour on the 15th February 1900, and subsequently condemned.
HAPPY ENA	LUGGER	20th century	420000	841000	207224	NK24SW0006	Canmore	The wooden lugger HAPPY ENA, in ballast, under Captain Cow, was driven from her moorings and reportedly foundered near Boddam on the 15th February 1900.
JUBILEE	LUGGER	20th century	413000	845000	291558	NK14NW0304	Canmore	The lugger JUBILEE (PD 1386), was stranded at the North Harbour, Peterhead, on the 8th July 1909.
MARY	LUGGER	20th century	413000	845000	207290	NK14NW0166	Canmore	The wooden lugger MARY, in ballast, under Captain Buchan, was stranded outside North Harbour, Peterhead, on the 19th August 1902.
TROPIC BIRD	LUGGER	20th century	427000	836000	207607	NK23NE0004	Canmore	The wooden lugger TROPIC BIRD (KY 112), in ballast, under Captain Allan, foundered 8 miles southeast by east of Buchan Ness on the 18th July 1912.
PIONEER	LUGGER	20th century	413700	842040	207321	NK14SW0110	HER	The lugger PIONEER (PD1353), under Captain Stephen, in ballast, was driven from her moorings and stranded at Boddam on the 9th February 1904.
SHILOH	LUGGER	20th century	413460	842730	292360	NK14SW0143	HER	The lugger SHILOH (PD 1420), under Captain Bruce, in ballast, was damaged by heavy seas whilst moored in Boddam harbour on the 15th February 1900, and subsequently condemned.

Description/name	Vessel type	Period	Easting	Northing	Canmore ID	HER ID	Position taken from	Extended description (from HER)
MONIMIA	MINESWEEPER TRAWLER	20th century	413000	845000	292162	NK14NW0365	Canmore	The steel minesweeper trawler HMS MONIMIA, under Captain W. J. Barlow, RNR, was stranded in South Bay, Peterhead, on the 27th February 1941. She had been taken over by the Admiralty in August 1939. She was refloated and continued in service throughout World War II, being returned to her owner in November 1945 and scrapped at Antwerp, Belgium, on the 26th May 1956.
RESMILO	MINESWEEPER TRAWLER	20th century	413000	845000	208455	NK14NW0379	Canmore	HMT RESMILO, a minesweeper trawler, under Captain R. D. Stephen, RNR, was sunk by German aircraft in Peterhead Bay, at the end of the South Breakwater, on the 20th June 1941. The Peterhead lifeboat saved the crew of 24. She had been taken over by the Admiralty in September 1940. The RESMILO had also served during World War I.
TOM TIT	MINESWEEPER TRAWLER	20th century	413000	845000	207699	NK14NW0175	Canmore	The former fishing trawler TOM TIT (H35), which had been requisitioned by the Royal Navy as a minesweeper, was wrecked at Peterhead on the 26th December 1914. The lifeboat ALEXANDER TULLOCH was swamped in attempting to rescue the crew, and three of its crew drowned.
MAJESTIC	MOTOR FISHING VESSEL	20th century	420000	843000	292341	NK24SW0001	Canmore	The auxiliary motor fishing vessel MAJESTIC (PD 273), under Captain Forman, sank off Buchan Ness on the 1st July 1921.
SKAGERAK	MOTOR FISHING VESSEL	20th century	413000	845000	208569	NK14NW0191	Canmore	Supposed site of wreck.
SPES MELIOR II	MOTOR FISHING VESSEL	20th century	413000	846000	291565	NK14NW0308	Canmore	The Motor Fishing Vessel SPES MLEIOR II (PD-278), under Captain Buchan, ran aground on the rocks at North Head, on the E side of the entrance to North Harbour, Peterhead, on the 1st May 1954. The Peterhead lifeboat was called to the scene.
EMINENT	MOTOR FISHING VESSEL	20th century	413000	845080	292083	NK14NW0332	HER	The motor fishing vessel EMINENT caught fire off Peterhead in September 1991, and was towed into the harbour. It is not known if she was lost.
GIRL GRACIE (BCK 139)	MOTOR FISHING VESSEL	20th century	413560	841840	292362	NK14SW0145	HER	The Motor Fishing Vessel GIRL GRACIE (BCK 139), under Captain Reid, was stranded at Boddam on the 10th August 1945 and was expected to become a wreck.
EXILE	SCHOONER	20th century	413000	845000	207312	NK14NW0167	Canmore	The wooden schooner EXILE, carrying a cargo of coal, under Captain Coole, was stranded at South Bay, Peterhead, on the 22nd January 1903.

Description/name	Vessel type	Period	Easting	Northing	Canmore ID	HER ID	Position taken from	Extended description (from HER)
SCATTAN	STEAM DRIFTER	20th century	415000	845000	326570		Canmore	
WHITEHILL	STEAM DRIFTER	20th century	413000	845060	292069	NK14NW0329	HER	The steam drifter WHITEHILL (PD 232) hit rocks near Peterhead and was lost in March 1945.
ENDEAVOUR	STEAM DRIFTER	20th century	412800	843600	115520		Canmore	
BEN VENUE	STEAM TRAWLER	20th century	414000	843200	207387	NK14SW0111	Canmore	The steel steam trawler BEN VENUW (A83), under Captain Noble, in ballast, was stranded on Skerry Rock on the 6th April 1904. She was got off, but foundered close by.
BENINGTON	STEAM TRAWLER	20th century	429000	834000	207709	NK23SE0003	Canmore	On the 7th May 1915, the steam trawler BENINGTON (registration number cited as A 236) was capture by German submarine U 39 (under Kapitanleutnant Walter Forstmann) and sunk by gunfire 10 miles southeast of Peterhead.
ELSWICK	STEAM TRAWLER	20th century	413600	845200	208500	NK14NW0188	Canmore	The steel steam trawler ELSWICK (A 97) was stranded at Peterhead on the 20th January 1942. She was subsequently moved to the outside of the South Breakwater and left.
HIT OR MISS	STEAM TRAWLER	20th century	416770	845840	207250	NK14NE0008	Canmore	The steel steam trawler HIT OR MISS, under Captain Pelsen, was stranded on Stuck Skerry on the 2nd December 1900 and foundered 1.5 miles East of the North Harbour, Peterhead.
LOCH WASDALE	STEAM TRAWLER	20th century	414000	843200	115525		Canmore	
LORD TWEEDMOUTH	STEAM TRAWLER	20th century	413600	845200	207482	NK14NW0174	Canmore	The steel steam trawler LORD TWEEDMOUTH, in ballast, was stranded at the entrance to Peterhead Harbour on the 21st June 1914.
MAJESTIC	STEAM TRAWLER	20th century	413700	842200	207687	NK14SW0114	Canmore	The steamship MAJESTIC (PD414), in ballast, was stranded near Buchanhaven on the 17th June 1914.
MARTABAN	STEAM TRAWLER	20th century	436000	816000	207714		Canmore	
NORTHMAN	STEAM TRAWLER	20th century	414200	845800	208526	NK14NW0189	Canmore	The steam trawler NORTHMAN (A 652) was stranded at South Head, Keith Inch, on the 11th December 1956.
PETUNIA	STEAM TRAWLER	20th century	413700	846600	207905	NK14NW0178	Canmore	The wooden steam trawler PETUNIA, in ballast, registration number cited as PD 396, was stranded on Roan Head Rocks, Peterhead, on the 22nd July 1916.
SCOTTISH BELLE	STEAM TRAWLER	20th century	413700	846600	208218	NK14NW0183	Canmore	The steel steam trawler SCOTTISH BELLE (A 512) was stranded on Roan Rock, Peterhead, on the 4th September 1924.

Description/name	Vessel type	Period	Easting	Northing	Canmore ID	HER ID	Position taken from	Extended description (from HER)
TYRIE	STEAM TRAWLER	20th century	429130	835330	207253	NK23NE0006	Canmore	The steel steam trawler TYRIE, in ballast, under Captain Craft, was in collision 9 miles SExE of Buchan Ness on the 12th January 1901.
WILLIAM BUTLER	STEAM TRAWLER	20th century	413600	845200	115519		Canmore	
STAR OF DEE	STEAM TRAWLER	20th century	412520	845100	292102	NK14NW0339	HER	The steam trawler STAR OF DEE was beached at the Brickworks, Peterhead, on the 19th September 1942 after being ashore at Scotstown Head.
FIDRA (EX. EIDSFOS, LISA BRODIN)	STEAMSHIP	20th century	413000	845000	324657		Canmore	
RUNSWICK	STEAMSHIP	20th century	413000	845000	324656		Canmore	
SALTWICK	STEAMSHIP	20th century	413000	845000	324658		Canmore	
HOLER	STEAMSHIP	20th century	413000	845200	292150	NK14NW0358	HER	The steamship HOLER, was stranded near Peterhead on the 27th February 1916.
GARTHDEE	STEAMSHIP	20th century	413900	845800	207465	NK14NW0173	Canmore	The steel steamship GARTHDEE, in ballast, was stranded on Keith Inch, off Peterhead, on the 22nd October 1908.
LADY BESSIE	STEAMSHIP	20th century	413200	845800	291583	NK14NW0311	Canmore	The wooden steamship LADY BESSIE, in ballast, was stranded 300 yards West of the entrance to South Harbour, Peterhead, on the 13th January 1910.
OTRA	STEAMSHIP	20th century	415000	845000	292168	NK14NE0018	Canmore	The steel steamship OTRA was stranded near Peterhead on the 13th January 1913.
PORTHLEVEN	STEAMSHIP	20th century	413000	845000	208216	NK14NW0182	Canmore	Supposed site of wreck.
PORTLETHEN	STEAMSHIP	20th century	412900	845900	291577	NK14NW0310	Canmore	The iron and steel steamship PORTLETHEN, in ballast, under Captain Sangster, was wrecked at the NW end of Peterhead Bay on the 6th February 1923.
SALVOR NO. 1	STEAMSHIP	20th century	413000	845000	207701	NK14NW0176	Canmore	The iron steamship SALVOR NO. 1, carrying salvage gear, was stranded at South Bay, Peterhead, on the 6th February 1915. Carnegie Hero Fund Awards were presented to Frank McRobbie and Alexander Baird on the 5th July 1915 in recognition of their services in rescuing life at the wreck of the S. S. SALVOR NO 1.
TAYLOR	STEAMSHIP	20th century	429150	832870	208383	NK23SE0004	Canmore	The steamship TAYLOR (formerly named TEIGN), carrying a cargo of timber, sank circa 8 miles southeast of Buchan Ness on the 30th September 1937.
FOLKA	STEAMSHIP	20th century	413000	845220	292151	NK14NW0359	HER	The steamship FOLKA was stranded near Peterhead on the 15th April 1915.

Description/name	Vessel type	Period	Easting	Northing	Canmore ID	HER ID	Position taken from	Extended description (from HER)
U 14	SUBMARINE	20th century	414000	845000	207726	NK14NW0177	HER	The German submarine U-14, launched in 1911 and with a crew of 28 under Oberleutnant zur See Max Hammerle, was disabled by gunfire from the armed trawler OCEANIC II, off Peterhead on the 5th June 1915, rammed and sunk. There were 27 survivors but the Oberleutnant died.
FIRSBY (BN 205) (EX. TEVIOT)	TRAWLER	20th century	415000	845000	326027		Canmore	
BELMONT	TRAWLER	20th century	412700	845270	208257	NK14NW0184	HER	The steel trawler BELMONT (A 101) was stranded on Horseback Rock, Peterhead Harbour, on the 26th January 1928, while under the command of the British Royal Navy.
STRATHCLUNIE	TRAWLER	20th century	425000	841000	208236	NK24SE0002	Canmore	On the 6th January 1928, the steel trawler STRATHCLUNIE (registration number cited as A 583), under Captain Wright, collided with the TUMBY and sank 8 miles off Buchan Ness.
Unknown	Unknown	20th century	440000	815000	292881	NK41NW0001	HER	Wreckage reported 20 miles ENE of Aberdeen on the 2nd February 1931. No further information.
REPART	CRAFT	Unknown	413420	845000	206580	NK14NW0155	HER	Possible site of the wreck of the REPART. No further information.
Unknown	CRAFT	Unknown	414020	847000	265729	NK14NW0219	HER	Supposed site of wreck.
ANN ELIZA	Unknown	Unknown	413380	845120	206381	NK14NW0146	HER	Supposed site of wreck.
ASSISTANCE	Unknown	Unknown	412700	845210	205924	NK14NW0123	HER	Supposed site of wreck.
Unknown	Unknown	Unknown	415930	845860	101841	NK14NE0002	HER	Wreckage is reported at this location.
Unknown	Unknown	Unknown	412700	845190	205922	NK14NW0122	HER	Supposed site of wreck.

18.0 Annex D - Gazetteer of intertidal assets

MSDS ID	Description	Location	Period	Easting	Northing	Canmore ID	HER ID
TI_001	Ferrous pipe, embedded beneath beach deposits. Identified during walkover survey.	Intertidal	Modern	412804	844143	-	-
TI_002	Remains of stone jetty, constructed of up to three courses of local stone. Historically associated with the former settlement of Burnhaven and illustrated by the Ordnance Survey 1st Edition. Identified during walkover survey.	Intertidal	Post-medieval	412604	844037	305324	NK14SW0048
TI_003	Large iron nail or spike driven into a large stone. Situated near to stone jetty and may have been used as a mooring point. Identified during walkover survey.	Intertidal	Post-medieval	412596	844031	-	-
TI_004	Stamped brick fragment. Identified during walkover survey.	Intertidal		412575	844015	-	-
TI_005	Single piece of timber. Possibly fragment of wreck or naturally occurring driftwood. Identified during walkover survey.	Intertidal	Unknown	412437	843519	-	-
TI_006	Remains of structures on the beach at Sandford Bay. "Wall lines" reported to the Archaeology Service by a member of the public in November 2019. Not identified during walkover survey but may correlate with TI_002.	Intertidal	Unknown	412459	843954	-	NK14SW0228
TI_007	Various objects collected at Sandford Bay, revealed by cliff erosion. They include pieces of clay pipe, fragments of pottery, stoneware, bottle glass, and animal bone. Also, a possible leather bale strap, musket balls. No similar artefacts identified during walkover survey.	Intertidal	Post-medieval	412396	843689	-	NK14SW0309

19.0 Annex E – Historic Environment Scotland records

Scheduled Monument records

Designation Ref.	Name	Easting	Northing
SM3252	Boddam Castle	413235	841811

Conservation Area records

Designation Ref.	Name	Easting	Northing
CA426	PETERHEAD ROANHEADS	413527	846599
CA428	BODDAM	413540	842290
CA427	PETERHEAD CENTRAL	413415	846039

Listed Building records

Designation Ref.	Name	Easting	Northing
LB13889	12A EARLS COURT	413409	842280
LB16312	22 QUEEN'S ROAD	413364	842307
LB16335	20, 22 EARL'S COURT	413357	842242
LB16336	24 EARL'S COURT	413356	842227
LB16337	5-9 ROCKSLEY DRIVE MASONIC LODGE NO. 1087	413351	842264
LB16338	11, 13 ROCKSLEY DRIVE	413336	842233
LB16338	11, 13 ROCKSLEY DRIVE	413338	842242
LB16339	15 ROCKSLEY DRIVE	413331	842219
LB16340	2 ROCKSLEY DRIVE	413339	842283
LB16341	6 ROCKSLEY DRIVE	413327	842262
LB16349	7 QUEEN'S ROAD	413423	842343
LB16350	9 QUEEN'S ROAD	413412	842333
LB16351	11 QUEEN'S ROAD	413394	842309
LB16352	13 QUEEN'S ROAD	413386	842305
LB16353	15 QUEEN'S ROAD	413376	842294
LB16354	17 QUEEN'S ROAD	413369	842286
LB16360	18, 20 QUEEN'S ROAD	413371	842311
LB16366	BUCHANNESS COTTAGE	413306	841919
LB16367	BUCHANNESS LIGHTHOUSE	413624	842263
LB16368	1 HARBOUR STREET	413467	842335
LB16370	RETAINING WALL HARBOUR STREET-BRIDGE STREET	413471	842330
LB16371	1 BRIDGE STREET	413408	842328
LB16372	3 BRIDGE STREET	413426	842322
LB16373	5 BRIDGE STREET	413440	842322
LB16374	7 BRIDGE STREET	413439	842330
LB16375	9 BRIDGE STREET	413453	842337
LB16376	11 BRIDGE STREET	413451	842343
LB16377	1 EARL'S COURT	413393	842299
LB16378	5 EARL'S COURT	413417	842305
LB16379	OUTBUILDINGS BETWEEN 7 AND 9 EARL'S COURT	413441	842291
LB16380	DESERTED HOUSE BETWEEN 9 EARL'S COURT AND ""BRIDGEND""	413452	842295
LB16382	11 EARL'S COURT	413423	842263
LB16383	2 AND 4 EARL'S COURT	413386	842291
LB16383	2 AND 4 EARL'S COURT	413389	842282
LB16384	6-12 EARL'S COURT	413379	842269
LB16385	14 EARL'S COURT	413369	842259
LB16386	16 EARL'S COURT	413370	842251
LB16387	18 EARL'S COURT	413351	842257
LB19794	1 ROCKSLEY DRIVE	413365	842276
LB19795	4 ROCKSLEY DRIVE	413335	842270
LB19798	3 EARL'S COURT	413406	842296
LB39705	25 ST. ANDREWS STREET	413377	846011

Designation Ref.	Name	Easting	Northing
LB39706	27 ST. ANDREWS STREET AND 14 UPHILL LANE	413371	846009
LB39713	1 MAIDEN STREET	413356	846015
LB39714	3 MAIDEN STREET	413343	846016
LB39715	5 MAIDEN STREET	413331	846018
LB39716	7 MAIDEN STREET	413319	846020
LB39717	9-11 MAIDEN STREET	413310	846020
LB39718	13 MAIDEN STREET	413299	846024
LB39719	17, 19 MAIDEN STREET	413283	846027
LB39720	21, 23 MAIDEN STREET.	413268	846029
LB39721	25, 27 MAIDEN STREET	413261	846033
LB39722	29, 31 MAIDEN STREET.	413248	846034
LB39722	29, 31 MAIDEN STREET.	413240	846037
LB39723	39-41 MAIDEN STREET.	413208	846047
LB39723	39-41 MAIDEN STREET.	413202	846050
LB39724	43 MAIDEN STREET	413185	846049
LB39725	45 MAIDEN STREET	413175	846052
LB39731	36, 38 MAIDEN STREET	413218	846067
LB39732	42-46 MAIDEN STREET AND 4-12 LOVE LANE	413178	846080
LB39739	1 HARBOUR STREET AND HARBOUR GARAGE JAMAICA STREET.	413538	845879
LB39740	2 HARBOUR STREET	413545	845883
LB39751	BATH HOUSE, BATH STREET INCLUDING GATES TO STREET.	413388	845929
LB39752	1, 2 BATH STREET AND 44 MERCHANT STREET.	413417	845878
LB39752	1, 2 BATH STREET AND 44 MERCHANT STREET.	413410	845886
LB39753	2 CHARLOTTE STREET AND 51, 53 MAIDEN STREET	413131	846060
LB39754	3, 4 CHARLOTTE STREET AND 49 MAIDEN STREET	413143	846057
LB39754	3, 4 CHARLOTTE STREET AND 49 MAIDEN STREET	413146	846052
LB39755	6 CHARLOTTE STREET AND 47 MAIDEN STREET	413161	846045
LB39756	10 CHARLOTTE STREET	413198	846026
LB39757	11-14 CHARLOTTE STREET	413222	846014
LB39758	BAY VIEW, 15 CHARLOTTE STREET	413250	846009
LB39759	CRAIGNABO 16 CHARLOTTE STREET	413265	846004
LB39760	18 CHARLOTTE STREET AND 15 MAIDEN STREET	413284	846000
LB39761	19 CHARLOTTE STREET	413292	845978
LB39762	MERLYNNE, 20 CHARLOTTE STREET	413305	845988
LB39763	21 CHARLOTTE STREET	413309	845965
LB39764	22 CHARLOTTE STREET	413317	845960
LB39775	25 JAMAICA STREET	413530	845899
LB39776	27 JAMAICA STREET	413533	845892
LB39784	24 JAMAICA STREET	413508	845919
LB39785	26 JAMAICA STREET	413508	845913
LB39789	25, 27 MERCHANT STREET	413431	845985
LB39789	25, 27 MERCHANT STREET	413432	845981
LB39790	29 MERCHANT STREET	413432	845973
LB39791	31 MERCHANT STREET	413430	845954
LB39792	37 MERCHANT STREET	413432	845946
LB39793	39 MERCHANT STREET	413432	845936
LB39794	41 MERCHANT STREET	413432	845928
LB39795	43 MERCHANT STREET	413434	845918
LB39796	45, 47 MERCHANT STREET.	413435	845907
LB39796	45, 47 MERCHANT STREET.	413435	845899
LB39797	2 WALLACE STREET (GABLE TO MERCHANT STREET)	413438	845886
LB39798	49 MERCHANT STREET	413435	845875
LB39799	51 MERCHANT STREET	413437	845868
LB39805	20 MERCHANT ST STREET	413407	845983

Designation Ref.	Name	Easting	Northing
LB39806	ST. PETER'S EPISCOPAL CHURCH HALL MERCHANT STREET	413412	845974
LB39807	ST. PETER'S EPISCOPAL CHURCH MERCHANT STREET.	413406	845956
LB39808	24 MERCHANT STREET	413411	845946
LB39809	28 MERCHANT STREET	413412	845938
LB39810	30 MERCHANT STREET	413416	845925
LB39811	42 MERCHANT STREET	413418	845891
LB39812	12 UPHILL LANE AND WALL TO SOUTH	413373	845954
LB39841	7-35 GLADSTONE ROAD.	413540	846624

20.0 Annex F – Sea Level Index Points

Sub-region	Unique sample ID	Age (cal. BP)	RSL (m)	Secondary indicator
Humber (Outer Estuary)	SRR1373	990	-1.33	High marsh environment
Fens	Q2558	1477	-1.82	High marsh environment
Fens	Q2556	1565	-1.8	High marsh environment
Fens	Q2557	1656	-2.23	High marsh environment
Fens	Q2559	1702	-2.26	High marsh environment
Humber (Inner Estuary)	GU5704	1773	-3	Freshwater to high marsh transition
Humber (Inner Estuary)	AA22678	1822	-3.07	High marsh environment
Humber (Outer Estuary)	SRR4897	1998	-2.03	High marsh environment
Lincolnshire Marshes	AA23826	2096	-2.8	High marsh environment
Humber (Outer Estuary)	GU5479	2237	-2.35	High marsh environment
Humber (Outer Estuary)	SRR1374	2348	-2.17	Freshwater to high marsh transition
NE England (South)	HAR8973	2355	2.75	Freshwater/Terrestrial limiting
Humber (Outer Estuary)	GU5480	2419	-2.35	High marsh environment
Fens	Q2825	2447	-2.88	High marsh environment
Humber (Outer Estuary)	GU5489	2477	-2.22	High marsh environment
Fens	Q2805	2545	-3.05	High marsh environment
SE Scotland	IGS6	2571	2.95	High marsh environment
East Anglia	AA25599	2579	-5.6	High marsh environment
NE England (South)	SUERC30014	2588	2.37	Freshwater/Terrestrial limiting
Lincolnshire Marshes	AA23520	2678	-3.25	High marsh environment
Humber (Outer Estuary)	GU5490	2725	-2.22	High marsh environment
Humber (Outer Estuary)	AA23821	2758	-3.97	High marsh environment
Humber (Inner Estuary)	OXA7066	2761	-1.68	Freshwater/Terrestrial limiting
Norfolk	AA22691	2767	-4.46	High marsh environment
NE England (South)	UB3905	2779	-0.69	Freshwater to high marsh transition
Norfolk	AA22687	2805	-5.03	High marsh environment

Sub-region	Unique sample ID	Age (cal. BP)	RSL (m)	Secondary indicator
Humber (Inner Estuary)	OXA7067	2812	-1	Freshwater/Terrestrial limiting
Tees	AA27196	2828	-0.84	High marsh environment
Fens	Q2826	2838	-3.41	High marsh environment
East Anglia	AA25600	2855	-4.36	High marsh environment
Norfolk	SRR2386	2891	-3.88	High marsh environment
Fens	Q2806	2907	-3.42	Freshwater to high marsh transition
NE England (South)	SRR1420	2913	2.7	Freshwater/Terrestrial limiting
NE England (South)	SRR3699	2914	0.5	Freshwater to high marsh transition
Lincolnshire Marshes	Q844	2944	-2.83	High marsh environment
Lincolnshire Marshes	RCD1598	2960	-1.83	High marsh environment
Tees	HV18064	2995	-0.78	High marsh environment
Tees	AA27210	3035	-2.21	High marsh environment
Fens	AA26355	3066	-3.96	High marsh environment
NE England (Central)	OxA12944	3156	-0.63	Freshwater to high marsh transition
Humber (Inner Estuary)	AA26375	3212	-4.5	High marsh environment
Humber (Inner Estuary)	AA23438	3294	-4.09	High marsh environment
Fens	Q2563	3326	-3.41	High marsh environment
NE England (South)	AA24228	3330	-0.12	High marsh environment
Fens	Q2827	3353	-3.25	High marsh environment
Fens	Q2526	3392	-4.19	High marsh environment
Humber (Inner Estuary)	CAM41317	3395	-2.91	High marsh environment
Fens	AA26356	3404	-3.82	Freshwater to high marsh transition
Tees	HV18063	3437	-1.28	High marsh environment
Fens	Q2828	3490	-3.71	High marsh environment
Norfolk	AA22688	3490	-5.68	High marsh environment
NE England (South)	AA22663	3510	-0.91	Freshwater to high marsh transition
NE England (South)	HAR8974	3511	2.37	Freshwater/Terrestrial limiting
NE England (Central)	OxA12967	3533	-1.26	Freshwater to high marsh transition

Sub-region	Unique sample ID	Age (cal. BP)	RSL (m)	Secondary indicator
Humber (Inner Estuary)	OXA7053	3534	-2.48	Freshwater/Terrestrial limiting
Fens	Q2562	3540	-4.44	High marsh environment
Lincolnshire Marshes	Q686	3585	-3.4	High marsh environment
NE England (North)	AA24223	3601	2.57	High marsh environment
NE England (South)	UB3904	3601	-0.26	High marsh environment
NE England (South)	HAR8975	3602	2.26	Freshwater/Terrestrial limiting
Humber (Inner Estuary)	GU5702	3613	-2.34	Freshwater/Terrestrial limiting
Fens	Q2564	3640	-3.87	High marsh environment
Humber (Inner Estuary)	AA27141	3647	-5.06	Freshwater to high marsh transition
NE England (South)	UB3906	3655	-0.79	High marsh environment
Fens	Q2807	3685	-3.82	High marsh environment
Humber (Inner Estuary)	AA23437	3685	-6.56	High marsh environment
Tees	SRR3704	3716	-1.36	High marsh environment
Norfolk	AA23458	3724	-2.83	High marsh environment
Norfolk	SRR2387	3745	-5.25	High marsh environment
Humber (Inner Estuary)	CAM41320	3764	-3.38	Freshwater to high marsh transition
Tees	HV18062	3775	-1.06	High marsh environment
NE England (South)	UB3907	3780	1.68	Uniquely defined
Humber (Inner Estuary)	CAM41319	3854	-4	High marsh environment
NE England (South)	SRR3846	3856	0.13	High marsh environment
Humber (Inner Estuary)	GU5703	3896	-3.06	Freshwater/Terrestrial limiting
Humber (Inner Estuary)	OXA7065	3903	-2.95	Freshwater/Terrestrial limiting
Fens	HAR149	3943	-3.79	Freshwater to high marsh transition
Humber (Inner Estuary)	SRR4748	3958	-4.05	High marsh environment
Humber (Inner Estuary)	OXA7052	4003	-4.6	Freshwater to high marsh transition
Tees	HV18061	4026	-1.46	Freshwater to high marsh transition
NE England (Central)	AA23498	4030	0.44	Freshwater to high marsh transition
Humber (Inner Estuary)	AA26379	4132	-6.86	High marsh environment

Sub-region	Unique sample ID	Age (cal. BP)	RSL (m)	Secondary indicator
Humber (Inner Estuary)	SRR4749	4140	-4.26	High marsh environment
Norfolk	AA22698	4144	-4	High marsh environment
Fens	HAR148	4151	-5.05	Freshwater to high marsh transition
Tees	HV18297	4156	-0.34	High marsh environment
Norfolk	AA22692	4168	-5.71	High marsh environment
Fens	Q2567	4180	-4.08	High marsh environment
Fens	Q2568	4209	-3.82	High marsh environment
NE England (Central)	OxA12946	4213	-1.39	Freshwater to high marsh transition
Aberdeen	SRR1192	4217	1.57	High marsh environment
Fens	Q2565	4230	-3.72	High marsh environment
Fens	Q2525	4231	-4.6	High marsh environment
Humber (Inner Estuary)	AA26377	4309	-5.84	High marsh environment
Humber (Inner Estuary)	GU5706	4318	-4.13	Freshwater/Terrestrial limiting
Humber (Inner Estuary)	AA22674	4342	-4.89	Freshwater/Terrestrial limiting
Humber (Inner Estuary)	AA23886	4349	-5.05	High marsh environment
Humber (Inner Estuary)	GU5701	4377	-3.27	Freshwater/Terrestrial limiting
Norfolk	AA22696	4380	-5.98	High marsh environment
Humber (Inner Estuary)	OXA7091	4382	-3.93	Freshwater/Terrestrial limiting
Lincolnshire Marshes	Q685	4385	-4.77	High marsh environment
Fens	IGS109	4388	-1.6	High marsh environment
Fens	HAR189	4399	-5.05	Freshwater to high marsh transition
Fens	SRR4632	4407	-3.94	High marsh environment
Fens	IGS111	4449	-4.7	Freshwater to high marsh transition
Humber (Outer Estuary)	AA34284	4474	-2.2	High marsh environment
Aberdeen	SRR1769	4481	1.57	High marsh environment
Norfolk	SRR2388	4486	-6.65	High marsh environment
Fens	SRR4633	4502	-4.26	Freshwater to high marsh transition
Humber (Outer Estuary)	AA23890	4534	-3.46	Freshwater to high marsh transition

Sub-region	Unique sample ID	Age (cal. BP)	RSL (m)	Secondary indicator
Humber (Inner Estuary)	AA23887	4564	-5.89	High marsh environment
Fens	Q2566	4588	-4.3	Freshwater to high marsh transition
Fens	HAR147	4591	-4.7	Freshwater to high marsh transition
Humber (Inner Estuary)	CAM41322	4626	-3.67	Freshwater/Terrestrial limiting
Fens	HAR151	4633	-4.7	Freshwater to high marsh transition
Lincolnshire Marshes	AA23521	4634	-4.15	High marsh environment
NE England (North)	AA24224	4635	2.1	High marsh environment
Norfolk	AA23461	4635	-5.34	High marsh environment
Fens	IGS112	4655	-5.05	Freshwater to high marsh transition
Tees	HV18298	4656	-0.9	High marsh environment
Humber (Outer Estuary)	AA25575	4672	-3.5	Uniquely defined
Fens	IGS110	4677	-5.5	Freshwater to high marsh transition
Lincolnshire Marshes	AA23895	4679	-4.88	High marsh environment
Fens	HAR150	4680	-5.05	High marsh environment
Humber (Outer Estuary)	AA34285	4684	-2.2	Freshwater to high marsh transition
Humber (Outer Estuary)	GU5476	4690	-4.35	High marsh environment
Humber (Inner Estuary)	SRR4743	4708	-6.18	High marsh environment
Fens	HAR192	4728	-5.5	Freshwater to high marsh transition
Fens	Q2544	4743	-6.01	Freshwater to high marsh transition
Humber (Outer Estuary)	AA23891	4749	-4.27	Freshwater to high marsh transition
Humber (Outer Estuary)	GU5475	4760	-4.35	High marsh environment
Fens	Q2543	4790	-5.79	High marsh environment
NE England (North)	AA25595	4790	1.7	High marsh environment
Norfolk	AA22699	4834	-2.78	Uniquely defined
Lincolnshire Marshes	AA23519	4847	-4.95	Freshwater/Terrestrial limiting
NE England (South)	HAR8977	4850	2.08	Freshwater/Terrestrial limiting
Fens	Q2545	4857	-6.03	Freshwater to high marsh transition
Humber (Inner Estuary)	CAM41321	4871	-6.39	High marsh environment

Sub-region	Unique sample ID	Age (cal. BP)	RSL (m)	Secondary indicator
Humber (Inner Estuary)	OXA7090	4871	-4.48	Freshwater/Terrestrial limiting
Tees	HV18299	4899	-1.87	High marsh environment
Fens	Q2546	4935	-6.07	Freshwater to high marsh transition
Humber (Inner Estuary)	AA23888	4954	-6.98	High marsh environment
Humber (Outer Estuary)	UB3901	4963	-3.87	High marsh environment
NE England (South)	SRR3700	4984	-0.26	Freshwater to high marsh transition
Norfolk	AA22701	4989	-6.52	High marsh environment
Lincolnshire Marshes	AA23814	5077	-4.89	Freshwater to high marsh transition
Norfolk	SRR2603	5093	-6.09	Freshwater to high marsh transition
Fens	Q2547	5105	-4.81	Freshwater/Terrestrial limiting
Fens	SRR4635	5131	-5.27	High marsh environment
Fens	SRR4636	5131	-5.54	Freshwater to high marsh transition
Norfolk	SRR2601	5136	-4.65	High marsh environment
Fens	AA26373	5140	-5.45	High marsh environment
Lincolnshire Marshes	AA23813	5149	-4.65	High marsh environment
Lincolnshire Marshes	AA22664	5156	-6.96	High marsh environment
Norfolk	AA22697	5156	-6.5	High marsh environment
Norfolk	SRR2391	5163	-5.6	High marsh environment
Humber (Inner Estuary)	OXA7064	5169	-4.93	Freshwater/Terrestrial limiting
Norfolk	AA28179	5186	-3.87	High marsh environment
Humber (Outer Estuary)	UB3900	5199	-4.17	Freshwater to high marsh transition
Tees	Beta99224	5314	-2.19	High marsh environment
Humber (Inner Estuary)	AA26376	5339	-7.14	Freshwater to high marsh transition
Norfolk	SRR2599	5395	-5.05	High marsh environment
NE England (South)	OxA22733	5398	1.66	Freshwater/Terrestrial limiting
NE England (South)	SUERC30009	5400	1.66	Freshwater/Terrestrial limiting
Humber (Inner Estuary)	OXA7055	5402	-5.08	Freshwater/Terrestrial limiting
SE Scotland	IGS5B	5402	1.44	Marine limiting

Sub-region	Unique sample ID	Age (cal. BP)	RSL (m)	Secondary indicator
Lincolnshire Marshes	AA22660	5403	-6.45	Freshwater to high marsh transition
Norfolk	AA22693	5418	-6.72	High marsh environment
Humber (Inner Estuary)	GU5707	5434	-5.13	Freshwater/Terrestrial limiting
Humber (Inner Estuary)	GU5700	5458	-5.47	Freshwater/Terrestrial limiting
NE England (South)	SRR1421	5461	1.65	Freshwater/Terrestrial limiting
Fens	AA26374	5475	-5.9	High marsh environment
NE Scotland	SRR1655	5499	1.09	High marsh environment
Tees	Q2664	5511	-3.02	High marsh environment
NE England (South)	SUERC49900	5516	1.61	Freshwater/Terrestrial limiting
NE England (South)	SUERC30008	5517	1.66	Freshwater/Terrestrial limiting
NE England (South)	SUERC52427	5517	1.61	Freshwater/Terrestrial limiting
Humber (Inner Estuary)	AA23439	5521	-6.94	High marsh environment
Humber (Inner Estuary)	AA23436	5549	-5.61	Freshwater/Terrestrial limiting
Humber (Inner Estuary)	AA24138	5588	-6.91	High marsh environment
Norfolk	SRR2600	5623	-5.98	Freshwater to high marsh transition
Lincolnshire Marshes	AA23828	5628	-6.09	Freshwater to high marsh transition
NE England (South)	SRR1422	5629	1.61	Freshwater/Terrestrial limiting
Humber (Inner Estuary)	AA27615	5631	-6.01	High marsh environment
Tees	Q2663	5676	-2.8	High marsh environment
Fens	SRR4634	5677	-6.49	High marsh environment
Humber (Inner Estuary)	OXA7054	5686	-6	Freshwater/Terrestrial limiting
Humber (Outer Estuary)	AA27586	5719	-5.48	Freshwater to high marsh transition
Humber (Inner Estuary)	OXA7137	5734	-10.72	High marsh environment
Humber (Outer Estuary)	AA25592	5738	-4.25	Freshwater to high marsh transition
NE England (South)	SRR3701	5748	-0.62	High marsh environment
Humber (Outer Estuary)	GU5483	5755	-5.47	High marsh environment
Humber (Inner Estuary)	GU5699	5795	-5.68	Freshwater/Terrestrial limiting
Lincolnshire Marshes	AA23811	5797	-6.58	Freshwater to high marsh transition

Sub-region	Unique sample ID	Age (cal. BP)	RSL (m)	Secondary indicator
Humber (Outer Estuary)	AA27585	5810	-5.12	High marsh environment
Humber (Inner Estuary)	AA23440	5815	-7.73	High marsh environment
Humber (Outer Estuary)	GU5477	5816	-5.62	High marsh environment
NE England (North)	AA23893	5867	1.19	High marsh environment
Humber (Outer Estuary)	GU5484	5887	-5.47	High marsh environment
NE Scotland	SRR1686	5888	0.11	Freshwater to high marsh transition
Tees	AA27211	5923	-3.43	High marsh environment
SE Scotland	IGS5A	5925	1.44	Marine limiting
NE England (North)	AA23894	5947	1.34	High marsh environment
Humber (Outer Estuary)	GU5478	5967	-5.62	High marsh environment
Lincolnshire Marshes	AA23827	5968	-5.79	High marsh environment
Tees	SRR3705	6017	-3.02	High marsh environment
Tees	HV3459	6022	-2.97	High marsh environment
Humber (Outer Estuary)	IGS97	6027	-6.31	Freshwater/Terrestrial limiting
Tees	HV4712	6071	-4.28	High marsh environment
NE England (South)	SRR3847	6073	-1.1	High marsh environment
NE England (North)	AA24225	6078	2.05	High marsh environment
Lincolnshire Marshes	AA22661	6093	-7.54	High marsh environment
Humber (Outer Estuary)	AA22672	6105	-6.1	High marsh environment
Fens	SRR4637	6153	-8.06	High marsh environment
Lincolnshire Marshes	AA22665	6179	-7.64	High marsh environment
Humber (Outer Estuary)	AA23434	6221	-6.45	Freshwater to high marsh transition
Humber (Inner Estuary)	OXA7056	6242	-8.88	Freshwater/Terrestrial limiting
Tees	Q2662	6332	-3.23	High marsh environment
Lincolnshire Marshes	AA23516	6338	-8.36	Freshwater to high marsh transition
Fens	SRR4638	6352	-8.31	Freshwater to high marsh transition
Humber (Inner Estuary)	AA26380	6356	-8.18	High marsh environment
Humber (Inner Estuary)	SRR4894	6390	-7.35	High marsh environment

Sub-region	Unique sample ID	Age (cal. BP)	RSL (m)	Secondary indicator
Tees	Beta99223	6399	-2.13	High marsh environment
Norfolk	AA23462	6406	-7.32	High marsh environment
Tees	Beta99222	6437	-2.54	High marsh environment
Humber (Outer Estuary)	SRR4744	6447	-10.58	High marsh environment
NE Scotland	SRR1660	6498	-0.35	Freshwater to high marsh transition
Humber (Inner Estuary)	HAR7007	6511	-8.81	High marsh environment
NE England (South)	AA24227	6518	-1.09	High marsh environment
Tees	AA27205	6518	-5.74	High marsh environment
Norfolk	AA22703	6522	-7.6	Freshwater to high marsh transition
Tay Valley	SRR1684	6535	7.03	High marsh environment
Norfolk	AA23459	6594	-3.39	Uniquely defined
Humber (Inner Estuary)	AA34280	6599	-7.13	Freshwater/Terrestrial limiting
Tees	HV18300	6637	-2.45	High marsh environment
Tay Valley	IGS1	6639	4.73	High marsh environment
Norfolk	AA22689	6659	-9.22	High marsh environment
NE England (Central)	OxA12947	6665	-2.23	Freshwater to high marsh transition
Humber (Inner Estuary)	AA27584	6691	-8.98	Freshwater to high marsh transition
Tay Valley	SRR1331	6713	4.59	High marsh environment
Humber (Outer Estuary)	SRR4745	6721	-11.05	High marsh environment
NE England (South)	OxA22732	6733	1.61	Freshwater/Terrestrial limiting
Aberdeen	SRR4719	6755	1.76	High marsh environment
NE England (South)	SUERC54087	6759	-1.54	Freshwater/Terrestrial limiting
Norfolk	AA22681	6764	-9.71	High marsh environment
NE England (South)	SUERC30010	6765	1.61	Freshwater/Terrestrial limiting
Norfolk	SRR2392	6811	-7.91	High marsh environment
Tay Valley	SRR1651	6812	7.43	High marsh environment
Tees	Q2661	6823	-3.41	Freshwater to high marsh transition
NE England (Central)	OxA12949	6824	-2.76	Freshwater to high marsh transition

Sub-region	Unique sample ID	Age (cal. BP)	RSL (m)	Secondary indicator
Humber (Inner Estuary)	AA25578	6825	-8.96	Freshwater to high marsh transition
Norfolk	AA23464	6825	-9.38	High marsh environment
Humber (Inner Estuary)	CAM41318	6831	-6.15	Freshwater/Terrestrial limiting
Humber (Inner Estuary)	OXA7057	6840	-6.33	Freshwater/Terrestrial limiting
Humber (Inner Estuary)	AA25577	6841	-8.66	High marsh environment
NE England (South)	SUERC54086	6845	-1.46	Freshwater/Terrestrial limiting
Tay Valley	SRR1649	6855	7.24	High marsh environment
Tay Valley	SRR1653	6883	7.22	High marsh environment
Humber (Outer Estuary)	AA23431	6907	-9.68	High marsh environment
Tees	HAR3714	6912	-4.68	High marsh environment
Tay Valley	SRR1151	6947	6.92	High marsh environment
NE Scotland	SRR1687	6973	-1.09	Extreme water level
Lincolnshire Marshes	AA23817	7001	-9.34	High marsh environment
NE Scotland	SRR1656	7016	0.37	Freshwater/Terrestrial limiting
Humber (Outer Estuary)	AA23430	7030	-9.57	High marsh environment
Humber (Outer Estuary)	AA26378	7039	-10.03	High marsh environment
Norfolk	AA22695	7049	-7.31	Uniquely defined
Tees	AA27199	7061	-4.54	High marsh environment
Tees	AA27197	7061	-5.62	High marsh environment
Humber (Inner Estuary)	OXA7136	7066	-7.62	Freshwater/Terrestrial limiting
Tay Valley	SRR1510	7066	7.14	High marsh environment
Tees	Q2660	7074	-3.26	High marsh environment
NE England (South)	SRR3848	7080	-1.72	High marsh environment
Aberdeen	SRR1193	7083	1.1	High marsh environment
NE England (South)	SUERC49869	7097	-1.03	Freshwater/Terrestrial limiting
Tay Valley	SRR1652	7149	7.43	High marsh environment
Humber (Outer Estuary)	AA23432	7158	-9.86	High marsh environment
NE England (Central)	OxA12951	7211	-3.14	Freshwater to high marsh transition

Sub-region	Unique sample ID	Age (cal. BP)	RSL (m)	Secondary indicator
NE England (North)	AA24226	7211	1.49	Freshwater to high marsh transition
NE England (Central)	OxA12950	7219	-3.07	Freshwater to high marsh transition
NE Scotland	SRR1661	7227	-1.46	Extreme water level
NE England (South)	SUERC49870	7236	-1.08	Freshwater/Terrestrial limiting
Tees	AA27202	7279	-6.08	High marsh environment
Norfolk	AA23936	7313	-8.21	Uniquely defined
NE England (South)	SUERC49871	7359	-1.15	Freshwater/Terrestrial limiting
Lincolnshire Marshes	AA23517	7388	-10.26	High marsh environment
Lincolnshire Marshes	AA23518	7401	-10.49	Freshwater to high marsh transition
Norfolk	AA28178	7401	-2.92	Uniquely defined
NE England (North)	AA23896	7409	0.45	High marsh environment
Humber (Outer Estuary)	AA23433	7433	-10.17	Freshwater to high marsh transition
NE England (South)	AA24217	7442	-2.14	High marsh environment
NE England (South)	SRR3702	7465	-1.77	High marsh environment
NE England (Central)	OxA13029	7484	-3.55	Freshwater to high marsh transition
Norfolk	AA27231	7488	-15.26	High marsh environment
Tees	AA27198	7507	-5.31	High marsh environment
NE England (South)	AA24218	7520	-1.17	High marsh environment
Humber (Outer Estuary)	SRR4746	7527	-11.68	High marsh environment
Lincolnshire Marshes	AA23938	7537	-12.24	Uniquely defined
Tay Valley	SRR1150	7545	6.92	High marsh environment
Lincolnshire Marshes	Q401	7555	-7.87	Uniquely defined
NE England (North)	AA25596	7570	0.35	High marsh environment
Montrose	SRR1148	7574	4.09	High marsh environment
Norfolk	AA23463	7574	-14.34	High marsh environment
Lincolnshire Marshes	AA23818	7591	-8.2	Uniquely defined
Montrose	SRR2119	7691	2.63	High marsh environment
Fens	AA22366	7700	-12.84	High marsh environment

Sub-region	Unique sample ID	Age (cal. BP)	RSL (m)	Secondary indicator
Norfolk	AA27232	7705	-15.83	Freshwater to high marsh transition
Aberdeen	SRR1565	7707	0.16	Extreme water level
NE England (South)	AA23892	7708	-1.91	Freshwater to high marsh transition
NE England (Central)	SRR3844	7709	-1.47	High marsh environment
Humber (Outer Estuary)	AA27583	7713	-13.11	High marsh environment
Lincolnshire Marshes	AA23937	7725	-12.24	Uniquely defined
NE England (North)	AA23824	7726	-0.11	High marsh environment
Lincolnshire Marshes	AA23941	7729	-13.2	Uniquely defined
Montrose	BIRM867	7730	2.8	High marsh environment
NE Scotland	SRR1657	7731	0.33	Freshwater/Terrestrial limiting
Humber (Outer Estuary)	IGS100	7737	-12.95	Uniquely defined
Fens	AA22365	7759	-12.69	Freshwater to high marsh transition
NE England (Central)	SRR3842	7764	-1.13	High marsh environment
NE England (South)	SRR4584	7764	-2.34	High marsh environment
NE England (South)	SRR3850	7774	-1.93	Freshwater to high marsh transition
NE England (North)	AA23823	7790	-0.03	Freshwater to high marsh transition
Humber (Outer Estuary)	IGS99	7804	-14.77	Uniquely defined
NE England (Central)	OxA12952	7825	-4.02	High marsh environment
Norfolk	SRR2393	7837	-7.69	Uniquely defined
Tees	AA27200	7864	-6.04	High marsh environment
NE England (South)	SRR3703	7871	-1.99	Freshwater to high marsh transition
Tay Valley	SRR1333	7872	3.24	Extreme water level
Tees	SRR3706	7894	-5.22	High marsh environment
NE England (Central)	OxA12954	7900	-4.05	High marsh environment
Montrose	SRR1149	7911	3.62	High marsh environment
Lincolnshire Marshes	AA23942	7919	-13.59	Freshwater to high marsh transition
NE England (South)	AA24219	7939	-2.01	Freshwater to high marsh transition
Montrose	SRR2120	7945	2.03	Uniquely defined

Sub-region	Unique sample ID	Age (cal. BP)	RSL (m)	Secondary indicator
NE England (Central)	OxA12953	7949	-4.02	High marsh environment
NE England (South)	AA24230	7960	-3.57	High marsh environment
Montrose	BIRM823	7964	2.62	Freshwater/Terrestrial limiting
Humber (Outer Estuary)	AA25581	7969	-15.49	Uniquely defined
NE England (Central)	AA27229	7969	-2.44	High marsh environment
Aberdeen	SRR4717	7970	-0.55	High marsh environment
NE England (Central)	OxA11860	7980	-4.52	High marsh environment
Norfolk	AA22684	7980	-7.68	Uniquely defined
NE England (North)	AA25601	7986	1.16	Uniquely defined
NE England (Central)	OxA11859	7988	-4.49	High marsh environment
NE England (Central)	SRR3843	7993	-1.65	High marsh environment
Tay Valley	SRR1400	7997	4.08	High marsh environment
Humber (Inner Estuary)	AA25590	8008	-15.86	Freshwater/Terrestrial limiting
Lincolnshire Marshes	AA23943	8018	-13.59	Freshwater to high marsh transition
Humber (Inner Estuary)	AA25589	8031	-15.09	Freshwater/Terrestrial limiting
Lincolnshire Marshes	AA23940	8035	-13.2	Uniquely defined
NE England (Central)	SRR3845	8046	-1.9	High marsh environment
Lincolnshire Marshes	AA22667	8051	-14.1	Freshwater to high marsh transition
Tees	AA27203	8068	-6.3	Freshwater to high marsh transition
Norfolk	AA22679	8078	-11.39	High marsh environment
Humber (Inner Estuary)	AA25585	8087	-14.44	Freshwater/Terrestrial limiting
NE England (Central)	OxA11833	8093	-3.25	Marine limiting
NE England (Central)	OxA11858	8107	-3.23	Marine limiting
NE England (Central)	AA27226	8126	-2.78	High marsh environment
Tay Valley	SRR1332	8127	4.41	High marsh environment
Montrose	SRR869	8153	1.75	High marsh environment
NE England (Central)	AA27228	8173	-2.27	High marsh environment
Lincolnshire Marshes	AA22666	8178	-13.82	High marsh environment

Sub-region	Unique sample ID	Age (cal. BP)	RSL (m)	Secondary indicator
Tees	AA27201	8239	-6.34	Freshwater to high marsh transition
Norfolk	AA27233	8244	-17.19	High marsh environment
Aberdeen	SRR4718	8245	-0.66	Uniquely defined
NE England (North)	AA23825	8249	-0.45	Freshwater to high marsh transition
Aberdeen	SRR4714	8254	-1.24	High marsh environment
NE England (Central)	AA27616	8255	-2.18	Uniquely defined
Aberdeen	SRR4715	8266	-1.57	High marsh environment
SE Scotland	SRR1430	8272	0.14	High marsh environment
Lincolnshire Marshes	AA23939	8274	-13.01	Uniquely defined
Tay Valley	SRR1401	8284	3.7	High marsh environment
Tay Valley	SRR1685	8301	5.97	High marsh environment
SE Scotland	SRR1431	8302	-0.01	High marsh environment
Tay Valley	SRR1511	8306	7.02	High marsh environment
NE Scotland	SRR1658	8312	0.26	Freshwater/Terrestrial limiting
Aberdeen	SRR4716	8332	-1.86	High marsh environment
Norfolk	AA22686	8334	-16.73	High marsh environment
Tay Valley	SRR1394	8348	0.56	High marsh environment
Tay Valley	SRR1397	8352	1.04	High marsh environment
Tay Valley	SRR1334	8359	3.05	Extreme water level
Tay Valley	SRR1395	8372	2.19	High marsh environment
East Anglia	HAR2535	8387	-20.04	High marsh environment
Offshore (N of Norfolk)	AA27142	8389	-22.44	Freshwater to high marsh transition
Tay Valley	IGS2	8411	3.85	High marsh environment
Tay Valley	SRR1650	8417	6.23	High marsh environment
Tay Valley	NPL127	8418	1.18	High marsh environment
NE England (South)	AA24229	8420	-3.2	High marsh environment
NE England (North)	AA27618	8427	1.07	Uniquely defined
NE England (South)	AA24220	8449	-3.96	High marsh environment

Sub-region	Unique sample ID	Age (cal. BP)	RSL (m)	Secondary indicator
Tay Valley	SRR1654	8463	7.25	High marsh environment
Humber (Inner Estuary)	AA25586	8520	-14.66	Freshwater/Terrestrial limiting
Norfolk	AA22704	8546	-13.41	Uniquely defined
Aberdeen	SRR4712	8548	-5.04	High marsh environment
Norfolk	AA22682	8551	-8.38	Uniquely defined
Tay Valley	SRR71	8554	1.1	High marsh environment
Tay Valley	SRR1396	8556	2.9	Uniquely defined
Aberdeen	SRR4711	8558	-4.75	High marsh environment
NE England (Tyne)	AA23822	8586	-5.68	High marsh environment
Aberdeen	SRR4709	8593	-5.4	High marsh environment
Aberdeen	SRR4708	8674	-5.07	High marsh environment
NE England (South)	AA24222	8711	-5.1	High marsh environment
NE England (South)	AA27617	8719	-3.62	High marsh environment
NE England (South)	AA24221	8745	-4.69	High marsh environment
Offshore (N of Norfolk)	AA27148	8842	-24.21	Freshwater/Terrestrial limiting
Tees	AA27192	8870	-15.46	High marsh environment
Aberdeen	SRR4713	9030	-5.5	High marsh environment
Aberdeen	SRR4710	9081	-7.5	High marsh environment
Dogger Bank	AA22662	9088	-33.26	High marsh environment
Tay Valley	SRR66	9094	-1.55	High marsh environment
Humber (Outer Estuary)	SRR4747	9112	-11.63	Uniquely defined
Tay Valley	SRR69	9128	-3.41	High marsh environment
Humber (Inner Estuary)	AA25591	9218	-15.93	Freshwater/Terrestrial limiting
Aberdeen	SRR4706	9303	-9.48	High marsh environment
Tay Valley	SRR67	9338	-1.95	High marsh environment
Tay Valley	SRR1147	9401	-0.1	High marsh environment
Norfolk	SRR2389	9443	-8.89	Freshwater/Terrestrial limiting
NE Scotland	SRR1659	9463	0.2	Freshwater/Terrestrial limiting

Sub-region	Unique sample ID	Age (cal. BP)	RSL (m)	Secondary indicator
Tay Valley	SRR1398	9506	-0.06	High marsh environment
Aberdeen	SRR5099	9519	-9.81	Freshwater to high marsh transition
Tay Valley	SRR1399	9530	-0.14	Freshwater to high marsh transition
Humber (Outer Estuary)	AA25582	9531	-15.77	Uniquely defined
Tay Valley	SRR70	9582	-4.32	High marsh environment
Norfolk	AA22694	9761	-5.93	Uniquely defined
Offshore (NE of Norfolk)	AA23946	9801	-35.12	High marsh environment
Humber (Inner Estuary)	AA34283	10038	-16.57	Freshwater/Terrestrial limiting
Offshore (NE of Norfolk)	AA27144	10165	-39.26	Freshwater/Terrestrial limiting
Offshore (NE of Norfolk)	AA27145	10212	-39.95	Freshwater/Terrestrial limiting
Offshore (NE of Norfolk)	AA27143	10321	-38.86	Freshwater/Terrestrial limiting
Offshore (NE of Norfolk)	AA27146	10336	-41.05	High marsh environment
Offshore (NE of Norfolk)	AA27147	10339	-38.93	Freshwater/Terrestrial limiting
Norfolk	AA27588	10445	-16.31	Uniquely defined
Offshore (NE of Norfolk)	AA23944	10448	-40.15	Freshwater/Terrestrial limiting
Norfolk	AA22680	10465	-10.25	Uniquely defined
Norfolk	AA22685	10660	-9.58	Uniquely defined
Norfolk	AA23460	10743	-8.2	Uniquely defined
Tay Valley	SRR72	10863	0.29	High marsh environment
Tay Valley	I2796	10961	0.29	High marsh environment
Tees	HAR3711	11011	-12.45	Freshwater/Terrestrial limiting
Norfolk	AA22700	11092	-8.47	Uniquely defined
Norfolk	AA22690	11292	-7.87	Uniquely defined
NE England (Central)	AA27227	11456	-2.06	Uniquely defined
Tay Valley	IGS3	11488	2.07	High marsh environment
NE England (Central)	OxA13370	11511	-5.39	Freshwater/Terrestrial limiting
NE England (Central)	OxA11936	11535	-5.34	Freshwater/Terrestrial limiting
Aberdeen	SRR4707	11882	-9.66	Freshwater/Terrestrial limiting

Sub-region	Unique sample ID	Age (cal. BP)	RSL (m)	Secondary indicator
NE England (Central)	OxA12825	12026	-5.53	Freshwater/Terrestrial limiting
NE England (Central)	OxA12824	12289	-5.61	Freshwater/Terrestrial limiting
NE England (North)	AA25597	12788	0.8	Uniquely defined
Offshore (E of Yorkshire)	AA25602	13005	-53.95	High marsh environment
Offshore (NE of Norfolk)	AA23945	13182	-40.59	Freshwater/Terrestrial limiting
Offshore (E of Yorkshire)	AA27137	13267	-53.32	Freshwater/Terrestrial limiting
Clyde	IGS68A	13597	10.7	Marine limiting
NE England (North)	AA25598	13900	0.39	Uniquely defined
Montrose	AA68681	13983	9.82	Marine limiting
Clyde	IGS21B	14237	15.7	Marine limiting
Clyde	IGS68B	14261	10.7	Marine limiting
Clyde	IGS21A	14693	15.7	Marine limiting
Tay Valley	AA37789	14896	2.14	Uniquely defined
Tay Valley	AA37790	15141	2.57	Uniquely defined
Tay Valley	AA37791	15204	-18.73	Uniquely defined
Tay Valley	Beta111509	15458	17.37	Marine limiting
NE England (North)	AA34199	15744	1.81	Uniquely defined
Tay Valley	Beta111507	15923	3.12	Marine limiting
Tay Valley	AA37788	15996	16.17	Marine limiting
Tay Valley	Beta111508	16001	2.52	Marine limiting
Tay Valley	CAMS111598	16451	10.37	Marine limiting
Tay Valley	CAMS111599	16480	10.37	Marine limiting
Tay Valley	AA37787	16694	16.17	Marine limiting
Tay Valley	CAMS77912	16777	16.17	Marine limiting
NE Scotland	Beta101953	17483	12.97	Marine limiting
NE Scotland	LU3028	18143	12.97	Marine limiting
Humber (Outer Estuary)	AA34281	19498	-17.85	Freshwater/Terrestrial limiting
Tay Valley	CAMS111597	20577	14.82	Marine limiting

Sub-region	Unique sample ID	Age (cal. BP)	RSL (m)	Secondary indicator
Tay Valley	CAMS111596	21447	14.82	Marine limiting