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APPENDIX 24-A HISTORIC ENVIRONMENT DESK-BASED ASSESSMENT





Aberdeen Harbour Expansion Project, Nigg Bay, Aberdeen

Historic Environment Desk-Based Assessment

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Front Cover	Panoramic view across Nigg Bay, looking South from the slipway and roofless building on the north coast (WA 1028).
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Aberdeen Harbour Expansion Project, Nigg Bay, Aberdeen

Historic Environment Desk-Based Assessment

Summary

Wessex Archaeology was commissioned by Fugro EMU Limited to prepare a Historic Environment Desk-Based Assessment of land, coast and sea at Nigg Bay, Aberdeen, centred on National Grid Reference 396990N 804680E. This study is intended to support applications for a Harbour Revision Order, a Marine Licence and Planning Permission for a proposed harbour development within Nigg Bay. The aims of this study were to assess the known and potential historic environment resource within the Site and the surrounding area, and to assess the likely impacts of the development proposals on this resource. The effect of the development proposals on the historic environment resource will be a material consideration in the determination of the planning application. This study has identified no overriding heritage constraints which are likely to prohibit development.

This assessment has established that there is an archaeological interest within the onshore and intertidal part of the Site. This is defined as the potential for the presence of buried archaeological remains, in particular the historic slipway and associated roofless building on the north coast of Nigg Bay which reflects the remaining visible *in situ* record of the vernacular maritime heritage of Nigg Bay. More generally, there is an archaeological potential for subsurface remains to be present within the Site boundary, including a potential for features relating to medieval and post-medieval ecclesiastical activity in the vicinity of Nigg Bay, particularly linked to St Fittick's Church and well. Structures and archaeological material associated with the 19th century rifle range and subsequent marine laboratory and hatchery in Nigg Bay are key elements of more recent history of the bay. Nigg Bay is important for maritime navigation and safety, particularly from the mid-19th century onwards in the form of the Stevenson lighthouse and the associated fog horn at Girdle Ness and the coastguard station at Greg Ness. Anti-tank defences and defensive emplacements at the back of Nigg Bay beach are well recorded by aerial photography and are a notable element of the World War II history of the area.

Within the offshore part of the Proposed Development, review of marine geophysical survey data undertaken as part of this assessment has identified a number of seabed anomalies of unknown origin of potential archaeological interest which are likely to be affected by the proposed marine development of the Site. These include identified debris and magnetic anomalies which may reflect unknown maritime or aviation wreck sites within the seabed of the Site.

Where the construction footprint interacts with previously undeveloped land there is a potential for unknown subsurface cultural heritage assets relating to all periods of archaeology from Early Prehistory to the modern day. The presence, location and significance of any such buried archaeological remains within the Site cannot be established with reference to available data. In order to mitigate impacts on such features, mitigation will include a post-ES submission programme of archaeological works, agreed with the planning archaeologist for Aberdeen City Council prior to the commencement of construction works.

Following an impact assessment, the proposed development may result in direct physical impacts leading to adverse effects of **major adverse significance** to the undesignated historic slipway (**WA 1028**) on the north coast of Nigg Bay and impacts of **major adverse significance** to the setting of the Scheduled Monument and B-listed structure St. Fittick's Church and churchyard (**WA 1030**) located around 250m west of the Site.



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The report was researched and compiled by Dr Andrew Bicket, Abby Mynett and David Howell with illustrations prepared by Ken Lymer. John McCarthy managed the project on behalf of Wessex Archaeology.



Aberdeen Harbour Expansion Project, Nigg Bay, Aberdeen

Historic Environment Desk-Based Assessment

1 INTRODUCTION

1.1 Project background

- 1.1.1 Wessex Archaeology (WA) was commissioned by Fugro EMU Limited (FEMU) on behalf of Aberdeen Harbour Board, to prepare a Historic Environment Desk-Based Assessment of land at Nigg Bay, Aberdeen (hereafter 'the Site', **Figure 1**), centred on National Grid Reference (NGR) 396990N, 804680E. The proposed development comprises an area of approximately 1.16 km² (**Figure 1**), and is located within Nigg Bay, south of Aberdeen Harbour.
- 1.1.2 As part of this study WA undertook a baseline study of known and potential cultural heritage within both the on and offshore parts of the proposed development. This study will support applications for a Harbour Revision Order, a Marine Licence and Planning Permission for the Aberdeen Harbour Expansion Project within Nigg Bay.
- 1.1.3 The onshore baseline study included a data gathering exercise of all available data relating to the presence of cultural heritage features within the onshore Site boundary and included a site visit and field reconnaissance survey.
- 1.1.4 As part of the offshore baseline study WA undertook an archaeological assessment of geophysical survey data acquired by Caledonian Geotech (CG) in August 2012 and Aspect Land & Hydrographic Surveys Ltd (Aspect) in September 2014 for the Aberdeen Harbour Expansion Project. The dataset consisted of sidescan sonar (SSS) and sub-bottom profiler (SBP). Multibeam bathymetry and LiDAR data were acquired by Aspect.
- 1.1.5 A magnetometer survey was also undertaken by Coastline Surveys (Coastline) in June 2013. Raw data from this survey was not available at the time of the archaeological assessment; a table of magnetic anomalies identified by Coastline during their data interpretation was provided for integration into the current assessment.
- 1.1.6 Additionally, a series of boreholes were acquired by Soil Engineering in 2013 and the logs and associated reports made available to WA for geoarchaeological assessment and correlation with the SBP data (Soil Engineering 2013).
- 1.1.7 Using this on and offshore baseline data, an impact assessment has been undertaken including assessment of direct physical impacts on cultural heritage features and setting impacts upon designated terrestrial cultural heritage assets.
- 1.1.8 Terminology, including a glossary and chronology used in the report are compiled in **Appendix 1: Terminology**.



1.2 The Site

- 1.2.1 The Site comprises a parcel of land and seabed of approximately 116 hectares (Ha) located within Nigg Bay and incorporating the coastal hinterland around St Fittick's Kirk, Girdle Ness, Greg Ness and smaller land areas to the south along the Coast Road at Doonie's and Hareness Road at Altens.
- 1.2.2 The proposed Aberdeen Harbour Expansion Project will extend the port facilities into Nigg Bay, to the south of the existing harbour. For the purposes of this report, the Study Area is defined as the site boundary as provided by Aberdeen Harbour Board plus an extra 500m buffer zone, which covers both offshore and onshore environments (**Figure 1**), discussed in detail in **Sections 3.5 and 3.6**Error! Reference source not found..
- 1.2.3 The Site is currently under a range of land uses including pastoral agriculture, recreation (including urban greenspace and Balnagask Golf Course), industrial (waste water treatment works), and maritime navigation and recreation along the coast.
- 1.2.4 Modern residential development borders the Site to the west at Balnagask. A modern waste water treatment facility is located immediately landward of Nigg Bay. The southern limit of the Site is bounded by the Coast Road, and by Greyhope Road, to the north.
- 1.2.5 The terrestrial part of the Site is situated within a relatively flat area of coastal land at an elevation of approximately 5 m above Ordnance Datum (aOD). Local topography falls gently to the east with steeper scarps on the south side of Nigg Bay and bedrock cliffs towards the north side of the embayment.
- 1.2.6 The underlying bedrock geology throughout the Site is dominated by Neoproterozoic Aberdeen Formation metamorphic sandstone and mudstone. Superficial sediments are characterised by glacial till and fluvio-glacial outwash sands and gravels overlain by raised marine deposits, and modern beach sands (British Geological Survey online 2015).

1.3 Development proposals

- 1.3.1 Aberdeen Harbour Board have proposed the design and construction of a new harbour facility at Nigg Bay, immediately South of the existing harbour. The purpose of the new facility is to complement and expand the capabilities of the existing harbour, accommodate larger vessels, retain existing custom, and attract increased numbers of vessels and vessel types to Aberdeen.
- 1.3.2 The new harbour development shall include but is not limited to:
- *Dredging the existing bay to accommodate vessels up to 9m draft with additional dredge depth of 10.5m to the east quay and entrance channel;*
 - *Construction of new North and South breakwaters to form the harbour;*
 - *Provision of approximately 1500m of new quays and associated support infrastructure. The quay will be constructed with solid quay wall construction and suspended decks over open revetment;*
 - *Construction of areas for development by others to facilitate the provision of fuel, bulk commodities and potable water;*
 - *Land reclamation principally through using materials recovered from dredging operations and local sources, where possible;*
 - *Provision of ancillary accommodation for the facility;*

- *Off-site highway works to the extent necessary to access the facility and to satisfy statutory obligations;*
- *Diversions and enabling works necessary to permit the development.*

1.4 Scope of document

1.4.1 This assessment has been undertaken in order to determine, as far as is possible from existing information, the nature, extent and significance of the historic environment resource within the Site and its environs, and to provide an assessment of the likely impact of development on the cultural heritage assets that embody that significance.

1.4.2 The Historic Environment (the resource considered within this assessment) as defined in the Scottish Historic Environment Policy (SHEP 2011:5), comprises:

'...our built heritage: ancient monuments; archaeological sites and landscapes; historic buildings; townscapes; parks; gardens and designed landscapes; and our marine heritage, for example in the form of historic shipwrecks or underwater landscapes once dry land.'

1.4.3 It should also be noted that setting impacts arising from the proposed development upon the setting of Conservation Areas and Gardens and Designed Landscape will be dealt in a Chapter 17 - Seascape, Landscape and Visual Effects.

1.5 Aims

1.5.1 The specific aims of this assessment are to:

- *Describe the known and potential heritage assets within the Site based on a review of existing information within a defined Study Area;*
- *Assess the significance of known and potential heritage assets through weighted consideration of their valued components;*
- *Assess the impact of potential development or other land changes on the significance of the heritage assets and their setting; and*
- *Make recommendations for strategies to mitigate potential negative effects arising from the proposed development.*

1.5.2 With regard to marine cultural heritage, the study included an archaeological assessment of 2012 geophysical survey data acquired from Nigg Bay. The objectives were as follows:

- *To assess the geophysical survey data acquired by CG, Aspect and the list of anomalies created by Coastline, in order to identify any material of possible archaeological and cultural heritage significance present within the Study Area;*
- *To geoarchaeologically assess the borehole logs created by Soil Engineering, identify any deposits of possible archaeological potential, and correlate them with the SBP interpretation results;*
- *To compare the resulting interpretation with desk-based assessments, historical data, known archaeological sites and previous investigations in the vicinity of the Study Area; and*
- *To recommend mitigation measures for potential archaeological or cultural heritage assets within the Study Area.*

2 LEGISLATIVE BACKGROUND

2.1 Introduction

- 2.1.1 There is national legislation and guidance relating to the protection of, and proposed development on or near, important archaeological sites or historical buildings within planning regulations as defined under the provisions of Scottish Planning Policy and Scottish Historic Environment Policy (**see below**). In addition, local authorities are responsible for the protection of the historic environment within the planning system.
- 2.1.2 The following section summarises the main components of the national and local planning and legislative framework governing the treatment of the historic environment. Further detail is presented in **Appendix 2: Legislative and planning framework**.

2.2 Designated heritage assets

- 2.2.1 Designated heritage assets are defined in Scottish Planning Policy as:

'World Heritage Sites, Scheduled Monuments, Listed Buildings, historic Marine Protected Areas, Registered Park and Gardens, Registered Battlefields and Conservation Areas designated under the relevant legislation.'

- 2.2.2 Designation is a formal acknowledgement of a building, monument or site's significance, intended to make sure that the character of the asset in question is protected through the planning system and to enable it to be passed on to future generations.
- 2.2.3 Further information regarding heritage designations is provided in **Appendix 2: Legislative and planning framework**.

2.3 Scottish planning policy and guidance

- 2.3.1 The following legislation, Scottish Government policy and guidance have been considered in the preparation of this assessment:
- *Scottish Historic Environment Policy 2011 (SHEP) - sets out Scottish Ministers' policies, providing direction for HS and a policy framework that informs the work of a wide range of public sector organisations; within the context of Scottish Planning Policy (SPP);*
 - *Ancient Monuments and Archaeological Areas Act 1979 (AMAA 1979) – this provides legal protection for heritage assets of national importance (usually onshore but can also include marine assets);*
 - *The Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997 – this contains the bulk of built heritage conservation planning law for Scotland. It requires Scottish Ministers to compile lists of buildings of archaeological or historic importance and provides for the designation of conservation areas. This Act has been amended by the Historic Environment (Amendment) (Scotland) Act 2011;*
 - *Historic Environment (Amendment) (Scotland) Act, 2011 – the Act amends and harmonises several previous acts on Historic Buildings and Ancient Monuments and Conservations Areas within the planning regime;*
 - *Planning Advice Note (PAN) 2/2011: Planning and Archaeology – this provides advice to planning authorities and developers on dealing with archaeological remains with an emphasis which is proportionate to the relative value of the remains and of the developments under consideration; and*

- *Managing Change in the Historic Environment: Setting (HS, 2010).*

2.4 Local planning policy and guidance

- 2.4.1 Cultural heritage above Mean Low Water Springs (MLWS) is considered within the 'terrestrial' planning system. The Site is situated within the administrative boundaries of Aberdeen City Council, which adopted the *Aberdeen Local Development Plan* in February 2012.
- 2.4.2 The *Plan*¹ forms the basis of the development plan for the district and sets targets for the provision of sustainable development by 2030, as well as setting out general policies in relation to provision of facilities, transport, and protection of natural and historic features.
- 2.4.3 Local planning policies, contained within the *Plan* that relate to the historic environment and may be relevant to the proposed development are provided as Supplementary Guidance *Archaeology and Planning* (March 2012¹). The guidance aims to "give archaeological sites and Scheduled Monuments strong protection from any development that could damage them". The guidance reiterates the non-recoverable nature of the archaeological record and the value of preserving them particularly for their "important educational, social and economic role". The guidance outlines the conditions for approving developments where adverse effects are unavoidable to archaeological sites, including appropriate embedded mitigation strategies (i.e. avoidance / preservation *in situ*) and archaeological excavation and recording.

2.5 Marine policy and guidance

- 2.5.1 Cultural heritage below Mean High Water Springs (MHWS) is considered as part of the Marine (Scotland) Act 2010 and associated guidance. Provision is made in the legislation for designating areas of the seabed as historic Marine Protected Areas (hMPA) in response to instances where the cultural heritage importance of a seabed feature such as a wreck requires formal protection.
- 2.5.2 The wider legislation and guidance acknowledges the importance of non-designated cultural heritage below MHWS and indicates the preference for *in situ* preservation of cultural heritage assets, and archaeological investigation when this is not possible; complementing the approach onshore.

¹ Aberdeen Local Development Plan and Supplementary Guidance
http://www.aberdeencity.gov.uk/planning_environment/planning/local_development_plan/pla_local_development_plan.asp (last accessed 11/05/2015).

3 METHODOLOGY

3.1 Introduction

- 3.1.1 The methodology employed during this assessment has been based upon relevant professional guidance including the Chartered Institute for Archaeologists' Standard and Guidance for Historic Environment Desk-Based Assessment (CIfA, 2014).
- 3.1.2 The overall methodology incorporates terrestrial, intertidal and marine environments which utilise a range of data sources, some of which are specific to the environment under assessment. For example, the marine assessment is underpinned by seabed and sub-seabed geophysical datasets, geotechnical data and existing databases of maritime cultural heritage assets; and is constrained to areas of the Site below MHWS. The terrestrial assessment is derived from historic mapping, aerial photography and existing databases of cultural heritage assets underpinning the coastal and intertidal Walkover Survey and site visits; and is constrained to areas of the Site above MLWS.
- 3.1.3 The overlap in marine, and intertidal and terrestrial Study Areas is reflected in the scope of terrestrial and marine planning legislation (**Section 2**).
- 3.1.4 **N.B.** Within this assessment onshore datasets are compiled and illustrated in **British National Grid**. Offshore datasets are compiled and illustrated in **WGS84 UTM 30N**. Both projections are reported as Eastings and Northings.

3.2 Assessment criteria – Magnitude

- 3.2.1 Within this document, the magnitude of impacts is defined by the following criteria:

Table 1: Classification of magnitude

Magnitude	Definition of magnitude of impact
Severe	Total loss of key elements or features of the pre-project conditions, such that the post-project character or composition of the feature would be fundamentally changed.
Major	Major alteration to, key elements or features of the pre-project conditions, such that the post-project character or composition of the feature would be fundamentally changed.
Moderate	Loss of, or alteration to, key elements or features of the pre-project conditions, such that the post-project character of the feature would be partially changed.
Minor	Minor alteration from pre-project conditions.
Negligible	No or unquantifiable change to pre-project conditions.

3.3 Assessment criteria – Receptor Value

- 3.3.1 Significance (for heritage policy) is defined in **Appendix 1: Terminology** as:

'the value of a heritage asset to this and future generations because of its heritage interest. That interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage asset's physical presence, but also from its setting.'

- 3.3.2 Within this document, value is weighed by consideration of the potential for the asset to demonstrate the following value criteria:

- **Evidential value:** Deriving from the potential of a place to yield evidence about past human activity;
- **Historical value:** Deriving from the ways in which past people, events and aspects of life can be connected through a place to the present. It tends to be illustrative or associative;
- **Aesthetic value:** Deriving from the ways in which people draw sensory and intellectual stimulation from a place; and
- **Communal value:** Deriving from the meanings of a place for the people who relate to it, or for whom it figures in their collective experience or memory. Communal values are closely bound up with historical (particularly associative) and aesthetic values, but tend to have additional and specific aspects.

3.3.3 The overall value of heritage assets has been determined in accordance with the categories laid out below in **Table 2** (cf. Highways Agency, 2007; Table 5.1, 6.1 and 7.1). Ultimately the assessment of an asset's cultural heritage value will be made according to the professional judgement of the assessor and this table is not intended to be prescriptive but to operate as a guide only. An estimate of receptor value is made based on this scheme.

Table 2: Categories of heritage assets classified according to value

Value	Categories
Very High	World Heritage Sites (including nominated sites) Assets of recognised international importance Assets that contribute to international research objectives
High	Historic Marine Protected Areas (hMPAs) Scheduled Monuments Category A Listed Structures Category B Listed Structures that can be shown to have exceptional qualities in their fabric or historical associations Inventory Battlefields Non-designated assets of national importance Assets that contribute to national research frameworks ²
Medium	Category B Listed Structures Assets that contribute to regional research objectives
Low	Assets compromised by poor preservation and/or poor contextual associations Assets with importance to local interest groups Assets that contribute to local research objectives
Negligible	Assets with little or no archaeological, architectural or historical interest
Unknown	The importance of the asset has not been ascertained from available evidence

3.3.4 The value of a cultural heritage asset is assessed by examining the receptor's age, type, rarity, survival and/or condition, fragility and/or vulnerability, group value, documentation, associations, scientific potential and outreach potential. These factors help to characterise an asset, to assess how representative it is in comparison to other, similar assets, and to assess its potential to contribute to knowledge, understanding and outreach. In most cases, statutory protection is only provided to an asset judged to be the best known or an above

²For example, Scottish Archaeological Research Framework (ScARF); <http://www.scottishheritagehub.com/> (last accessed 12/05/2015).

average example in regard to these factors. It is important to note that undesignated sites may also have a degree of importance as high, or higher, than other designated cultural heritage assets.

- 3.3.5 Furthermore the nature of the archaeological resource, in general, is such that there is a high level of uncertainty concerning the distribution of potential, unknown archaeological receptors. **Unknown, potential cultural heritage receptors** are considered of **high value** as a precautionary measure.

3.4 Assessment Criteria – Significance of Effects

- 3.4.1 Within this assessment, 'impact' is taken to mean the direct change caused by the project, whether it occurs through mechanical, chemical or biological processes. 'Effect' is taken to mean the consequences of that change in the value of the historic environment that results from the impact (Highways Agency, 2007; Wessex Archaeology, 2007).
- 3.4.2 The significance of an impact on a cultural heritage asset, whether a physical impact (direct or indirect) or an impact on its setting, is assessed by combining the magnitude of the impact (**Table 1**) and the value of the cultural heritage asset (**Table 3**). The matrix in **Table 3** provides a guide to the assessment but is not a substitute for professional judgement and interpretation, particularly where the value or magnitude levels are not clear or are borderline between categories.

Table 3: Determining Significance of Effects

Magnitude of Impact	Cultural Heritage Value				
	Negligible	Low	Medium	High	Very High
Negligible	Negligible	Negligible	Negligible	Negligible	Minor
Minor	Negligible	Minor	Minor	Minor	Moderate
Moderate	Minor	Minor	Moderate	Moderate	Major
Major	Minor	Moderate	Moderate	Major	Major
Severe	Moderate	Major	Major	Major	Major

3.5 Onshore Study Area

Onshore Study Area Definition

- 3.5.1 A Study Area was established within a 500m radius of the Site boundary (**Figure 2**). The recorded historic environment resource within the Study Area was considered in order to provide a terrestrial and intertidal context for the discussion and interpretation of the known and potential resource within the Site and to take account of known cultural heritage features recorded outwith the Site which had the potential to extend within it.
- 3.5.2 Onshore datasets are compiled and illustrated in **British National Grid**.

Data Sources

3.5.3 A number of publicly accessible sources of primary and synthesised information were consulted. A bibliography of documentary, archive and cartographic sources consulted is included in the References section of this report (**Section 8**).

3.5.4 These comprised:

- *The National Monuments Record of Scotland (NMRS), curated by the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS) comprising a database of recorded archaeological sites, find spots, and archaeological events within the county;*
- *Aerial photography curated in the National Collection of Aerial Photography (NCAP), RCAHMS (**Appendix 3: Aerial photography consulted**);*
- *Available historic manuscripts, surveyed maps, and Ordnance Survey maps held at the National Archives Scotland and National Library of Scotland (**see footnotes**); and,*
- *Relevant, available primary and secondary sources held at WA's own library. Both published and unpublished archaeological reports relating to excavations and observations in the vicinity of the Site were studied, through the Archaeology Data Service, Grey Literature archive (**see cited bibliography and footnotes**).*

Site visit & Walkover Survey

3.5.5 The Site was visited on the 5th and 6th May 2015. Weather conditions ranged from heavy rain and high winds, to dry and clear. A fieldwork record comprising digital photography and notes is held in the project archive.

3.5.6 The aim of the Site visit was to assess the general aspect, character, condition and setting of the terrestrial and intertidal areas of the Site and to identify any features of cultural heritage interest and to assess the potential for the development proposals to affect the settings of heritage assets (see *Setting* section below).

Consultation

3.5.7 The selection of cultural heritage assets at risk of setting impacts was refined through consultation with the national curator (Historic Scotland 21/08/2013; Ref: AMN/16/GA, Case ID: 201302830) and incorporates designated Cultural Heritage assets within the Study Area and additional sites beyond it. Responses regarding Cultural Heritage and archaeology were not received from other Consultees, such as the Aberdeen City Council archaeology service (see **Section 3.7**). These additional sites comprise a number of Scheduled Monuments and Listed Buildings:

- *Torry Battery, battery 130m ESE of Old South Breakwater (Scheduled Monument, **WA 1002**);*
- *Girdle Ness Lighthouse, Greyhope Road, including Fog Signal at South Site at NJ 9274 0530 (Category A-listed structure), **WA 1015, 1018**);*
- *St Fittick's Church, Aberdeen (Scheduled Monument, also Category B-listed structure, **WA 1030**);*
- *Tullos Cairn, cairn (Scheduled Monument, **WA 1044**);*
- *Crab's Cairn, cairn (Scheduled Monument, **WA 1053**); and,*

- *Baron's Cairn, cairn (Scheduled Monument, WA 1055).*

Setting assessment

- 3.5.8 The approach to the assessment of impact on the selected receptors, and upon their cultural heritage setting significance, has been undertaken in line with Managing Change in the Historic Environment: Setting (Historic Scotland 2010). The approach taken is staged, and aims to:
- *Identify the cultural heritage assets that might be affected;*
 - *Define the setting of each asset (without reference to the Proposed Development); and*
 - *Assess how the Development would impact upon this defined setting.*
- 3.5.9 It should be noted that the methodology for assessment of cultural heritage setting impacts is distinct from aesthetic heritage setting impacts (Chapter 17: Seascape, Landscape and Visual Effects) and is undertaken in line with heritage sector-specific guidance (e.g. HS 2010). The setting assessment included in this chapter has been carried out to identify where changes in setting have a potential to impact upon the cultural heritage significance of assets as distinct from the aesthetic landscapes. Therefore there is no direct correlation between the magnitude and significance of setting impacts identified in the separate technical studies, even in cases where the same receptors or locations have been considered in both studies.
- 3.5.10 Setting as defined in the HS guidance is not limited to visual factors. Setting includes the way in which the surroundings of a historic asset or place contribute to how it is experienced, understood and appreciated. However, for this assessment the distances involved between the receptors and the proposed infrastructure (which in some cases is considerable) and considerable levels of screening by topography and mature vegetation mean that significant indirect impacts upon the setting of cultural heritage assets are considered to be limited to visual impacts where there is uninterrupted intervisibility (discussed where appropriate in **Section 6**). Maritime traffic is considered here as a component of potential visual impacts to the setting of cultural heritage assets.
- 3.5.11 There may be impacts from increases in terrestrial traffic (and linked to traffic generally) which may result in increased noise, which may in turn potentially have an effect upon the appreciation of the setting of designated cultural heritage assets. This has not been assessed as part of the study and will be reconsidered as part of the ES once specialist traffic baseline assessments and data are available.
- 3.5.12 Assessment of the setting impacts of cultural heritage assets is ultimately rooted in the professional judgement of the assessor but it is possible to highlight a number of key factors that have been considered in defining setting. Setting factors considered to be of particular importance in the environment of the Site include the key vistas that give an asset a context; the prominence of the cultural heritage asset or its place in views throughout the surrounding area together with the character of the surrounding landscape; and the relationships between built and natural features. Assessment of the significance of setting effects on a cultural heritage asset is therefore complex and is not simply a function of the proximity of the development in question.
- 3.5.13 The aim of the setting assessment, presented in **Section 6**, is to explore the likely effects of the proposed development on the settings of designated and non-designated heritage assets situated within the wider context of the Site.

- 3.5.14 **Step 1** of the approach is *'identifying the heritage assets affected'*.
- 3.5.15 The potential for the proposed development to effect change upon the settings of the heritage assets included in the Scoping Exercise was then assessed via the application of professional judgement, informed by observations made during the Site visit.
- 3.5.16 Where it could be confidently determined that a heritage asset and its settings would not be affected by the development proposals, no further assessment was undertaken.
- 3.5.17 In cases where it could be anticipated that the development proposals may have the potential to alter the setting of a heritage asset, these assets were scoped in for further detailed assessment. These heritage assets were assessed on a case by case basis, in accordance with Steps 2 and 3 of the process outlined below.
- 3.5.18 **Step 2** requires consideration of *'whether, how and to what degree these settings make a contribution to the significance of the heritage asset(s)'*. This stage of the assessment should first address the key attributes of the heritage asset itself and then consider:
- *The physical surroundings of the asset, including its relationship with other heritage assets;*
 - *The way the asset is appreciated; and*
 - *The asset's associations and patterns of use.*
- 3.5.19 **Step 3** involves *'assessing how the proposed development would change, and impact the setting of the asset(s)'*. This stage of the assessment addresses the key attributes of the proposed development, such as its:
- *Location and siting;*
 - *Form and appearance;*
 - *Additional effects; and*
 - *Permanence.*

3.6 Offshore Study Area

Offshore Study Area Definition

3.6.1 The offshore Study Area was established using the same 500m radius of the Site boundary (**Figure 3**) as that used onshore. The recorded historic environment resource within the Study Area was considered in order to provide a maritime and marine archaeological context for the discussion and interpretation of the known and potential resource within the Site.

3.6.2 Offshore datasets are compiled and illustrated in **WGS84 UTM 30N**.

Data Sources

3.6.3 A number of publicly accessible sources of primary and synthesised information were consulted. A bibliography of documentary, archive and cartographic sources consulted is included in Section 8: References.

3.6.4 Wreck and obstruction data within the Study Area were obtained from the United Kingdom Hydrographic Office (UKHO) and the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS). Data was not available from the Aberdeen City Council Historic Environment Record (HER). All available records of known wrecks and obstructions

located within the Study Area were compared and integrated with the geophysical results as outlined in **Section 4.7**.

- 3.6.5 Any sites found to be outside the Study Area are deemed beyond the scope of the current project and are subsequently not included in this report.

Geophysical Data Assessment

- 3.6.6 No pre-existing marine geophysical or geotechnical data to aid the establishment of a cultural heritage baseline was found to exist within the area of the proposed development. Therefore review of geophysical and geotechnical data was confined to survey data gathered for the proposed development.

- 3.6.7 The geophysical survey data comprised SSS, SBP and multibeam bathymetry datasets. Each of these was assessed for their quality, and were rated using the criteria in Table 4.

Table 4: Criteria for assigning data quality rating

Data Quality	Description
Good	Data which are clear and unaffected by weather conditions or sea state. The dataset is suitable for the interpretation of standing and partially buried metal wrecks and their character and associated debris field. These data also provide the highest chance of identifying wooden wrecks and debris.
Average	Data which are affected by weather conditions and sea state to a slight or moderate degree. The dataset is suitable for the identification and partial interpretation of standing and partially buried metal wrecks, and the larger elements of their debris fields. Wooden wrecks may be visible in the data, but their identification as such is likely to be difficult.
Variable	This category contains datasets with the quality of individual lines ranging from good to average to below average. The dataset is suitable for the identification of standing and some partially buried metal wrecks. Detailed interpretation of the wrecks and debris field is likely to be problematic. Wooden wrecks are unlikely to be identified.

- 3.6.8 Geophysical data coverage varies across the Study Area and by sensor type (see **Figure 3**). The different data sets covered different areas of slightly varying extent, the potential reason for this is discussed further in the paragraphs below, and the extent of the magnetometer data coverage is unknown.

- 3.6.9 The SSS data have been rated as ‘Variable’ using the above criteria table, with a number of lines displaying noise from weather conditions and the full range not usually being achieved due to the shallow water depth. Full coverage of the Study Area was also not achieved (see **Figure 3**), again presumably due to the water depth. As such, it is possible that small features of archaeological potential may not have been identified, especially in the nearshore area where there is no SSS data coverage.

- 3.6.10 The multibeam bathymetry data have been rated as ‘Good’ using the above criteria table. Small amounts of weather effects were identified in the data, but the data quality and resolution was found to be of a high standard and suitable for archaeological assessment.

- 3.6.11 The SBP (sparker) data were rated as ‘Variable’ using the above criteria. Weather noise was visible on a number of survey lines and the seabed multiple (a duplicated sonar signature of the seabed, typically appearing at a consistent vertical offset throughout the

dataset) was observed at a shallow depth which obscured a lot of the data, although this is a function of water depth and as such could not be controlled.

- 3.6.12 Additionally, sparker data is generally considered relatively low resolution for identifying small-scale features of archaeological potential, and, as with the SSS data, full coverage was not achieved across the whole Study Area. However, it is considered likely that any significant features of archaeological potential will have been identified.
- 3.6.13 WA processed and assessed 100% of the SSS, SBP and multibeam bathymetry data provided. The magnetometer assessment was based solely on a table of anomalies previously identified by Coastline, and the raw data were not provided to WA.

Geophysical Data – Technical Specifications

- 3.6.14 The SSS and SBP data were acquired by CG between 10th August 2012 and 23rd August 2012 on board the survey vessel *Surveyor 2*. The multibeam bathymetry was acquired by Aspect between 10th and 11th September 2014 and between 23rd and 24th September 2014 on board survey vessel *Coastal Sensor*.
- 3.6.15 The survey area was approximately 1.8 km², with survey lines run at a spacing of 25m in an east – west direction (perpendicular to the coast) and at 100m spacing in a north – south direction. The line plan was designed to cross over or lie in close proximity to the locations of historical borehole investigations (CG 2012). Actual lines were dictated by environmental aspects such as weather and water depths in addition to Client direction.
- 3.6.16 An Applied Acoustics Squid 500 sparker and trailing hydrophone system was used for the SBP data acquisition. The system was operated at a pulse rate of four per second and a power of 250J (CG 2012). The data were digitally recorded in Coda and provided to WA as processed .sgy files.
- 3.6.17 A Geoacoustics Geoswath interferometric sonar system was deployed to acquire the SSS data. The sidescan sonar data were acquired alongside multibeam in Geoswath with a 60 – 80 m range applied and then output in .xtf format.
- 3.6.18 The bathymetry data were acquired using an R2Sonic 2022 multibeam sonar system operating at a 400kHz operating frequency. The data were digitally logged and provided to WA as a single .xyz file, this file contained data gridded at 0.5m and had also been combined with LIDAR data. The LIDAR data covers the intertidal zone and part of the area above MHWS in the immediate vicinity of the bay (see Figure 4).
- 3.6.19 The LiDAR survey used a Trimble UX5 UAS (Unmanned Aircraft System) to collect photogrammetric information that was processed by Aspect to obtain wide area topography levels to overlap the bathymetric survey to seaward (Aspect 2014).
- 3.6.20 Primary positioning used for the survey was a Veripos LD2 positioning system with a Meridian Gyrocompass used to observe the vessel heading during the survey work.
- 3.6.21 The geodetic parameters used for the survey were WGS 1984 UTM Zone 30N.
- 3.6.22 A second survey, undertaken by Coastline to acquire the magnetometer data, took place between the 24th and 27th June on board the survey vessels MV *Lady Gail* and *Predator*.
- 3.6.23 Coastline used a Geometrics G-882 caesium vapour marine magnetometer to acquire the data, which were recorded digitally using Geometrics MagLog Software. None of the raw

data were provided to WA, but a table of anomalies identified by Coastline were made available for assessment.

- 3.6.24 Positioning for this survey was provided by a Hemisphere Vector dGPS Gyro system and digitally recorded using QinsY software. The positioning was reportedly recorded in WGS 1984 UTM Zone 30N, although the positions provided to WA were expressed as British National Grid (BNG). The data were converted by WA into WGS 84 UTM30N by WA using the standard OSTN2 algorithm.

Geophysical Data – Processing

- 3.6.25 The sidescan sonar data were processed by WA using Coda Geosurvey software. This allowed the data to be replayed with various gain settings in order to optimise the quality of the images. The data were initially scanned to give an understanding of the geological nature of the site and were then interpreted for any objects of possible anthropogenic origin. This involves creating a database of anomalies within Coda by tagging individual features of possible archaeological potential, recording their positions and dimensions and acquiring an image of each anomaly for future reference.
- 3.6.26 A mosaic of the sidescan sonar data is produced during this process to assess the quality of the sonar towfish positioning. The survey lines are smoothed, and the navigation corrected. This process allows the position of anomalies to be checked between different survey lines and for the layback values to be further refined if necessary.
- 3.6.27 The form, size and/or extent of an anomaly is a guide to its potential to be an anthropogenic feature and therefore of archaeological interest. A single small but prominent anomaly may be part of a much more extensive feature that is largely buried. Similarly, a scatter of minor anomalies may define the edges of a buried but intact feature, or it may be all that remains as a result of past impacts from, for example, dredging or fishing.
- 3.6.28 The SBP data were processed by WA using Coda Seismic+ software. This software allows the data to be visualised with user selected filters and gain settings in order to optimise the appearance of the data for interpretation. The software then allows an interpretation to be applied to the data by identifying and selecting sedimentary boundaries and shallow geological features that might be of archaeological interest.
- 3.6.29 The sub-bottom profiler data were interpreted with a two-way travel time (TWTT) along the z-axis. In order to convert from TWTT to depth, the velocity of the seismic waves was estimated to be $1,600\text{ms}^{-1}$. This is a standard estimate for shallow, unconsolidated sediments.
- 3.6.30 Any small reflectors which appear to be buried material such as a wreck site covered by sediment were also recorded, the position and dimensions of any such objects noted in a gazetteer, and an image of each anomaly acquired. It should be noted that anomalies of this type are rare, as the sensors must pass directly over such an object in order to produce an anomaly.
- 3.6.31 The multibeam bathymetry data were analysed to identify any unusual seabed structures that could be shipwrecks or other anthropogenic debris. The data were gridded at 0.5m and analysed using Fledermaus software, which enables 3-D visualisation of the acquired data and geo-picking of seabed anomalies.
- 3.6.32 All data were processed following the current guidance and legislation (Plets *et al*, 2013).

3.6.33 The acquired table of magnetometer anomalies previously identified by Coastline were converted from BNG into WGS84 UTM30N by WA, loaded into a GIS and then grouped/discriminated as appropriate. No additional magnetometer work was undertaken by WA.

Geophysical Data – Anomaly Grouping and Discrimination

3.6.34 The previous section describes the initial interpretation of all available geophysical datasets which were conducted independently of each other. This inevitably leads to the possibility of any one object being the cause of numerous anomalies in different datasets and apparently overstating the number of archaeological features in the Study Area.

3.6.35 To address this fact the anomalies were grouped together along with the results of the desk-based study of known archaeological sites and the magnetometer anomalies previously identified by Coastline. This allows one ID number to be assigned to a single object for which there may be, for example, a UKHO record, a magnetic anomaly and multiple sidescan sonar anomalies.

3.6.36 Once all the geophysical anomalies and desk-based information have been grouped, a discrimination flag is added to the record in order to discriminate against those which are not thought to be of an archaeological concern. For anomalies located on the seabed, these flags are ascribed as follows:

Table 5: Criteria Discriminating Relevance of Seabed Features to Proposed Scheme

Non-Archaeological	U1	Not of anthropogenic origin
	U2	Known non-archaeological feature
	U3	Non-archaeological hazard
Archaeological	A1	Anthropogenic origin of archaeological interest
	A2	Uncertain origin of possible archaeological interest
	A3	Historic record of possible archaeological interest with no corresponding geophysical anomaly

3.6.37 Similarly, the discrimination flags applied to shallow geological features of possible archaeological potential are ascribed as follows:

Table 6: Criteria Discriminating Relevance of Palaeogeographic Features

Non-Archaeological	U2	Feature of non-archaeological interest
Archaeological	P1	Feature of probable archaeological interest, either because of its palaeogeography or likelihood for producing palaeoenvironmental material
	P2	Feature of possible archaeological interest

3.6.38 All of the sites of archaeological potential that have been identified within the Study Area are presented in **Appendix 4: Seabed Features of Archaeological Potential** and are discussed below. Recommendations have been made for mitigation measures should the sites be impacted upon by the proposed development.

3.6.39 The grouping and discrimination of information at this stage is based on all available information and is not definitive. It allows for all features of potential archaeological interest to be highlighted, while retaining all the information produced during the course of the

geophysical interpretation and desk-based assessment for further evaluation should more information become available.

- 3.6.40 Any sites which are located outside of the defined Study Area, either previously recorded in known databases (e.g. UKHO) or identified during this geophysical assessment, are deemed beyond the scope of the current project and are subsequently not included in this report.

Geoarchaeological Assessment of Geotechnical Data

- 3.6.41 As part of ground investigations prior to the proposed development, 117 geotechnical boreholes and test pits were acquired by Soil Engineering. These logs (Soil Engineering 2013) were provided to WA for geoarchaeological assessment and to aid in the SBP interpretation.
- 3.6.42 To help frame geoarchaeological investigations of this nature, WA has developed a five stage approach, encompassing different levels of investigation appropriate to the results obtained, and accompanied by formal reporting of the results at the level achieved. The stages are summarised below:

Table 7: Stages of Geoarchaeological Assessment/Recording

Stage	Method	Description
1	Assessment	A desk-based archaeological assessment of the borehole and CPT logs generated by geotechnical contractors aims to establish the likely presence of horizons of archaeological interest and broadly characterise them, as a basis for deciding whether a stage 2 archaeological recording is required and what this would involve. The Stage 1 report will state the scale of Stage 2 work proposed.
2	Geoarchaeological Recording	Archaeological recording of selected retained or new core samples will be undertaken. This will entail the splitting of the cores, with half of each core being cleaned and recorded. The Stage 2 report will state the results of the archaeological recording and will indicate whether any Stage 3 work is warranted.
3	Sampling and Assessment	Dependent upon the results of Stage 2, sub-sampling and palaeoenvironmental assessment (pollen, diatoms and foraminifera) may be required. Subsamples will be taken from one core-half, with the other core-half retained intact for further sub-sampling, should it be required. Assessment will comprise laboratory analysis of the samples to a level sufficient to enable the value of the palaeoenvironmental material surviving within the cores to be identified. Subsamples will also be taken and retained at this stage in case radiocarbon dating is required during Stage 4. The Stage 3 report will set out the results of each laboratory assessment together with an outline of the archaeological implications of the combined results, and will indicate whether any Stage 4 work is warranted.
4	Analysis and Dating	Full analysis of pollen, diatoms and/or foraminifera assessed during Stage 3 will be undertaken. Typically, Stage 4 will be supported by radiocarbon dating of suitable subsamples. Stage 4 will result in an account of the successive environments within the coring area, a model of environmental change over time, and an outline of the archaeological implications of the analysis.

Stage	Method	Description
5	Final Report	If required Stage 5 will comprise the production of a final report of the results of the previous phases of work for publication in an appropriate journal. This report will be compiled after the final phase of archaeological work, whichever phase that is.

3.6.43 The assessment undertaken as part of the geophysical data interpretation comprises Stage 1 of this geoarchaeological framework (**Table 7**), the results of which are integrated with the palaeogeographic assessment (**Section 4.8**).

3.7 Assumptions and limitations

Archaeological Data

3.7.1 Data used to compile this report consists of secondary information derived from a variety of sources, only some of which have been directly examined for the purposes of this Study. The assumption is made that this data, as well as that derived from other secondary sources, is reasonably accurate.

3.7.2 The records held by RCAHMS, the UKHO and the other sources outlined above are not a record of all surviving heritage assets, but a record of the discovery of a wide range of archaeological and historical components of the historic environment. The information held within it is not complete and does not preclude the subsequent discovery of further elements of the historic environment that are, at present, unknown. In particular this relates to sub-surface archaeological features.

3.7.3 At the time of this assessment the Historic Environment Record (HER) of Aberdeen City Council was not available for consultation or data requests due to an interruption in provision of archaeological advice to Aberdeen City Council.

3.7.4 In discussion with Aberdeenshire Council Archaeology Service, who are providing temporary cover for archaeological advice provision for Aberdeen City Council (pers comm. Bruce Mann, 07/05/2015), attempts have been made to reconstruct known archaeology baseline datasets that would normally have been available from the HER. This includes archaeological fieldwork events sourced through the ADS Grey Literature archive. It was also not possible to assess any potential data gaps through publically available sources such as PastMap as the regional HER data layer was also unavailable at the time of writing. The Walkover Survey was undertaken at low tide and reasonable attempts have been made to verify the available HER (RCAHMS/HS only) data and record unrecorded features with surface expression. This includes digitising features from coastal 0.5m LiDAR coverage for the Nigg Bay area with features observed on the ground.

Geophysical Data – Data Gaps

3.7.5 As mentioned in **Paragraph 3.6.6**, a number of marine geophysical data gaps have been encountered within the Study Area.

3.7.6 The SSS and SBP coverage begins 200m from the nearshore area of the site, meaning that a large portion of the Study Area is not covered by either of these data sets. The multibeam bathymetry data did, however, cover the entire Study Area. The assessed borehole logs partially fill in the SBP data gap, although only at point locations rather than continuous coverage.

3.7.7 No magnetometer data were provided to WA, and the magnetometer assessment in this report is based solely on a table of previously identified magnetic anomalies identified by

Coastline. As the data were not viewed by WA, the coverage of this data set is unknown and it cannot be guaranteed that all anomalies of possible archaeological potential will have been identified.

3.8 Copyright

3.8.1 This report may contain material that is non-Wessex Archaeology copyright (e.g. Ordnance Survey, British Geological Survey, Crown Copyright), or the intellectual property of third parties, which Wessex Archaeology are able to provide for limited reproduction under the terms of our own copyright licences, but for which copyright itself is non-transferable by Wessex Archaeology. Users remain bound by the conditions of the Copyright, Designs and Patents Act 1988 with regard to multiple copying and electronic dissemination of the report.

4 BASELINE RESOURCE

4.1 Introduction

4.1.1 The following section provides a summary of the archaeological and historical development of the Site and the Study Area, compiled from the sources summarised above and detailed in the references section of this report (**Section 8**). The aim is to establish the known and potential historic environment resource that could be affected by the development proposals.

4.1.2 All heritage assets identified within the Study Area are listed in **Appendix 5: Gazetteer of terrestrial and intertidal Cultural Heritage Assets within the Study Area**. The entries have been merged where duplicate records exist between the various data sources and are assigned a unique number within the text and given a **WA** prefix for ease of reference.

4.2 Historic Land-use

4.2.1 The Historic Land-use³ character of the Site includes *Leisure and Recreation*. The Site has been used in this way since the 19th century in the area of the north side of Nigg Bay and Girdle Ness. Within the wider Study Area the site of the Nigg Wastewater Treatment Plant and adjacent beach area is characterised as *Built-Up Area* comprising *Industrial or Commercial Area* of the 19th century or more recently. The southern shores of Nigg Bay and land on Greg Ness, Doonie's Yawns and Long Slough east of the railway line is characterised as *Agriculture and Settlement* comprising *Rectilinear Fields and Farms* of the 18th century and more recently. West of the railway line at the site of Doonie's Hill the area is characterised as *Energy, Extraction and Waste*, related to the late 20th century landfill facility on the northeast flank of Tullos Hill.

4.2.2 The approaches to Aberdeen Harbour and the Albert Basin are characterised as *Transport* reflecting the *Maritime Installations* dating from the 19th century to present day.

4.3 Designated heritage assets

Site Boundary

4.3.1 There is one designated cultural heritage asset within the Site, a Category A-listed structure.

- **WA 1015 Girdle Ness Lighthouse and fog horn (WA 1018) (Plate 1),**

³ <http://hla.rcahms.gov.uk/> (last accessed 11/05/2015).

Onshore Study Area

4.3.2 Cultural Heritage Designations within the Study Area but outwith the proposed development boundary comprise:

Scheduled Monuments;

- **WA 1002** Torry Battery, mid-19th century military battery manned during World War I and II, Greyhope Road, 500m North of Site (**Plate 2**).
- **WA 1026** Balnagask motte, probably 12th-13th century medieval date, Baxter Place, 600m northwest of Site (**Plate 3**).
- **WA 1030** St Fittick's Church (Old, Ruin) and churchyard St Fittick's Road (also a listed building, see below), 10m west of Site (**Plate 4**).
- **WA 1053** Crab's Cairn, prehistoric burial cairn of possible Bronze Age date, Loirston Country Park, Tullos Hill, 500m southwest of Site (**Plate 5**).

Category A Listed Structures;

- **WA 1031** St Fittick's Church (Old, Ruin) and churchyard St Fittick's Road. 17th century church with later 18th century additions (bell-cote and weather vane), east gable demolished.

Additional Sites

4.3.3 Through Consultation with Curatorial stakeholders (see *Consultation*) an additional two designated cultural heritage assets were compiled into the gazetteer of cultural heritage assets considered in this assessment. These comprise two Scheduled Monuments:

- **WA 1044** Tullos Cairn (**Plate 6**); and,
- **WA 1055** Baron's Cairn (**Plate 6**).

4.3.4 In order to assess the group of burial cairns comprising a possible prehistoric funerary landscape on Tullos Hill, the remaining Scheduled cairns located within Loirston Country Park were also incorporated into the assessment. These comprise:

- **WA 1060** Loirston Country Park, cairn and dyke (**Plate 7**); and,
- **WA 1062** Cat Cairn (**Plate 7**).

4.3.5 There are no World Heritage Sites or Inventory Battlefields within the Study Area.

4.3.6 Designated heritage assets located within the Study Area are depicted in **Figure 2**.

4.4 Undesignated heritage assets

Site Boundary

4.4.1 There are a further 14 undesignated heritage assets documented within the Site (**Figure 1**). Undesignated heritage assets documented within the Site comprise:

- **WA 1013** Stone, Girdle Ness, 160m west of Lighthouse;
- **WA 1016** Girdle Ness Lighthouse Keeper's Cottages;
- **WA 1017** Boundary Stone, Girdle Ness, 170m west of Lighthouse;
- **WA 1019** Greyhope Road, City of Aberdeen Main Drainage Works (**Plate 8**);
- **WA 1021** Boundary Stone, Girdle Ness, 225m southwest of Lighthouse;
- **WA 1027** Boundary Stone, Nigg Bay, north coast at Greyhope Road;

- **WA 1028** Slipway and roofless building, north side of Nigg Bay (**Plate 9**);
- **WA 1033** Boundary Stone, junction of Coast Road, St Fittick's Road and Greyhope Road, Nigg Bay;
- **WA 1037** 20th century anti-tank blocks, Nigg Bay;
- **WA 1038** Boundary Stone, central Nigg Bay;
- **WA 1040** 20th century pillbox, south Nigg Bay;
- **WA 1045** Greg Ness coastguard station, east of Doonie's Hill, south of Nigg Bay;
- **WA 1049** Boundary Stone, Doonie's Hill; and
- **WA 1051** Boundary Stone, east of Doonie's Hill, Bridge of One Hair (**Plate 10**).

4.4.2 Notably the boundary stones, pillbox and anti-tank blocks recorded in positions adjacent to Nigg Bay have not been observed during recent archaeological interventions or the Walkover Survey associated with this assessment.

4.4.3 The Walkover Survey identified the potential remains of two house platforms on the south side of Greg Ness, which are depicted in 2nd edition Ordnance Survey mapping and contemporary Admiralty Charts from 1902 (**WA 1043**).

Study Area

4.4.4 A further 45 undesignated cultural heritage assets are documented within the onshore Study Area outwith the Site, listed in **Appendix 5: Gazetteer of terrestrial and intertidal Cultural Heritage Assets within the Study Area** and illustrated in **Figure 2**.

4.5 Previous studies

Site

4.5.1 A watching brief of geotechnical trial pits was previously undertaken at locations across the beach at Nigg Bay (Cameron Archaeology 2013⁴) encountering no archaeological material but observed underlying Quaternary sediments beneath the made ground and beach sediments. A watching brief was undertaken on excavations in support of the planting of trees and perimeter hedges on land around St Fittick's Kirk along the south end of St Fittick's Road (Buchanan 2009); two pieces of worked flint were recovered suggesting prehistoric activity in the area. A further find, a tanged arrowhead is noted to the immediate southwest of St Fittick's kirk (**WA 1031**) also suggesting some prehistoric activity in the area.

Study Area

4.5.2 The Archaeology Data Service Grey Literature Archive contains entries pertaining to a small number of investigations which have been carried out within the Study Area. These comprise:

- Cameron, A (2012) *South Kirkhill, St Fittick's Road, Aberdeen*. Aberdeen: Cameron Archaeology doi: 10.5284/1019383
<http://archaeologydataservice.ac.uk/archsearch/record.jsf?titleId=2589137>
- Cameron, AS (2009) *Fisheries Research Service, Victoria Road, Torry, Aberdeen*. Aberdeen: Aberdeen City Council Archaeological Unit doi:

⁴ <http://archaeologydataservice.ac.uk/archsearch/record.jsf?titleId=2592826> (last accessed 12/05/2015).

10.5284/1004099,

<http://archaeologydataservice.ac.uk/archsearch/record.jsf?titleId=1945422>

- Cameron, AS (2009) *St Fittick's Church and Manse, Aberdeen*. Aberdeen: Aberdeen City Council Archaeological Unit doi: 10.5284/1003891 <http://archaeologydataservice.ac.uk/archsearch/record.jsf?titleId=1945192>.

4.5.3 Where relevant, the results of these investigations are discussed in further detail below.

4.5.4 To the south, at Doonie's Hill, a watching brief on groundworks for a waste water treatment system at Ness Farm Gully, Tullos Hill (Duffy 2007) encountered no archaeological material or features.

4.5.5 No previous marine archaeological investigations have been undertaken within the offshore part of the Site.

4.6 Archaeological and historical context

4.6.1 The following section provides a summary of the historical development of the Site and the Study Area and the known cultural heritage assets, compiled from the sources listed above. The potential for the likelihood of as yet unrecorded archaeological remains within the Site is informed by the consideration of the known heritage assets within the Study Area, in conjunction with the geology and topography of the area.

4.6.2 Records obtained from the RCAHMS National Database and other sources are listed in **Appendix 5: Gazetteer of terrestrial and intertidal Cultural Heritage Assets within the Study Area** and illustrated in **Figure 2**.

Maritime Wreck & Aviation Crash Sites

4.6.3 There are no known maritime or aviation wrecks located within in the Site.

Later Upper Palaeolithic & Mesolithic (c. 12,700 – 4100 BC)

4.6.4 At present there are no known Palaeolithic sites in the northeast of Scotland⁵.

4.6.5 There are no known Mesolithic sites within the Site.

4.6.6 The Northeast Scotland Regional Research Framework (NSRRF) outlines the known Mesolithic archaeological resource in the region⁶. Notable concentrations of lithic scatters are known from Aberdeen Bay and the Dee and Don valleys including significant collections of microliths⁷. Many of the known sites located close to or at the coast, such as recent lithic discoveries at Menie Links⁸ (Dalland and Lochrie 2009, Dalland 2010: their Appendix 2) including evidence of preserved *in situ* ground surfaces buried beneath coastal dunes and aeolian deposits of direct relevance to the Site considered here.

⁵ ScARF Palaeolithic: <http://www.scottishheritagehub.com/content/21-palaeolithic> (last accessed 14/05/2015).

⁶ NSRRF Mesolithic Period: <http://www.aberdeenshire.gov.uk/archaeology/ResearchFrameworkMesolithic.asp> (last accessed 12/05/2015).

⁷ ScARF, Mesolithic <http://www.scottishheritagehub.com/content/22-mesolithic> (last accessed 13/05/2015).

⁸ Dalland, M., Lochrie, J., (2009) <http://archaeologydataservice.ac.uk/archsearch/record.jsf?titleId=2585461>; Dalland, M. (2010) <http://archaeologydataservice.ac.uk/archsearch/record.jsf?titleId=2585462> (last accessed 12/05/2015).

- 4.6.7 Recent palaeogeographical assessments of the UK indicate that during the early Holocene, during periods of lower-than-now sea level prior to 6,000 years ago (c. 4,000 BC) there is potential for areas of coastal land exploited by early prehistoric people to have been inundated in the northeast of Scotland (Sturt *et al.* 2013). Submerged palaeolandscapes are a key element of understanding and investigating early prehistory in the UK particularly for coastal and maritime perspectives⁹.
- 4.6.8 The earliest period of maritime transport is believed to have been an important part of Mesolithic dispersal of people around Britain (Garrow and Sturt 2011), particularly around Scotland as many islands groups are now known to contain Mesolithic archaeology and would have required significant open water voyages by boat (Waddington 2015). Rivers, coasts and inshore waters of the area are likely to have been traversed by log and skin boats during the Mesolithic period¹⁰. From around 8,400 BC well-dated sites indicate that groups moved out of the southern North Sea into northeast England and southeast Scotland between Yorkshire and the Forth valley and dispersed around northern and western coasts from around 8,000 BC (Waddington 2015); probably including Aberdeenshire. The archaeological detection and survival of these kinds of maritime features is typically complex and examples from the British Isles and northern Europe are extremely rare.

Neolithic (4,100 – 2,500 BC)

- 4.6.9 There are no known Neolithic sites within the Site.
- 4.6.10 Regionally, Neolithic archaeological sites are relatively common and current distributions cluster in lowland plains and valleys with possibly increased penetration inland than seen in earlier prehistory, and with similar distributions during the early (<3,300 BC) and late Neolithic (>3,300BC)¹¹. Known archaeological sites range from timber halls such as the important early Neolithic sites at Warren Field and Balbridie¹² on opposite sides of the River Dee, flint mines, rectangular enclosures, barrows (including Round Barrows which are concentrated in northeast Scotland) and other structures reflecting key elements of later prehistoric life from settlement activity, industry, funerary monuments and agricultural practice. Some stray finds of probably later prehistoric date (Neolithic or later) have been recovered around St Fittick's Kirk (e.g. **WA 1031**, and possibly Buchanan 2009) suggesting some activity in the area.
- 4.6.11 Maritime connectivity is a key part of Neolithic development and dispersal of resources and ideas; the seaways of Scotland have received increased attention in recent years (Garrow and Sturt 2011). It is likely that maritime traffic was a feature of northern Scotland during the Neolithic.

Bronze Age (2500 – 800 BC)

- 4.6.12 Key clusters of funerary cairns, reportedly of Bronze Age date are located to the south of the Site within the area of Loirston Country Park on Tullos Hill. The monuments are located on the ridge with open views north across Aberdeen and Aberdeen Bay reflecting prehistoric tendency to place monuments in prominent locations within the landscape visible from a

⁹ ScARF Submerged Landscapes: <http://www.scottishheritagehub.com/content/2-submerged-landscapes> (last accessed 14/05/2015).

¹⁰ ScARF Mesolithic Lifestyles: <http://www.scottishheritagehub.com/content/61-mesolithic-lifestyles> (last accessed 14/05/2015).

¹¹ NSRRF Neolithic Period: <http://www.aberdeenshire.gov.uk/archaeology/ResearchFrameworkNeolithic.asp> (last accessed 12/05/2015).

¹² ScARF, Early Neolithic <http://www.scottishheritagehub.com/content/511-early-neolithic-c-3600-bc> (last accessed 13/05/2015).

distance. The clustering of the cairns may indicate they are part of a prehistoric landscape of funerary monuments.

- 4.6.13 Tullos Cairn (**WA 1044**), Baron's Cairn (**WA 1055**), Cat Cairn (**WA 1062**), Crab's Cairn (**WA 1053**) (**Plate 6, 7**) and nearby smaller cairn in Loirston Country Park (**WA 1060**) (**Plate 7**) are constructed from sub-angular glacial boulders in roughly circular plan of various sizes, Tullos Cairn and Cat Cairn having the largest area.
- 4.6.14 Crab's Cairn (**WA 1053**) was excavated and found to contain a short cist containing a funerary urn during the 18th century. The boulder built cairn is around 14m in diameter and a height of around 1.5m. The site is heavily overgrown with gorse, with access recently cleared on the northeast side (**Plate 7**).
- 4.6.15 To the northwest of Crab's Cairn, Tullos Cairn (**WA 1044**) stands on the ridge about 50m above Nigg Bay, overlooking Aberdeen to the north. The monument is a boulder built cairn, disturbed but surviving to around 20m diameter and 2m height (**Plate 6**).
- 4.6.16 To the southwest, Baron's Cairn (**WA 1055**) is located at a prominent highpoint (so much so that an OS trig point has been built through the monument) overlooking Nigg Bay, Aberdeen and to the south at around 83m elevation (**Plate 6**). Also built of boulders, the monument is around 18m in diameter and around 1.5m high.
- 4.6.17 Further southwest, a smaller cairn (**WA 1060**) is recorded to the northeast of the large, Cat Cairn (**WA 1062**). The smaller cairn, designated as a Scheduled Monument, along with a section of post-medieval consumption dyke, is reported to be built of turf and loose stones. The site is presently heavily covered in gorse (**Plate 7**).
- 4.6.18 Nearby, on Tullos Hill¹³ a bioturbated and eroded, possible roundhouse was excavated in 2010 (Suddaby 2010a, b). This is located to the north of Cat Cairn (**WA 1062**) and is also thought to be Bronze Age¹⁴ in date.
- 4.6.19 The earliest recorded logboats in Scotland date to the Bronze age, with oldest around 4,000 years old (Mowat 1996), such as the recently conserved boat from the Carpow on the Tay dating to around 1,100 BC (Strachan 2010). It is thought that boats would have been a major element of Bronze Age life in and around coasts, islands, lochs and rivers, however due to the organic materials used in their construction preservation is extremely rare in Scotland¹⁵.

Iron Age (800 BC – AD 400) and Roman (AD 77 – 211)

- 4.6.20 There are no known Iron Age sites within the Site.
- 4.6.21 Regionally, Iron Age settlements and hill forts are important features in the landscape such as the extensively investigated group of roundhouses at Kintore¹⁶ to the northwest.

¹³ <http://canmore.rcahms.gov.uk/en/site/311002/details/tullos+hill/> (last accessed 13/05/2015).

¹⁴ Tullos Hill Guide http://www.aberdeencity.gov.uk/web/files/LocalHistory/tullos_hill_guide_booklet_2013.pdf (last accessed 13/05/2015).

¹⁵ ScARF, Bronze Age; Transportation and Movement:

<http://www.scottishheritagehub.com/content/36%C2%A0-transportation-and-movement> (last accessed 14/05/2015).

¹⁶ ScARF, Kintore <http://www.scottishheritagehub.com/content/case-study-kintore-aberdeenshire-shining-light-black-hole> (last accessed 13/05/2015).

- 4.6.22 There are no known Roman sites within the Site.
- 4.6.23 Regionally, campaigns penetrating northeast Scotland through the Dee and Don skirting the Grampians and into Moray are attested by the distribution of *temporary marching camps* in Scotland (Jones 2011).
- 4.6.24 A Roman military camp has been found at Normandykes¹⁷ on the Dee near Peterculter southwest of Aberdeen and finds of Roman coins and other artefacts have been made in the area. On Ptolemy's map of Scotland of AD 145 a notable settlement is charted *Devana* 'the town of the two waters' presumably the Rivers Dee and Don indicating an important settlement at that time. Nigg and Aberdeen Bay are likely to have been traversed by inshore vessels and fishing boats. Roman naval activity may be expected in order to efficiently supply the military campaigning (e.g. Martin 1992) along riverine and estuarine routes along the Dee. More widely east coast and west coast maritime supply lines have been inferred for Scotland, particularly for supplying the Wall garrisons at Hadrian's Wall and the Antonine Wall as maritime transport was the cheapest method of moving the large quantities of materials, food and supplies to the legions campaigning in northern Britain (Martin 1992, Wessex Archaeology 2014).

Medieval (AD 400 – 1500)

- 4.6.25 There are no known medieval sites within the Site.
- 4.6.26 Locally, the motte at Balnagask (**WA 1027, Plate 3**), to the west of the Site is thought to date to around the 12th and 13th century. The artificial mound would have been crowned with a timber castle and been a prominent feature of the medieval landscape above the mouth of the Dee. The parish church of Nigg was dedicated to St Fittick around 1189 to 1199 (**WA 1030**), a 7th century Saint (St Fiacre). Elements of the walls date to the 13th century surviving the 18th century reconstruction and development of the building, including a bell-cote (1704) and weather vane (1763).

Post-medieval (AD 1500 – 1800)

- 4.6.27 St Fittick's Kirk (**WA 1030, Plate 4**), reconstructed in the 17th and 18th centuries is noted on Roy's military map of the 1750s¹⁸. Annotated as *Kirk of Nigg*, Roy's map depicts settlement along the south half of Nigg Bay. The back beach and hinterland are depicted as cultivated inland to *Churchill* [Kirkhill]. The main coastal road passes through *Coves* and *Loriston* [Loirston], and large areas of cultivated land between these two settlements, before stopping at a settlement north of *Balnagask* at the river coast. The map suggests an agricultural landscape of small settlements linked by the main north-south coast road.

19th Century (AD 1800 – 1900)

- 4.6.28 The Girdle Ness Lighthouse (**WA 1015**), built in 1833 is a well-preserved example of a Stevenson lighthouse, designed by Robert Stevenson. The lighthouse overlooks Aberdeen Harbour and Nigg Bay (**Plate 12**). The lighthouse is flanked by single-storey buildings and to the south and west by the keeper's cottages (**WA 1016**). A fog horn was added in 1876, known as the 'Torry Coo', above the cliff to the east of the lighthouse. 2nd edition OS mapping indicates further buildings within a circular feature in the plot to the southwest of

¹⁷ Normandykes Roman temporary camp <http://canmore.rcahms.gov.uk/en/site/37075/details/normandykes/> (last accessed 13/05/2015).

¹⁸ Roy Military Survey of Scotland 1747 – 55, Highland: <http://maps.nls.uk/geo/roy/#zoom=15&lat=57.1260&lon=-2.0320&layers=roy-highlands> (last accessed 13/05/2015).

the lighthouse in the late 19th, at the location of Walker Park today. Outside the western wall a series of boundary stones are depicted (**WA 1013, 1017, 1021**).

- 4.6.29 The south breakwater for Aberdeen Harbour (**WA 1000**) is located on the north side of Girdle Ness. Built in concrete between 1869 and 1874, the breakwater extends northwards with a small lighthouse at the northern seaward end.
- 4.6.30 Now demolished, Greyhope Cottages (**WA 1003**), a row of cottages once stood to the south of the Southern Breakwater, east of the Torry Battery on the site of the Balnagask Golf Course dating probably to the late 19th century. To the west, a steading and cottage at North Kirkhill (**WA 1010**) are recorded in early edition late 19th century OS mapping (1st and 2nd edition) but are not mapped after 1902. To the southeast, the site of South Kirkhill Farm (**WA 1023**) was excavated in 2012. A further steading, of four buildings, at South Kirkhill (**WA 1024**) to the south of St Fittick's Road is recorded on mid-18th century 1st Edition OS mapping, but not by the second edition in 1902. Similarly, a farmsteading to the west at Balnagask Mains (**WA 1025**) recorded on early edition OS mapping was demolished, the site now within the modern housing estate.
- 4.6.31 Several sand and gravel workings are depicted on 1902 OS mapping surveyed in the late 19th century; **WA 1005** near the Torry Battery, another 350m to the southwest (**WA 1014**) and a further workings near Victoria Road and Baxter Place, now under the site of the housing estate.
- 4.6.32 The Manse (**WA 1029**) presumably contemporary with the later phase of St. Fittick's church immediately to the west of the kirk survives as one wall. The building was depicted as roofed until the late 18th century according to 1st and 2nd Edition OS maps.
- 4.6.33 In the 19th century Nigg Bay was the site of a rifle range, mapped on the mid-19th century 1st edition OS mapping¹⁹ across the majority of the coastal hinterland and dunes on the west side of the bay. The targets and corresponding distance markers are depicted with the targets at the north end, in the position of the current Balnagask Golf course (**WA 1008**) along St Fittick's Road. In 1898 the north end of the bay from the junction of Greyhope Road was the site of the Marine Laboratory & Fish Hatchery for the Fisheries Board for Scotland (Aberdeen City Council leaflet²⁰), which is depicted on the 1899 surveyed, 1904 published 2nd edition 6" OS mapping²¹.
- 4.6.34 A vernacular slipway is located on the north side of Nigg Bay (**WA 1028**). The slipway is illustrated on 25" 1st Edition OS mapping as a cleared area of beach, surveyed in 1868. The slipway is located seaward of small building at the back of the beach above MHWS. During the Walkover Survey the slipway was observed as faced boulders embedded in the surface of beach extending at least 40m south and obscured partially by boulders and beach armouring. The upper sections near MHWS have been skimmed in concrete (presumably a later phase of use) (**Plate 9**). A number of iron fittings and holes for fittings are observed here. Anecdotally, the site is said to have been used by lobster fishermen until the 1960s (Cameron 2013). The western gable of the roofless, partly demolished building is a brick-built extension, perhaps early 20th century as depicted on 1901 25" 2nd edition

¹⁹ Kincardineshire, Sheet IV (includes: Aberdeen; Banchory-Devenick; Nigg), 6" 1st edition 1843-1882: <http://maps.nls.uk/view/74427590> (last accessed 20150514).

²⁰ Aberdeen City Council, Torry Industrial & Maritime Trail: A guide to industrial & maritime Torry: https://www.aberdeencity.gov.uk/.../torry_industrial_maritime_trail.pdf (last accessed 20150514).

²¹ Aberdeenshire Sheet LXXXVI.NE (includes: Aberdeen; Nigg): Publication date: 1904 Date revised: 1899: <http://maps.nls.uk/view/75476045> (last accessed 14/05/2015).

OS mapping; three abutting bays with porch or lean-to on seaward side (15x6m long axis facing the sea). A well is also annotated, in keeping with a number of wells marked at the seaward extent of the dunefields around Nigg Bay. The expansion of the building and augmentation of the harbour is potentially linked to the development of the marine laboratory to the west: built in 1868 and relocated in the 1920s. The vernacular slipway exhibits substantial, faceted boulder built form and is the only remaining extant element of the historic maritime/fishery heritage within Nigg Bay.

- 4.6.35 To the south of Nigg Bay, a *house* (**WA 1043**) is marked on the 1902 Admiralty chart covering Aberdeen Harbour²², located at top of cliffs on the north coast of the cove on the south side of Greg Ness. The structure was not observed during the Walkover Survey, however, a possible platform or terrace partly disturbed by the modern coastal path was noted (**Plate 11**). A rectangular feature is recorded on the OS mapping of the time²³, and may have been included as an aid to navigation for vessels approaching Aberdeen from the south. A further feature is depicted lower down the cliff on the 1901 OS mapping. A flagstaff is also noted on the Admiralty chart on the south, opposing cliff of this cove, not observed during the Walkover Survey; located outside the Site area.
- 4.6.36 A number of boundary stones are reported in the area (**WA 1007, 1009, 1012, 1017, 1021, 1027, 1033, 1038, 1041, 1046, 1049, 1051**), of which most have not been reported as surviving *in situ*. They likely date to the 18th and 19th centuries.

Modern (AD 1900 – present day)

- 4.6.37 During the early 20th century the marine lab in Nigg Bay developed substantially into a complex of buildings and tanks along the line of Greyhope Road²⁴.
- 4.6.38 The wartime heritage of the area is highlighted by the use of the Torry Battery (**WA 1002**) in both World Wars. During WWII, a range of defences were installed around Nigg Bay including anti-tank blocks (**WA 1006**) arrayed in lines along the back of the beach from a Type 22 pillbox in the south of the bay (**WA 1040**) 400m north to Greyhope Road around the marine laboratory; nothing now remains visible within the made ground seaward of the modern Sewage Treatment works. A coastal defence battery (**WA 1020**) was installed on the higher ground above the north coast of Nigg Bay, west of the boundary wall of Walker Park. The gun emplacement was associated with a camp and perimeter fence and housed two 6” guns and is visible on aerial photography of the time (**Appendix 3: Aerial photography consulted**).
- 4.6.39 To the north on the raised beach at Greyhope Bay anti-tank blocks (**WA 1006**) were also installed. Demolition debris from the blocks and elements of the Torry Battery are reportedly dumped nearby.
- 4.6.40 Further sites include another pillbox (**WA 1047**), possibly an 8-sided Type 27, on the west side of the radar station at Doonie’s Hill (**WA 1048**), with a further pillbox on the south side (**WA 1050**). To the east between Needle’s Eye and Bridge of One Hair, at the base of the cliffs, anti-tank blocks are reported (**WA 1052**), said to have been dumped as landfill. One block or other dumped material may have been placed at the top of the cliffs to the east

²² Admiralty chart 1446, Aberdeen Harbour, 1902: <http://maps.nls.uk/view/101948585> (last accessed 13/05/2015).

²³ Aberdeenshire 075.16 (includes: Aberdeen): Publication date: 1901 Revised: ca. 1900: <http://maps.nls.uk/view/82862631> (last accessed 13/05/2015).

²⁴ Aberdeenshire Sheet LXXV.SE (includes: Aberdeen): Publication date: 1928 Date revised: 1923: <http://maps.nls.uk/view/75475874> (last accessed 14/05/2015).

(background upright stone in **Plate 10**) but the area was not accessible to verify the nature of the stone during the Walkover Survey and may be a boundary stone on the promontory, seaward of another (**WA 1051**) array of large rectilinear detritus is visible on modern aerial photography on the east side of the promontory.

- 4.6.41 A memorial cross dedicated to the memory of 'Seafarers Lost At Sea' (**WA 1004**) is located west of the Torry Battery.
- 4.6.42 The high-rise blocks at Balnagask South (**WA 1032-36**) were built from the late 1960s, located to the west of the Site.

Undated

- 4.6.43 The Aberdeen South Ordnance Survey Fundamental Bench Mark (**WA 1001**) is located to the south of the South Breakwater (**WA 1000**), seaward of Greyhope Road.
- 4.6.44 Rig and furrow is recorded in areas of Balnagask Golf Course (**WA 1011**), it is likely of post-medieval date but may be earlier.

4.7 Seabed Features Assessment

- 4.7.1 A full geophysical survey data assessment of the offshore part of the Study Area was undertaken by WA and the results discussed below. The complete results are presented in gazetteer format in **Appendix 4: Seabed Features of Archaeological Potential** and the distribution of identified anomalies illustrated in **Figure 4**.
- 4.7.2 Fifteen anomalies were identified by WA in the 2012 sidescan sonar and bathymetry datasets. A number of these have been interpreted during the anomaly grouping and discrimination stage of analysis to be probable natural seabed features such as boulders and cobbles on the seabed. Nine of these have been identified as being of potential archaeological interest within the Study Area. Additionally, 27 magnetic anomalies identified by Coastline are present within the Study Area, some of which are the result of grouping by WA of more than one previously recorded anomaly.
- 4.7.3 As such, a total of 36 features of possible archaeological potential have been identified within the Study Area by WA, 19 of which are within the site boundary and 17 of which are within the 500m buffer zone. These anomalies have been discriminated as follows:

Table 8: Anomalies of Archaeological Potential within the Study Area

Archaeological Discrimination	Number of Anomalies	Interpretation
A1	0	Anthropogenic origin of archaeological interest
A2	36	Uncertain origin of possible archaeological interest
A3	0	Historic record of possible archaeological interest with no corresponding geophysical anomaly
Total	36	

- 4.7.4 Furthermore, these anomalies can be classified by probable type, which can further aid in assigning archaeological potential and importance.

Table 9: Types of Anomalies Identified within the Study Area

Anomaly Classification	Number of Anomalies
Debris	4
Dark Reflector	4
Mound	1
Magnetic	27
Total	36

- 4.7.5 Four possible pieces of debris have been identified within the Study Area. Of these, one (**WA7004**) was identified in the SSS data only, measuring 16.3 x 4.3 x 0.3m, and is possibly a partially buried piece of non-ferrous debris, as no associated magnetic anomaly was identified by Coastline.
- 4.7.6 The remaining three pieces of debris (**WA 7005**, **WA 7006** and **WA 7007**) were identified in the multibeam bathymetry data only, relatively close to each other in an area outside of the SSS coverage. These are generally rectangular in appearance, range from 2.8 x 1.5 x 0.2m (**WA 7007**) to 5.2 x 2.4 x 0.4m (**WA 7005**) in size, and are located in an area of possibly scoured gravelly seabed. The location of these anomalies close to the beach suggests they may have been washed into the sea from the shore. These anomalies are located beyond the limits of the SSS survey, and presumably magnetometer survey, and so no further information is available.
- 4.7.7 One anomaly classified as a mound (**WA 7008**) has been identified within the multibeam bathymetry data only. This is a distinct, isolated feature measuring 4.2 x 2.5 x 1.5m and could be a large isolated boulder or a piece of debris. The anomaly is located beyond the limits of the SSS survey, and presumably magnetometer survey, and so no further information is available.
- 4.7.8 Four dark reflectors (**WA 7000**, **WA 7001**, **WA 7002** and **WA 7003**) have also been identified within the Study Area and are classified as being an A2 archaeological potential rating. These are anomalies of uncertain nature and origin, and could either be pieces of debris or natural features. They were identified within the SSS data only, and were not associated with any magnetic anomalies identified by Coastline, and so any debris that may be present at these locations is likely to be non-ferrous.
- 4.7.9 The 27 magnetic anomalies identified by Coastline in the 2013 magnetometer survey (Coastline 2013) have been mapped in GIS and incorporated into this assessment by WA. These range in amplitude between 6nT (**WA 7032**) and 1341nT (**WA 7018**), with an additional two anomalies (**WA 7010** and **WA 7012**) being >100nT in amplitude (190nT and 134nT, respectively).
- 4.7.10 No associated SSS or multibeam bathymetry features have been identified with these anomalies, and so they could represent pieces of buried ferrous debris. However, without access to the data from which these anomalies were picked, this is difficult to determine and they could have been caused by other factors.
- 4.7.11 For example, the Dalradian bedrock known to be present at shallow depth within the Study Area (**Section 3.4**) contains numerous igneous intrusions (Gatliff *et al.* 1994). Localised changes in bedrock such as this can cause magnetic anomalies, but without access to data

it is not possible to tell whether the identified anomalies are likely to relate to ferrous debris or natural features.

- 4.7.12 Finally, a number of RCAHMS wreck records are located with the Study Area, none of which were identified within the geophysical data (**Appendix 6: Reported Losses**). These records are all 'Reported Losses' associated with 'Named Locations' of navigational hazards – general positions given to anecdotal evidence of vessel strandings/losses etc. and not the positions of actual, previously identified wrecks. No actual wreck records from the UKHO database are present within the Study Area. As they do not represent the locations of structural remains, these records are not included in the geophysical results.

4.8 Palaeogeographic Assessment

- 4.8.1 The SBP data were interpreted and correlated with the provided geotechnical logs, the locations of which are illustrated in **Figure 5**. Four shallow geological units were identified within the Study Area, which are as follows:

Table 10: Shallow Geological Units Identified within the Study Area

Unit	BGS Formation	Description	Archaeological Potential
Unit 4	Quaternary	Gravelly sands and sandy gravels, Holocene seabed sediment.	Moderate / Low
Unit 3	Forth Formation (St. Andrew's Bay Member) (Possibly)	Gravelly sands and sandy gravel with cobble sand boulders, possible Late Devensian/Early Holocene glacial outwash deposit.	Moderate
Unit 2	Wee Bankie Formation	Late Devensian glacial till.	Low
Unit 1	Dalradian Bedrock	Late Precambrian igneous and metamorphic bedrock.	Low

- 4.8.2 The oldest unit (**Unit 1**) was clearly identified within the SBP data and the assessed borehole logs (Soil Engineering 2013), and is a sequence of igneous (granite) and metamorphic (schist and gneiss) bedrock. This is attributed to the Dalradian supergroup; an extensive regional geological formation present north of the Highland Boundary Fault and of Late Precambrian age (Gatliff *et al.* 1994). Due to the age of this formation, Unit 1 is not of archaeological potential.
- 4.8.3 Two major shallow geological features have been identified within the Study Area. The first is a large, distinct valley feature trending east-west across the Study Area, which was identified along most of the SBP survey lines (**Figure 6, Figure 7**). This feature is relatively steep-sided with an irregular base and is relatively well-defined within the data, although it extends below the seabed multiple on most lines and so the depth of the feature is unknown. Borehole information has shown the feature to be filled with glacial till (**Unit 2**). The logs indicate possibly two phases of till with a sandy partition, and a gravelly base.
- 4.8.4 The valley feature interpreted as a glacial feature, most likely an offshore extension of the glacial valley present to the west of Nigg Bay and which contributes to the presence of the bay itself. The glacial till potentially correlates with the offshore Wee Bankie Formation, and, as such, would be of Late Devensian age (Gatliff *et al.* 1994). As a glacial till deposit, **Unit 2** is considered of low archaeological potential.

- 4.8.5 Overlying **Unit 2**, and extending to cover some areas of the surrounding **Unit 1**, is an extensive deposit identified on most of the SBP survey lines filling an almost bowl-like depression within the Study Area (**Unit 3, Figure 6, Figure 7**). This unit is characterised in the SBP data by a relatively gentle, low-relief surface and fill containing sub-parallel internal reflectors. Borehole data indicate this fill to comprise gravelly sand and sandy gravel, with localised areas containing numerous cobbles and boulders.
- 4.8.6 This is interpreted as being a possible glacial outwash deposit, created during melting and inland retreat of the Devensian ice sheet, and possibly correlates to the offshore St. Andrews Bay Member of the Forth Formation (Gatliff *et al.* 1994). This indicates **Unit 3** is potentially of Late Devensian/Early Holocene age, and could potentially have provided a surface upon which Prehistoric human communities could have lived between the Last Glacial Maximum (LGM) and the Holocene marine transgression. However, the nature of the sediments is not generally favourable for artefact preservation, and any remains are likely to comprise lithic artefacts, possibly *in-situ* but more likely to be in a secondary context. As such, **Unit 3** is considered to be of moderate archaeological potential.
- 4.8.7 The shallowest identified unit within the Study Area is **Unit 4**, which forms a blanket deposit over the other units wherever the bedrock is not outcropping at seabed. This is a relatively thin deposit of gravelly sand and sandy gravel generally estimated to be up to 2m thick, although the similarity with the underlying **Unit 3** has made it very difficult to definitively determine the thickness. In some boreholes a thin gravel layer, which could represent a transgression deposit, appears to mark the base, though this is not consistent across the Study Area.
- 4.8.8 This is interpreted as the modern seabed sediment, although it is likely to be comprised at least in part by reworked sediment from **Unit 3**. Seabed sediments in themselves are not generally of high archaeological potential, although they can bury and help preserve previously recorded and unknown sites such as wrecks. Due to this, and the potential for reworking of lithic artefacts from within **Unit 3** into a secondary context, the archaeological potential of **Unit 4** is considered to be moderate to low.
- 4.8.9 No other palaeogeographic features of archaeological potential were identified from within the Study Area. As Nigg Bay appears to have once been the original mouth of the River Dee before it was diverted further north and through what is now Aberdeen, it was considered that other features may have been likely.
- 4.8.10 The data suggests that any major river that once flowed through the valley between Nigg Bay and the River Dee deposited sufficient glacial outwash sediments to block the water course and divert the river northwards early on in its development.
- 4.8.11 At present, there is a small water outflow into Nigg Bay from a maintained channel, which could be a channelised route of a pre-existing stream. However, if this feature did exist prior to the development of the area, no evidence for it has been identified within the SBP or borehole data.

4.9 Assessment of survival and previous impacts

Previous impacts

- 4.9.1 The preservation of archaeological material *in situ* will be linked, at a given location, to the extent to which 20th century modifications to the Nigg Bay coastal hinterland and dunefield area have removed earlier deposits. The area has been subject to substantial, made-ground emplacement, road construction, golf course construction, wartime development and more recent outflow works at the beach for the Waste Water Treatment plant. It is unclear to what

extent some of this development would have required major groundworks which would have entirely removed earlier material. Disturbance to buried archaeological remains that may be present would be concentrated in these areas.

- 4.9.2 In other areas primarily under agriculture such as Loirston Country Park around St Fittick's Kirk, disturbance would be largely restricted to truncation caused by ploughing; this disturbance might be assumed to be quite low level. Further disturbance may have been caused by works undertaken to canalise the burns draining into Nigg Bay during the post-medieval period, recorded on early edition OS mapping.
- 4.9.3 Substantial modern coastal protection engineering is evident around Nigg Bay, primarily concrete and boulder armouring on the north coast from the car park, around to the historic slipway (**WA 1028**) and built-up made ground installed to protect the SSSI on the south coast. More recent development of Balnagask Golf Course has also landscaped large areas of Girdle Ness between St. Fittick's Road and Greyhope Road.
- 4.9.4 It is anticipated that, as parts of the Site have been historically developed (linked to the 19th century rifle range and subsequent marine laboratory) and more recently, in a landscape that was previously agricultural, disturbance may be expected to be highly variable across the Site.

Potential for Early prehistory

- 4.9.5 Previous archaeological events on the beach (Cameron Archaeology 2013) suggested that under the made ground, beach armouring and Holocene beach deposits there was survival of the underlying Quaternary deposits indicating the scope for the preservation of early prehistoric sedimentary context. There is some potential for encountering early prehistoric artefacts, sites and material within the marine area of the Site (**Figure 6, 7**); however this may be in reworked contexts. Potential may therefore be greatest within the beach area of the Nigg Bay where disturbance to underlying deposits has not been comprehensive. Any material of early prehistoric age would be regarded as **high** significance.

Potential for Later prehistory

- 4.9.6 There is potential for encountering sites, artefacts and material from all periods of prehistory in the area, perhaps especially of Bronze Age date judging by the importance of Tullos Hill during later prehistory.

Potential for historical archaeology

- 4.9.7 Sites of medieval, post-medieval, and more recent centuries are well represented in the local area, and there is corresponding potential for encountering further finds and archaeology with no surface expression within Nigg Bay generally.

Potential for maritime and aviation archaeology

- 4.9.8 A number of seabed anomalies have been identified within the Site (**Figure 4**) as debris, magnetic anomalies etc. and have the potential to represent elements of wrecking events or material lost over the side of vessels (or have reached the seabed through other processes of discard).
- 4.9.9 Nigg Bay, as a natural harbour, is likely to have been used as a landing place for small vessels, with the 19th century slipway (**WA 1028**) as recent evidence for this. However this use may well extend much further back in time. The activity in and around the bay associated with the marine laboratory and hatchery may also have contributed to the archaeological record on the seabed. More generally, as a centre for maritime activity linked to historic trade, and more recently industrial uses, the coasts around Aberdeen and the



mouth of the Dee will have seen high concentrations of marine traffic particularly during and after the industrial revolution when shipping greatly increased and metal-hulled vessels became dominant. Navigational hazards around these coasts and poor weather conditions are likely to have contributed to a great many losses, strandings and wreckings along this coast including Nigg Bay. A significant number of reported losses are associated with this stretch of coastline, compiled in **Appendix 6: Reported Losses**. The vessels, mainly post-medieval and 19th century date are known to have been lost but accurate positions are not known as they were lost in a period prior to accurate methods of positioning or in some cases the wrecking events happened out of sight of land. Many are likely to have been wooden vessels which are harder to detect with geophysical sensors, especially if buried beneath a protective cover of seabed sediments. Due to the sandy seabed across much of Nigg Bay, if present, unknown wrecks and associated material may be well-preserved.

- 4.9.10 Similarly, due to the concentration of wartime activity around Aberdeen, Luftwaffe bombing raids and anti-aircraft installation in the area there is the potential for unknown aircraft wrecks generally across the area; a number of search and rescue missions are known for the area during World War 2 (Wessex Archaeology 2008). Due to the largely non-ferrous construction of military aircraft of the period (perhaps only the engine blocks) and relatively ephemeral nature of aircraft crash sites, unknown material associated with aircraft and crash sites themselves maybe buried within seabed sediments or dispersed over a wide area. Military aircraft are considered war graves under the PMRA 1986 and receive automatic legal protection.

5 POTENTIAL DEVELOPMENT EFFECTS - PHYSICAL IMPACTS

5.1 Introduction

5.1.1 This section provides an initial assessment of the likely effects of the proposed development in relation to elements of the historic environment resource that may be subject to physical impacts (**Figure 8**). The following predictions as to the likely effects of the proposed development are based upon the latest iteration of the draft design proposals (Q2582_VIA1_Layout_6_RevA).

5.2 Summary of known and potential historic environment resource

5.2.1 The following table (**Table 9**) presents a summary of the known and potential elements of the terrestrial (**Figure 8**) and maritime (**Figure 9**) historic environment resource within the Site and its immediate vicinity, which could be physically affected by the development proposals, based on the information presented in **Section 4**.

5.2.2 Entries in the table are assigned a '*Potential*' rating, which represents a measure of probability. This has been determined via the application of professional judgement, informed by the evidence presented in the preceding sections of this assessment. '*Potential*' is expressed on a four point scale, assigned in accordance with the following criteria:

- **High** Situations where heritage assets are known or strongly suspected to be present within the Site or its vicinity and which are likely to be well preserved.
- **Moderate** Includes cases where there are grounds for believing that heritage assets may be present, but for which conclusive evidence is not currently available. This category is also applied in situations in which heritage assets are likely to be present, but also where their state of preservation may have been compromised.
- **Low** Circumstances where the available information indicates that heritage assets are unlikely to be present, or that their state of preservation is liable to be severely compromised.
- **Unknown** Cases where currently available information does not provide sufficient evidence on which to provide an informed assessment with regard to the potential for heritage assets to be present.

5.2.3 The '*Value*' of known and potential heritage assets included in **Table 11** has been determined in accordance with the criteria set out in **Section 3.2**.



Table 11: Summary of known and potential historic environment resource within the Site

Potential	Period and Description	Value	Previous impacts
High	<p>19th century</p> <p>Vernacular slipway (WA 1028), north side of Nigg bay. Possibly illustrated on 25" 1st edition OS mapping as cleared area of beach, in 1868, seaward of small building at back of beach above mean high water recorded at this location. Slipway observed as faced boulders embedded in surface of beach extending at least 40m south. Obscured partially by boulders and beach armouring. Upper sections near MHWS have been skimmed in concrete (presumably a later phase of use). A number of iron fittings and holes for fittings are observed here. Anecdotally said to have been used by lobster fishermen until the 1960s (Cameron 2013). Western gable of roofless, partly demolished building is a brick-built extension, perhaps early 20th as depicted on 1901 25" 2nd edition OS mapping; three abutting bays with porch or lean-to on seaward side (15x6m long axis facing the sea), a well is also annotated. Potentially linked to the development of the marine laboratory nearby. Vernacular slipway exhibits substantial boulder built form and is the only remaining extant element of the bays historic maritime/fishery heritage.</p> <p>The associated building is not presently located within the development layout; however it is within 5m.</p>	<p>Medium:</p> <p>The slipway and adjacent building dates to at least the 1st Edition OS map, c. mid-19th century and is a well-preserved example of a vernacular slipway built in faced, set onto the bedrock coastline; reflecting the local fishery tradition and vernacular landing places, the understanding of which are identified as national research priorities²⁵. It is likely to have been maintained and used during the late 19th century and early 20th century associated with the Marine Laboratory and hatchery nearby (1868-1927), and may have been used by local fishermen into the mid-20th century. As the last remaining <i>in-situ</i> element of this fishing heritage within Nigg Bay, it is judged to have regional significance.</p>	<p>Early 20th century additions to slipway – concrete skim over upper sections of the boulder-built structure beneath. May be considered as a beneficial impact as likely to have protected upper section at MHWS.</p>

²⁵ ScARF, Marine & Maritime panel, Theme 3, Research recommendations: <http://www.scottishheritagehub.com/content/35-research-recommendations> (last accessed 15/05/2015).



Potential	Period and Description		Value	Previous impacts
High	18 th -19 th century	The buildings or houses (WA 1043) depicted on 2 nd edition OS mapping and 1902 Admiralty chart on the south side of Greg Ness are in close proximity to the southern breakwater for the proposed development. Platforms for these features are observed at the coast. The floors and lower courses of the buildings remain <i>in situ</i> ,	Low: The buildings may reflect post-medieval dwellings or coastal buildings used to fishing, agriculture or other purpose. The buildings have not been recorded previously by the NMRS but are known to have existed over a century ago.	The modern coastal path may truncate the northern building platform at the top of the cliffs.



Potential	Period and Description		Value	Previous impacts
High	Unknown	<p>Maritime: A2 – Uncertain Origin of Possible Archaeological Interest (Figure 4).</p> <p>A range of seabed anomalies of unknown origin of possible archaeological interest have been identified within the marine geophysical data. Some of these anomalies may represent unknown maritime or aviation wrecks, debris and other cultural heritage. Some may be natural features. Without additional, detailed examination it is not possible to identify these anomalies further.</p>	<p>National/High: A precautionary approach to considering unknown, potential archaeological receptors demands that a high potential value be applied prior to ground investigation.</p> <p>The significance of individual receptors if identified will range across the criteria set out in Section 3.</p>	Seabed processes, Unknown anthropogenic impacts.
Moderate	Early prehistory to modern	<p>There is potential for encountering unknown cultural heritage assets within the Site. Nigg Bay is a natural harbour within an area of rich cultural heritage of prehistoric, historic and modern importance. It is judged that there is moderate potential for encountering buried archaeological artefacts and sites.</p> <p>However, this is tempered by the historic and modern development in the Bay including substantial modification of the back beach and dunefield area of Nigg Bay and the considerable volumes of made ground that are widely distributed around the Site. The extent to which this modification has removed any potential archaeological deposits is unknown, however they may be buried under thicknesses of concrete debris, landfill and made ground.</p>	<p>National/High: A precautionary approach to considering unknown, potential archaeological receptors demands that a high potential value be applied prior to ground investigation.</p> <p>The significance of individual receptors if identified will range across the criteria set out in Section 3.</p>	<p>Modification of Nigg Bay coastal geomorphology.</p> <p>Historic development associated with rifle range and marine laboratory in 19th century. 20th century landfill and emplacement of made ground and coastal engineering (i.e. at car park) and beach armouring.</p>



Potential	Period and Description		Value	Previous impacts
Low	18 th / 19 th century	Boundary stone (WA 1033) marked on 1 st and 2 nd edition OS mapping. However, during recent RCAHMS visit (2002) and Walkover Survey, the stone was not observed. Feature may have been removed, buried or fallen, obscured by verge emplacement along roadside.	Low	Construction of Greyhope Road.
	20 th century	Anti-tank blocks (WA 1037). A line of WW2 anti-tank blocks was installed running from pillbox (WA 1040) in south of Nigg bay to Greyhope Road. Removed following the end of the war.	Low	Removed post-war. Some residual may be present but likely to have been disturbed by subsequent landfill, made ground and considerable modifications made to the back beach area of Nigg Bay during the latter 20 th century.
	20 th century	The site of type 22 pillbox (WA 1040) emplaced in the south of Nigg Bay lies close to the perimeter of the proposed development. Removed post-war. The extent of this feature is not known and may extend into the proposed development area.	Low	Removed post-war. Some residual remains may be present but are likely to have been disturbed by subsequent landfill, made ground and considerable modifications made to the back beach area of Nigg Bay during the latter half of the 20 th century.
Unknown	18 th / 19 th century	In addition, close to the perimeter of the proposed development an additional boundary stone (WA 1038) is marked on early edition OS mapping. It is unclear whether this feature survives. RCAHMS visit did not observe the feature, located near or under the Coast Road.	Low	Modern construction of Coast Road.



Potential	Period and Description		Value	Previous impacts
Unknown	Marine area: Early prehistory (Mesolithic)	<p>The palaeogeographical assessment of Nigg Bay identified low to moderate potential for encountering archaeological and palaeoenvironmental resources within the submerged palaeolandscape features located beneath the seabed.</p> <p>There is potential for encountering <i>in situ</i> artefacts and archaeological deposits within Units 3 and 4 however, due to the reworked nature of the sediments recovering artefacts and other materials <i>ex situ</i> is judged more likely.</p>	<p>High: Archaeological material of early prehistoric date, specifically Mesolithic and Late Upper Palaeolithic are regarded as being of high value. This is in part due to the rarity of these cultural heritage assets as well as their small size and generally ephemeral nature of the resource.</p> <p>Artefacts in secondary contexts, i.e. stray finds or reworked into other contexts are still important and help to define the general archaeological potential of river catchments. Such material is subject to reporting through Protocols for Archaeological Discoveries.</p>	<p>Fluvial and marine reworking of seabed sediments and underlying sedimentary units.</p> <p>Anchoring or seabed disturbance by jack-up vessels, dredging or other processes of seabed disturbance.</p>

5.3 Statement of likely impact

Designated heritage assets

- 5.3.1 The implementation of the development proposals would result in no physical impacts to any designated heritage assets. The potential for the development proposals to affect the settings of designated heritage assets is explored in **Section 6**.

Unknown Archaeological remains

- 5.3.2 The implementation of the Proposed Development is anticipated to entail the following sources of ground disturbance and excavations (**Figure 8**); comprising direct and indirect physical impacts, arising from:

- *Preliminary site investigation works;*
- *Marine dredging (of areas to -9 m and to -10.5 m Chart Datum, entrance channel, south-western dredge line);*
- *Quay construction;*
- *Breakwater construction;*
- *Solid quayside construction;*
- *Suspended deck quayside construction;*
- *Construction of access tracks, roads or routes and diversions;*
- *Setting up a secure construction compound;*
- *Plant movement;*
- *Topsoil stripping;*
- *Piling and/or excavation of new foundation trenches and monopiles;*
- *Installation of services, drainage and other infrastructure (i.e. gatehouse, substation, welfare facilities, as well as mud, fuel and water tanks);*
- *Establishment of new car parking areas, roads and access points;*
- *Hard and soft landscaping works (levelling, remodelling);*
- *Environmental enhancement works, including planting;*
- *Erection of perimeter fencing, lighting (i.e. leading lights) and CCTV;*
- *Works to existing outfalls or intakes within the development site;*
- *Construction of temporary batching plants and fabrication areas; and*
- *Drainage works.*

- 5.3.3 The aforementioned works have the potential to result in the damage to or loss of any buried archaeological features which may be present within their footprint. This could in turn result in a total or partial loss of significance of these heritage assets (**Figure 8, Table 11**).

- 5.3.4 Any negative impact to buried archaeological features would be permanent and irreversible in nature. Potential effects could be reduced through the implementation of an appropriate scheme of archaeological mitigation.

- 5.3.5 The elements of the development proposals which have the greatest potential to remove subsurface archaeological features (should any such remains be present within the Site) would be likely to be associated with the main construction areas such marine dredging,

ground preparation for quaysides and sites of buildings and other infrastructure, tanks and supply trench.

- 5.3.6 Should substantial landscaping or levelling works be required in order to prepare the site, these activities could also result in widespread truncation of any archaeological remains present within the working areas. However, due to the thicknesses of made ground and landfill across the site the impact of this may be significantly reduced.
- 5.3.7 The magnitude of likely physical impacts to unknown archaeology and cultural heritage assets if encountered, both onshore and offshore, is judged to be of **major magnitude**. The receptors, based on a precautionary approach for considering unknown, buried archaeology, are judged to be of **high value**. Therefore, without mitigation, the effects upon these cultural heritage receptors are judged to be of **major adverse significance**.

Non-designated built heritage

- 5.3.8 The proposed development will directly impact the vernacular slipway on the north coast of Nigg Bay (**WA 1028**) (**Figure 8**) which is likely to be at least permanently buried or completely destroyed under the north quay. However the adjacent roofless building may remain in situ.
- 5.3.9 The magnitude of likely physical impacts to this receptor is judged to be of **severe magnitude**. The slipway (**WA 1028**) is judged to be of **regional sensitivity** and **medium value**. Therefore, without mitigation, the effects upon this cultural heritage receptor are judged to be of **major adverse significance**.

Maritime and Aviation archaeology

- 5.3.10 The proposed marine dredging and construction of quays and breakwaters is likely to interact directly with identified seabed anomalies of possible archaeological interest (**Figure 9**).
- 5.3.11 The magnitude of potential physical impacts to these receptors is judged to be of **major magnitude**. The receptors, based on a precautionary approach for considering unknown, buried archaeology, are judged to be of **high value**. Therefore, without mitigation, the effects upon these cultural heritage receptors are judged to be of **major adverse significance**.

Historic Landscape Character

- 5.3.12 The proposed development will add additional examples of **Navigation, Maritime, Recreation** and **Industry** land-use that currently characterises Aberdeen Harbour and the marine areas off Nigg Bay.

6 POTENTIAL DEVELOPMENT EFFECTS - SETTINGS OF HERITAGE ASSETS

6.1 Introduction

6.1.1 This section presents an assessment of the likely effects of the development in relation to the settings of heritage assets, in accordance with the methodology set out in **Section 3.2**. Illustration of viewpoints is provided by [Figure 10a – 10e] in Appendix 7: Photomontages. The locations were selected by Wessex Archaeology following the site visits. Further methodology on the production of the photomontages is set out in Chapter 17: Seascape, Landscape and Visual Effects - Photographs and Panoramas section. These photomontage visualisations of intervisible areas of the development (green outlines) including modelled vessels (orange outlines) have been prepared to inform the assessment of setting effects. Areas not intervisible with the viewpoint are shown in red outline.

6.2 Overview

6.2.1 Due to intervening topography, vegetation, and modern buildings and structures between many of the designated heritage assets within the Study Area and the Site, it is anticipated that non-visual effects arising from the proposed development would not result in any negative impacts to the settings of these assets particularly to the Scheduled cairns on Tullos Hill to the southwest, comprising Cat Cairn (**WA 1062, Figure 10d**), Loirston Country park cairn (**WA 1060, Figure 10c**), Baron's Cairn (**WA 1055**), Crab's Cairn (**WA 1053, Figure 10e**) and Tullos Cairn (**WA 1044**); and the Torry Battery located to the north (**WA 1002, Figure 10b**). Additionally, views towards the site form Balnagask motte (**WA 1026**) are screened by local mature trees and the intervening housing estate (**Plate 3**).

6.2.2 The Site is located between the relative high topography of Girdle Ness and Greg Ness, at sea level. This restricts views towards the Site from the sea. Views towards the Site from the land are restricted to the immediate coasts of Nigg Bay, south side of Girdle Ness and north side of Greg Ness. Views from the eastern edge of Balnagask and St Fittick's Church have unrestricted views towards the Site. There are more-restricted views from St Fittick's Community Park to the southwest of the Site. Views beyond this immediate area are judged to be screened fully or partly by topography, intervening built-up areas such as Aberdeen Harbour and housing around Balnagask.

6.2.3 Two designated cultural heritage assets are judged to have unrestricted views of the Site at relatively close proximity (**Figure 2**). These comprise:

- *Girdle Ness Lighthouse, Greyhope Road, including Fog Signal at South Site at NJ 9274 0530 (Category A-listed structure), WA 1015, 1018*;
- *St Fittick's Church, Aberdeen (Scheduled Monument, also Category B-listed structure, WA 1030, Figure 10a)*.

6.2.4 Views towards the Site from the Girdle Ness Lighthouse Fog Horn (**WA 1018**) east of the Lighthouse are considered as partially screened by the headland of Girdle Ness with the seaward half of Nigg Bay potentially visible.

6.2.5 A further five Scheduled Monuments, the group of cairns on Tullos Hill, Loirston Country Park are considered here together as possible relict funerary landscape of likely Bronze Age date. The views towards the Site are partly screened by intervening topography, vegetation and industrial features. These designated cultural heritage assets comprise:

- *Tullos Cairn, cairn (Scheduled Monument, WA 1044)*;
- *Crab's Cairn, cairn (Scheduled Monument, WA 1053)*;

- *Baron's Cairn, cairn (Scheduled Monument, **WA 1055**);*
- *Loirston Country Park, cairn and dyke 220m NE of Cat Cairn (**WA 1061**) (**Plate 7A**); and,*
- *Cat Cairn, cairn (**WA 1063**) (**Plate 7**).*

6.2.6 Views towards the proposed development from the scheduled monuments, Torry Battery (**WA 1002**) (**Plate 2**) and Balnagask motte (**WA 1026**) (**Plate 3**) are screened by intervening topography and vegetation, and in the case of Balnagask motte, additionally, intervening modern housing. In the case of the Torry Battery (**WA 1002**), the key view from this monument was judged to comprise the view to the north, reflecting the military aspect of the site to provide cover across the mouth of the Dee and Aberdeen Harbour. Potential impacts to their setting are not considered further.

6.2.7 The setting of the various designated cultural heritage receptors considered here reflect a range of archaeological and historical periods from Bronze age relict funerary landscape (the Scheduled monuments on Tullos Hill), medieval and post-medieval ecclesiastical landscape (St Fittick's Church) and 19th century maritime, navigational landscape and seascape (Girdle Ness Lighthouse and Fog horn). The settings of monuments and buildings associated with each of these themes are not interrelated and are considered here independent of each other. I.e. the setting of the cairns on Tullos Hill are not defined by St Fittick's Church, or Girdle Ness Lighthouse and vice versa, nor is the setting of Girdle Ness Lighthouse defined by intervisibility between St Fittick's Church or the Scheduled Monuments on Tullos Hill.

6.3 Scheduled Monuments on Tullos Hill, Loirston Country Park

The assets and their setting

6.3.1 Tullos Hill is located to the southwest of Nigg Bay and comprises a high point within the immediate vicinity. Forming a ridge running northeast-southwest much of the area is relatively open heathland punctuated by areas of dense stands of trees, gorse and other scrubby vegetation. There are notable gullies and the surface of the ground is notably undulating. Comprising Loirston Country Park, the area is criss-crossed by public footpaths allowing access to the heathland and the archaeological monuments located therein. The southeastern flanks of Tullos Hill are constrained by the industrial estates around Peterseat and Altens and the northeast tip, at Doonie's Hill, historically farmland and a quarry, is now reinstated landfill (not publically accessible and surrounded by high security fencing).

6.3.2 The Scheduled Monuments; Tullos Cairn, (**WA 1044**), Crab's Cairn (**WA 1053**), Baron's Cairn (**WA 1055**), Loirston Country Park cairn (**WA 1061**), and Cat Cairn (**WA 1063**) are located along the top of the ridge and defined highpoints along the ridge along the northeast-southwest axis of ridge. Open views are generally to the north and northwest, and south and southeast. Views towards Nigg Bay, Girdle Ness and Greg Ness are generally interrupted by the summit of Tullos Hill and other intervening local topography. To the east of the sites the sea is visible on the horizon and it is possible to understand the proximity of this general location to the sea.

Contribution of the setting to the significance of the asset

6.3.3 The Scheduled Monuments on Tullos Hill, in Loirston Country Park are considered of **National Significance**.

6.3.4 It is often observed that prehistoric funerary monuments, such as the cairns in question, appear to have been deliberately sited in order to maintain lines of sight with other contemporary monuments, settlements and/or landscape features. The location of these

funerary cairns at prominent high points along Tullos Hill is in keeping with this, and there is intervisibility between several of the cairns, particularly with Baron's Cairn (**WA 1055**) at a high point within the centre of the clustered cairns.

- 6.3.5 Key views towards the monuments are likely to have been most visible from the north and northwest. Views from Nigg Bay are likely to have been interrupted if visible at all, purely on topographic screening.

Potential effects of the proposed development

- 6.3.6 Tullos Hill cairn (**WA 1044**), at a distance of around 750m southwest of the Site, is screened by nearby intervening topography on Tullos Hill (**Plate 13**).
- 6.3.7 The view from Crab's Cairn (**WA 1053**) located around 800m south of the Site, is entirely screened by the adjacent security fencing around the landfill site on the northeast of Tullos Hill and particularly by intervening topography to the north (**Plate 13**).
- 6.3.8 Baron's Cairn (**WA 1055**) is located around 1.1km southwest of the Site. The cairn occupies a notable high point, and has been disturbed by the construction of an Ordnance Survey trig point (**Plate 5C**). Of all the Monuments within this cluster, this location has the most uninterrupted views towards Nigg Bay at a distance of just over 1km to the northeast. However, only the upper half of the Girdle Ness cliffs above Nigg Bay is visible from the monument, the coastline including the Site is screened by intervening topography. The upper decks of large ships using the proposed north quay may be visible from this location (**Plate 13**).
- 6.3.9 Views north from Loirston Country Park cairn (**WA 1060 (Plate 13)**) at a distance of 1.7km to the southwest of the Site, and Cat Cairn (**WA 1062**) at a distance of 1.9km southwest of the Site (**Plate 13**) are screened towards to Site by intervening topography and vegetation. The cupola of Girdle Ness Lighthouse is just visible at a distance of up to 2.7km and 2.9km, respectively indicating that the proposed quays, buildings and maritime traffic associated with the Site would not be visible from these locations.
- 6.3.10 Generally then, there will be no or minimal intervisibility from any of the cairns and the ability to appreciate the proximity of the group of monuments to the sea will not be affected. The Site is not located within key views to and from the Scheduled Monuments on Tullos Hill, and potential intervisibility of structures and maritime traffic is likely to be partially visible at only one location (Baron's Cairn). It is therefore judged that likely effects on the setting of the monuments would be of **negligible magnitude**.
- 6.3.11 The Scheduled Monuments on Tullos Hill are judged to be of **high value**. Therefore, without mitigation, setting effects to these Cultural Heritage Receptors are judged to be of **negligible significance**.

6.4 St Fittick's Church (WA 1030)

The asset and its setting

- 6.4.1 The Category B-listed Church and Scheduled area around the structure and churchyard is located around 250m west of Nigg Bay. The Church is related to surrounding cemeteries and the principal component of the setting of the receptor is considered to be the largely agricultural landscape around the church itself. Although there are several noticeably modern elements within this area including roads, streetlights and the waste water treatment plant, most of the landscape is greenspace. The church is built on the east-facing sloping ground that leads down towards Nigg Bay and has clear views across the bay constrained between the rocky headlands of Girdle Ness and Greg Ness (**Plate 4**). This bay

is currently largely undeveloped with few modern elements visible in views in this direction apart from a modern E-W orientated road and associated streetlights. This view to the east is considered to be a key view of the setting of the church. A second key view exists across the site from the north of the Scheduled area from the churchyard's modern entrance, encompassing the churchyard, the church itself and Nigg Bay, framed over the top of the low boundary wall on the south side of the Scheduled area (**Plate 4**).

Contribution of the setting to the significance of the asset

- 6.4.2 The Church and Churchyard are considered to be of **High Value**.
- 6.4.3 The church was built at the turn of the 17th /18th century. Prior to the mid-18th century the church was set in open, coastal farmland and was the parish church of the area, Nigg. The wider area around the church was punctuated by small farmsteads from at least the time of Roy's military map in the 1750s and presumably also prior to this when the site was occupied by an earlier medieval church. Despite the encroachment of modern housing to the west of the Monument, and adjacent road building and a modern waste water treatment plant to the south, views to the east of the Church are relatively uncluttered by more recent additions and a sense of the open, coastal landscape remains; the proximity of the site to the sea can be appreciated today contributing to the significance of the setting to the significance of the asset.

Potential effects of the proposed development

- 6.4.4 The proposed permanent harbour infrastructure would introduce some modern elements to this key view east from the Church, including cranes, storage tanks, buildings and bunded compounds (**Photomontage A**). Much of the sea below the horizon which is currently visible from this receptor will be obscured in this view by breakwaters and the proposed quay. Furthermore the presence of large ships, although not permanently present, would further add to the modern elements and obscure the natural topography of the bay in this view. The ships in particular would be of a scale which contrasts with features currently visible in this view. This development would represent a major additional modern maritime element to the historic natural, agricultural and ecclesiastical setting of the receptor across the key view to the east.
- 6.4.5 Accordingly, it is considered that the worst-case scenario development proposals, comprising the permanent infrastructure at the Site but mainly the temporary, but repeated berthing of large vessels, would result in changes to the setting of the receptor of **major magnitude**.
- 6.4.6 The Scheduled Monuments and category B-listed St. Fittick's Church is judged to be of **high value**. Therefore, without mitigation, setting effects upon these cultural heritage receptors are judged to be of **major adverse significance**.

6.5 Girdle Ness Lighthouse, Greyhope Road, including Fog Signal (WA 1015, WA 1018)

The asset and its setting

- 6.5.1 The Girdle Ness Lighthouse is a Stevenson lighthouse, constructed in the late 19th century on Girdle Ness Point, to the south of Aberdeen Harbour. The lighthouse and various ancillary facilities including the fog horn located on the cliffs to the east of the lighthouse represent a key navigational aid for maritime traffic passing Aberdeen or entering Aberdeen Harbour. The lighthouse is in use today. Key views towards to lighthouse are from the seas north to south of Girdle Ness, and from within Nigg Bay and across Aberdeen (**Plate 12A**). Key views from within the lighthouse cupola are predominantly in a wide arc from south to north, but not including the west (it is blacked out). Nigg Bay is visible from the walkway halfway up the lighthouse (**Plate 12A**) and from within the cupola (**Plate 12B**).



Contribution of the setting to the significance of the asset

- 6.5.2 The lighthouse and fog horn (**Plate 1**) are considered of **High Value**.
- 6.5.3 Much of this significance derives from the intervisibility of the structures within the maritime seascape and navigational heritage of the area, particularly Aberdeen Harbour but also the local maritime heritage of Nigg Bay itself, linked to the marine laboratory and local fishery activity represented today by the surviving vernacular slipway within Nigg Bay (**WA 1028**).
- 6.5.4 The building's significance is enhanced as a result of its setting within the wider maritime landscape and seascape within Aberdeen Harbour, south breakwater (**WA 1000**) and seascape of Aberdeen Bay today, for example the Maritime and Coastguard Agency anchorage and substantial maritime traffic passing through or past Aberdeen Harbour. This setting offers opportunities for understanding and appreciating of its past maritime navigational function, and its prominent position in the historic seascape of the areas from the 19th century up to the present day.

Potential effects of the proposed development

- 6.5.5 The proposed development represents an additional maritime aspect to views to the south of the lighthouse similar to those occupying views to the north around Aberdeen Harbour.
- 6.5.6 Views toward the Site, which lies approximately 100 - 200m to the southwest, from locations within the lighthouse (**WA 1015**) including the cupola and exterior walkways, and the fog horn (**WA 1018**) are likely to be partly screened by intervening topography. This incorporates views of the north quay. Views of the harbour entrance and traffic within outer Nigg Bay are unrestricted (**Plate 12**).
- 6.5.7 It is considered that the proposed development would not substantially intrude upon the maritime character of the receptor. Maritime traffic using the proposed facilities represents an additional element to the existing setting of the receptor. Accordingly, it is considered that the development proposals would result in changes to the setting of the receptor of **minor magnitude**.
- 6.5.8 The category A-listed Girdle Ness Lighthouse and Fog Siren are judged to be of **high value**. Therefore, without mitigation, setting effects upon these cultural heritage receptors are judged to be of **minor adverse significance**.

7 SUMMARY

7.1 General

- 7.1.1 The effect of the development proposals on the known and potential heritage resource will be a material consideration in determination of the planning application. This study has identified no overriding cultural heritage constraints which are likely to prohibit development.

7.2 Physical Impacts

Undesignated Cultural Heritage Assets

- 7.2.1 There is one known undesignated cultural heritage asset within the Site. This is the historic slipway within the north coast of Nigg Bay (**WA 1028**). Construction of the quay along the north coast of Nigg Bay is likely to destroy or permanently bury this feature. Therefore prior to mitigation **the magnitude of the impact is judged to be severe, leading to effects of major adverse significance.**

Designated Cultural Heritage Assets

- 7.2.2 There are two designated cultural heritage assets within the proposed development boundary. These are the Girdle Ness Lighthouse (**WA 1015**) and the associated fog horn (**WA 1018**). The proposed design allows for the retention of these features and therefore it is judged that there will be **no direct physical impacts to designated cultural heritage assets.**

Unknown archaeological remains

- 7.2.3 This assessment has established that there is an archaeological interest within the Site. This is defined as the potential for the presence of unknown, buried archaeological remains, in particular relating to the historic slipway within the north coast of Nigg Bay (**WA 1028**). There is also potential for encountering remnants of wartime infrastructure that was located within the beach area of Nigg Bay during WW2. In addition prehistoric artefacts have been found in the vicinity of the site which might indicate wider potential in the area. However, due to a lack of previous archaeological investigation within the Site, the potential for and significance of any such remains could not be accurately confirmed on the basis of the available evidence and incorporating a precautionary approach to the assessment of impacts.
- 7.2.4 There is low-moderate potential for encountering early prehistoric artefacts, palaeoenvironmental resources and other material of archaeological interest within the submerged palaeolandscape features preserved under the seabed in Nigg Bay. Much of this archaeology is likely to be within reworked contexts.
- 7.2.5 Any negative impact to buried archaeological features as a result of the implementation of the development proposals would be permanent and irreversible in nature. In accordance with national and local planning policy, this potential adverse effect could be reduced through the implementation of an appropriate scheme of archaeological mitigation.

Maritime and Aviation remains

- 7.2.6 This assessment has established that there is potential for encountering maritime wrecks and aircraft remains (or associated debris) within the seabed area of the Site based on the assessment of marine geophysical datasets. The archaeological value of identified seabed anomalies cannot be clarified without further examination and a precautionary approach is necessary to the assessment of impacts.

7.2.7 Marine dredging in particular but also subsequent construction of the quays and breakwaters is likely to damage or destroy these potential features of precautionary **high value**. Therefore **the magnitude of the impact is judged to be major, leading to effects of at least major adverse significance**.

7.2.8 Any physical impacts leading to adverse effects to buried archaeological features as a result of the implementation of the development proposals would be permanent and irreversible in nature. In accordance with national and local planning policy, this potential adverse effect could be reduced through the implementation of an appropriate scheme of archaeological mitigation.

7.3 Setting impacts

7.3.1 There is likely to be a significant adverse effect to the setting of St Fittick's Church and churchyard (**WA 1030**) considered of **high value**, 250m to the west of the proposed development, primarily due to the addition of substantial levels of maritime traffic utilising the harbour facilities, which is not an existing component of the receptors setting. Therefore **the magnitude of the impact is judged to be major, leading to effects of major adverse significance**.

7.3.2 Adverse effects to the setting of prehistoric Scheduled Monuments on Tullos Hill within Loirston Country Park: Tullos Cairn (**WA 1044**), Crab's Cairn (**WA 1053**), Baron's Cairn (**WA 1055**), Loirston Country Park Cairn (**WA 1060**) and Cat Cairn (**WA 1062**), and Girdle Ness Lighthouse and fog horn (**WA 1015, 1018**), are considered to be of negligible to minor adverse significance.

7.4 Cumulative Effects

7.4.1 No other Developments within the Study area are judged to induce cumulative direct impacts to cultural heritage receptors within Nigg Bay.

7.4.2 Potential cumulative effects associated with construction of the European Offshore Wind Deployment Centre (EOWDC) in Aberdeen Bay to the North may induce similar scale direct impacts to unknown seabed cultural heritage receptors. However, a package of mitigation measures will be required for the EOWDC leaving no unmitigated impacts, or cumulative effects. Kincardine Offshore Wind Farm is likely to have very minimal seabed footprint, and is not considered to induce similar seabed impacts as to those considered for the Aberdeen Harbour Expansion Project.

7.4.3 Other schemes such as the Ness Solar Farm, the SITA Waste Recycling Facility at Altens, and the Energy from Waste Facility at East Tullos are not considered likely to induce similar setting effects to the Aberdeen Harbour Expansion Project.

7.4.4 More distant schemes such as the Aberdeen Western Periphery Route, Haudagain Roundabout Improvements and the third Don Crossing are not considered relevant to likely effects to cultural heritage receptors considered here.

7.5 Mitigation & Residual effects

Approach to archaeological mitigation

7.5.1 Avoidance is the preferred method of mitigating negative direct impacts to cultural heritage receptors. In cases where this is not possible a programme of archaeological works will be established in writing in the form of Written Scheme of Investigation (WSI) documents for onshore and offshore elements of the project. These will be agreed with the relevant curators as planning permission or marine licence conditions require, including the

archaeologist for Aberdeen City Council, and Historic Scotland on behalf of Marine Scotland (with specific regards to marine licensing), prior to the commencement of construction works.

Unknown Archaeological remains

- 7.5.2 The presence, location and significance of unknown, buried archaeological remains within the onshore and offshore areas of the Site cannot be fully established with reference to available data. Where the construction footprint interacts with previously undeveloped land or potential maritime or aviation receptors on the seabed, there is a potential for unknown subsurface cultural heritage assets relating to all periods of archaeology from Early Prehistory to the modern day.
- 7.5.3 Mitigation measures may include watching briefs, evaluation and/or excavation covering areas of ground and seabed disturbance.
- 7.5.4 On completion of the archaeological works and appropriate post-excavation analysis, reporting and archiving it is anticipated that there would be no residual effects from physical impacts.

Non-designated built heritage

- 7.5.5 The historic vernacular slipway located on the north coast of Nigg Bay (**WA 1028**) and possibly the associated roofless building immediately to the north are likely to be buried or removed by the groundworks and construction of the north quay. It is recommended that the slipway be cleared of overlying boulders and detritus, surveyed and recorded *in situ* prior to site preparation works; forming the basis of a Historic Buildings Report and supplemental Heritage Statement. This may be achieved using a variety of high-resolution and rapid techniques such as photogrammetry, laser-scanning and hand-recorded plans.

Settings of heritage assets

- 7.5.6 Mitigation strategies for minimising visual impacts based upon measures outlined for ES Chapter 17: Seascape, Landscape and Visual Effects should contribute to reducing significant setting effects likely for St Fittick's Church (**WA 1030**).
- 7.5.7 A similar mitigation strategy is not possible for the temporary but repeated berthing of large vessels in the harbour.

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APPENDICES

Appendix 1: Terminology

Glossary

The terminology used in this assessment follows definitions derived from Scottish Historic Environment Policy and associated guidance, in conjunction with complementary definitions with the National Planning Policy Framework (UK) (see also **Appendix 2: Legislative and planning framework**):

Archaeological interest	There will be archaeological interest in a cultural heritage asset if it holds, or potentially may hold, evidence of past human activity worthy of expert investigation at some point. Cultural heritage assets with archaeological interest are the primary source of evidence about the substance and evolution of places, and of the people and cultures that made them.
Conservation (for heritage policy)	The process of maintaining and managing change to a heritage asset in a way that sustains and, where appropriate, enhances its significance.
Designated Cultural Heritage assets / receptor	World Heritage Sites, Scheduled Monuments, Listed Buildings, historic Marine Protected Areas (hMPAs), Inventory Gardens and Designed, Inventory Battlefields and Conservation Areas designated under the relevant legislation.
Cultural Heritage Asset	A building monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest. Cultural Heritage assets include designated heritage assets and assets identified by the local planning authority (including local listing where undertaken, e.g. in association with Local Plans).
Historic environment	All aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, and landscaped and planted or managed flora.
Historic environment record	Information services that seek to provide access to comprehensive and dynamic resources relating to the historic environment of a defined geographic area for public benefit and use.
Setting of a cultural heritage asset	The surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral.
Significance (for heritage policy)	The value of a heritage asset to this and future generations because of its heritage interest. That interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage asset's physical presence, but also from its setting.
Value	An aspect of worth or importance

Chronology

Where referred to in the text, the main archaeological periods for Scotland are broadly defined by the following general date ranges:

Prehistoric		Historic	
Later Upper Palaeolithic	12,700 – 9500 BC	Roman	AD 77 – 211
Mesolithic	9500 – 4100 BC	Medieval	AD 400 – 1500
Neolithic	4100 – 2500 BC	Post-medieval	AD 1500 – 1800
Bronze Age	2500 – 800 BC	19th Century	AD 1800 – 1899
Iron Age	800 BC – AD 400	Modern	1900 – present day



Appendix 2: Legislative and planning framework

Scotland & Relevant UK Policy and Legislation

Legislation/Policy	Summary
Marine and Coastal Access Act 2009 (Marine Policy Statement 2011)	Scottish Ministers have powers over marine planning, licensing and conservation over the Scottish Marine Area from 12 - 200 nm offshore. The inshore area (to 12nm) is covered by Scottish Legislation.
National Planning Framework for Scotland 2 (2009)	Long term spatial strategy for Scotland's development including the protection of the environment. One of the main elements of the spatial strategy to 2030 is to conserve and enhance Scotland's distinctive natural and cultural heritage, and continue to safeguard internationally protected sites, habitats and species.
Marine (Scotland) Act 2010	The Marine (Scotland) Act 2010 received Royal assent on 10th March 2010 and replaces the PWA (1973) in Scotland. Aspects of this Act relevant to offshore development and archaeology include provision for a new statutory marine planning system and for improved marine historic conservation. This includes new powers to select and manage historic Marine Protected Areas (hMPAs) for the protection and enhancement of marine biodiversity and for the preservation of, 'a marine historic asset of national importance located, or believed to be located, in the area'.
Scottish Historic Environment Policy (2008, revised 2011)	The Scottish Historic Environment Policy (SHEP) sets out Scottish Ministers' policies, providing direction for Historic Scotland and a policy framework that informs the work of a wide range of public sector organisations.
Scottish Planning Policy 2010	A statement of the Scottish Government's policy on nationally important land use planning matters. It sets out policy on how archaeological remains and discoveries should be handled. The guidance is aimed at planning authorities in Scotland, and is also of direct relevance to developers, owners, statutory undertakers, government departments, conservation organisations and others whose actions have a direct physical impact upon the natural or built environment.
Historic Environment (Amendment) (Scotland) Act 2011	The Historic Environment (Amendment) (Scotland) Act 2011 (HEA 2011) received Royal Assent on 23rd February 2011. The Act amends the Historic Buildings and Ancient Monuments Act 1953, the AMAA (1979) and The Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997 to harmonise aspects of historic environment legislation with the planning regime.
Historic Scotland's Marine Heritage Strategy 2012-15	In April 2012, Historic Scotland published a Strategy for the protection, management and promotion of marine heritage (2012-2015) setting out priorities for protecting, managing and promoting Scotland's outstanding marine heritage under the Marine (Scotland) Act 2010.



Legislation/Policy	Summary
National Marine Plan (NMP)	<p>The National Marine Plan was published in March 2015 and sets out a single framework for sustainable development within Scotland's marine area (as defined by the Marine (Scotland) Act 2010 and MCAA 2009).</p> <p>General Policy 6: Historic Environment states, "development and use of the marine environment should protect and, where appropriate, enhance heritage assets in a manner proportionate to their significance".</p>
Protection of Military Remains Act (1986)	<p>Under the Protection of Military Remains Act (1986), all aircraft that have crashed in military service are automatically protected. Maritime vessels lost during military service are not automatically protected although the MoD has powers to protect any vessel that was in military service when lost. The MoD can designate 'controlled sites' around wrecks whose position is known and can designate named vessels as 'protected places' even if the position of the wreck is not known. It is not necessary to demonstrate the presence of human remains at either 'controlled sites' or 'protected places'.</p>
Merchant Shipping Act (1995)	<p>This Act sets out the procedures for determining the ownership of underwater finds that turn out to be 'wreck', defined as any flotsam, jetsam, derelict and lagan found in or on the shores of the sea or any tidal water. It includes ship, aircraft, hovercraft, parts of these, their cargo or equipment. If any such finds are brought ashore, the salvor is required to give notice to the Receiver of Wreck that he/she has found or taken possession of them and, as directed by the Receiver, either hold them pending the Receiver's order or deliver them to the Receiver. The act is administered by the Maritime and Coastguard Agency.</p>

European Policy and Legislation

Legislation/Policy	Summary
European Convention on the Protection of the Archaeological Heritage (Revised) (1992) (the Valletta Convention)	<p>The Valletta Convention was ratified by the UK Government in 2000 and came into force in 2001. The convention binds the UK to implement protective measures for the archaeological heritage within the jurisdiction of each party, including sea areas. Insofar as the UK exerts jurisdiction over the Continental Shelf, then it would appear that the provisions of the Valletta Convention apply to that jurisdiction.</p>



European Landscape Convention (2000)	The European Landscape Convention (2000) became binding on the UK from 1 March 2007. Its principal clauses require the Government to protect and manage landscapes and to integrate landscape into regional and town planning policies including its cultural, environmental, agricultural, social and economic policies. The Convention applies to the entire territory of the UK and includes land, inland water and marine areas. It is not regarded as applying to sea areas regulated by the UK that lie beyond territorial waters.
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Global Policy and Legislation

Legislation/Policy	Summary
The World Heritage Convention (1972)	The Convention provides for the identification, protection, conservation and presentation of cultural and natural sites of “outstanding universal value” for inscription on the World Heritage List. The Convention sets out the duties of States Parties in identifying potential sites and their role in protecting and preserving them. By signing the Convention, each country pledges to conserve not only the World Heritage sites situated on its territory, but also to protect its national heritage. The 1972 UNESCO World Heritage Convention was ratified by the UK in 1984 and the UK currently has 28 World Heritage Sites.
United Nations Convention on the Law of the Sea 1982	UNCLOS 1982 was ratified by the UK in 1997. Article 303 stipulates that ‘states have the duty to protect objects of an archaeological and historical nature found at sea and shall co-operate for this purpose’. Article 303 also provides for coastal states to exert a degree of control over the archaeological heritage to 24 nautical miles, though the UK has not introduced any measures to implement this right.
International Council of Monuments and Sites Charter on the Protection and Management of Underwater Cultural Heritage (1996) (the Sofia Charter)	The Charter upon which the Annex of the UNESCO Convention is largely based includes a series of statements regarding best practice, intending ‘to ensure that all investigations are explicit in their aims, methodology and anticipated results so that the intention of each project is transparent to all’. The UK is a member of the International Council of Monuments and Sites.
UNESCO Convention on the Protection of the Underwater Cultural Heritage (2001)	The UNESCO Convention was concluded in 2001, and is a comprehensive attempt to codify the law internationally with regards to underwater archaeological heritage. The UK abstained in the vote on the final draft of the Convention; however, it has stated that it has adopted the Annex of the Convention, which governs the conduct of archaeological investigations, as best practice for archaeology. Although the UK is not a signatory, the convention entered into force on 2nd January 2009 having been signed or ratified by 20 member states.



Guidance

Guidance	Summary
Identifying and Protecting Palaeolithic Remains: Archaeological Guidance for Planning Authorities and Developers (English Heritage (now Historic England) 1998)	This draws attention to the importance of Palaeolithic remains and states that they must be considered in line with planning policy when potentially affected by development proposals.
Ships and Boats: Prehistory to Present (English Heritage (now Historic England) 2012)	This guide outlines the selection criteria used when designating ships and boats that are part of the archaeological resource.
Military Aircraft Crash Sites (English Heritage (now Historic England) 2002)	This provides archaeological guidance regarding the significance and future management of military aircraft crash sites. It outlines the importance of aircraft crash sites and indicates that they should be considered where they are affected by development proposals.
Code of Practice for Seabed Developers, Joint Nautical Archaeology Policy Committee (JNAPC) 2006	This voluntary code provides a framework for seabed developers similar to the principles found in current policy and practice on land. The aim of the Code is to ensure a best practice model for seabed development. The Code offers guidance to developers on issues such as risk management and legislative implications.
COWRIE: Historic Environment Guidance for the Offshore Renewable Energy Sector (Wessex Archaeology 2007)	Of relevance to the offshore renewable energy sector, this guidance is intended to promote the development of best practice in relation to the marine historic environment. It is also intended to promote an understanding of conservation issues arising from the effects of offshore renewable energy projects on the historic environment.
COWRIE: Guidance for Assessment of Cumulative Impacts on the Historic Environment from Offshore Renewable Energy (Oxford Archaeology 2008)	This report provides guidance for the assessment of cumulative impacts on the historic environment from offshore renewable energy projects. It outlines the cumulative (additive / changes) and synergistic (impact interactions) effects that should be considered.
Model Clauses for Archaeological Written Schemes of Investigations (Crown Estate and Wessex Archaeology 2010)	This document outlines Model Clauses which can be referred to in scheme-specific Written Scheme of Investigation (WSI) without the need to repeat them in the WSI itself. The Model Clauses draw upon a corpus of practical experience in developing and agreeing methodological clauses WSI-by-WSI in the course of Round 1 and Round 2 offshore wind farm development, and in the course of other forms of marine development.



Guidance	Summary
COWRIE: Offshore Geotechnical Investigations and Historic Environment Analysis: Guidance for the Renewable Energy Sector (Emu 2011)	This report provides guidance on how best to achieve the integration of offshore geotechnical investigations and their data outputs, arising from offshore renewable energy projects, with archaeological historic environment analysis, and ensure optimum use of geotechnical data.
The Setting of Heritage Assets (English Heritage (now Historic England), 2011 revised 2012)	This document sets out Historic England guidance on managing change within the settings of heritage assets, including archaeological remains and historic buildings, sites, areas, and landscapes. It provides the basis for advice by Historic England on the setting of heritage assets when responding to consultations and when assessing the implications of development proposals. It is also intended to assist others involved with managing development that may affect the setting of heritage assets.
Standard and guidance for historic environment desk-based Assessment (Chartered Institute for Archaeologists, 1994, revised December 2014)	This guidance seeks to define good practice for the execution and reporting of desk-based assessment, in line with the by-laws of the Chartered Institute for Archaeologists. The standard and guidance was formally adopted as approved practice at the Annual General Meeting of the Institute held on 14 October 1994. This revision recognises the new Chartered status of the Institute.
The Assessment and Management of Marine Archaeology in Port and Harbour (Wessex Archaeology 2015)	This guidance provides practical advice on assessing the impact of port and harbour development in England upon the intertidal and marine historic environment. It is relevant to port and harbour owners, operators, developers and contractors, regulatory authorities, curators, archaeological consultants/contractors and other stakeholders. The document aims particularly at providing advice for environmental assessments required for new development projects; it does not address routine port operations or activities covered under existing Harbour Orders.
Dredging and Port Construction: Interactions with Features of Archaeological or Heritage Interest (PIANC 2014), PIANC Guidance Document No. 124	This guidance document is intended to promote the development of good practice for dredging and port construction in relation to underwater cultural heritage.
A Strategic Framework for Scoping Cumulative Effects. A report produced for the Marine Management Organisation (MMO), (MMO (2014)) MMO Project No. 1055. ISBN: 978-1-909452-34-3	This guidance is intended to develop an initial high level consistent approach to scoping in cumulative effects, specific to the needs of MMO functions. The guidance provides a framework to identify and scope cumulative effects at a strategic level that aims to be proportionate and achievable in practice. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/389876/MMO1055_Report_Final.pdf



Guidance	Summary
Managing Change in the Historic Environment: Setting (Historic Scotland 2010)	This guidance provides a tool for assessing the impact of development on setting.
Our Place In Time: The Historic Environment Strategy For Scotland	The Strategy was published in 2014 and outlines the vision that “Scotland’s historic environment is understood and valued, cared for and protected, enjoyed and enhanced. It is at the heart of a flourishing and sustainable Scotland and will be passed on with pride to benefit future generations”. With the outcome, “To ensure that the cultural, social, environmental and economic value of Scotland’s heritage makes a strong contribution to the wellbeing of the nation and its people.

Appendix 3: Aerial photography consulted

National Collection of Aerial Photography, RCAHMS (30/04/2015)

Sortie	Date	Frame #	Barcode Reference
106G/UK_0151	1946	3201-3202; 4001-2	SB_005206; SB_005205
58/1109	1953	0201; 0316	SB_001845; SB_001846
58_2104	1957	17-15	SB_002061
58_4698	1961	F21, 0782; F22, 0310	SB_000182; SB_000184
OS_66_056	1966	4-22, 23-39, 40-56	SB_004620



Appendix 4: Seabed Features of Archaeological Potential

WA ID	Classification	Easting	Northing	Archaeological Discrimination	Length (m)	Width (m)	Height (m)	Magnetic Amplitude (nT)	Description	External References	Area
7000	Dark Reflector	557760	6332177	A2	5.1	3.4	2.7	-	Large hard edged and curvilinear shaped dark reflector with a long and bright shadow. No associated magnetic anomaly identified by Coastline. In a very rough and boulder rich part of the seabed and possibly a natural feature, although could be non-ferrous debris.	-	Buffer Zone
7001	Dark Reflector	557751	6332235	A2	9.2	1.2	1.9	-	Very hard edged and distinctive dark reflectors with a long shadow, irregular rectangular shaped anomaly in profile on a sandy patch on the seabed but surrounded by rocks and geology. No associated magnetic anomaly identified by Coastline. Possibly a natural feature, although could be non-ferrous debris.	-	Site Boundary
7002	Dark Reflector	558070	6332382	A2	0.6	0.3	0.0	-	Diffuse linear dark reflector without a shadow or associated magnetic anomaly identified by Coastline. Located on a sandy and even area of the seabed, and could be a natural feature or non-ferrous debris.	-	Buffer Zone
7003	Dark Reflector	557313	6332356	A2	0.9	0.6	0.8	-	Hard edged rounded dark reflector with a long, bright and tapered shadow. Scouring all around the north of anomaly measuring 5m but no associated magnetic anomaly identified by Coastline. Could be a natural feature or non-ferrous debris.	-	Site Boundary
7004	Debris	558210	6332726	A2	16.3	4.3	0.3	-	Hard edged broken up or partially buried dark reflector with an internal shadow. No associated magnetic anomaly identified by Coastline, and could be partially buried non-ferrous debris.	-	Buffer Zone



WA ID	Classification	Easting	Northing	Archaeological Discrimination	Length (m)	Width (m)	Height (m)	Magnetic Amplitude (nT)	Description	External References	Area
7005	Debris	557101	6332467	A2	5.2	2.4	0.4	-	Rectangular anomaly on seabed identified within the multibeam bathymetry data. Possible piece of debris. Location close to the beach possibly suggests it has been washed in from the shore.	-	Site Boundary
7006	Debris	557109	6332465	A2	4.9	1.5	0.5	-	Irregular, elongate anomaly identified within the multibeam bathymetry data within area of gravelly seabed. Possible piece of debris. Location close to the beach possibly suggests it has been washed in from the shore.	-	Site Boundary
7007	Debris	557113	6332468	A2	2.8	1.5	0.2	-	Rectangular anomaly identified within the multibeam bathymetry data within area of gravelly seabed. Possible piece of debris. Location close to the beach possibly suggests it has been washed in from the shore.	-	Site Boundary
7008	Mound	557201	6332499	A2	4.2	2.5	1.5	-	Distinct mound feature identified within the multibeam bathymetry data. Could be a natural feature but is much larger than other identified rocks in the area and could be a piece of debris.	-	Site Boundary
7009	Magnetic	558017	6332171	A2	-	-	-	89	Magnetic anomaly identified by Coastline, no associated sidescan sonar or multibeam bathymetry anomaly identified by WA. Possible piece of buried ferrous debris.	Target 1 (Coastline)	Buffer Zone
7010	Magnetic	558003	6332135	A2	-	-	-	190	Magnetic anomaly identified by Coastline, no associated sidescan sonar or multibeam bathymetry anomaly identified by WA. Possible piece of buried ferrous debris.	Target 2 (Coastline)	Buffer Zone



WA ID	Classification	Easting	Northing	Archaeological Discrimination	Length (m)	Width (m)	Height (m)	Magnetic Amplitude (nT)	Description	External References	Area
7011	Magnetic	557990	6332171	A2	-	-	-	89	Magnetic anomaly identified by Coastline, no associated sidescan sonar or multibeam bathymetry anomaly identified by WA. Possible piece of buried ferrous debris.	Target 3 (Coastline)	Buffer Zone
7012	Magnetic	557979	6332160	A2	-	-	-	134	Magnetic anomaly identified by Coastline, no associated sidescan sonar or multibeam bathymetry anomaly identified by WA. Possible piece of buried ferrous debris.	Target 4 (Coastline)	Buffer Zone
7013	Magnetic	557975	6333139	A2	-	-	-	64	Magnetic anomaly identified by Coastline, no associated sidescan sonar or multibeam bathymetry anomaly identified by WA. Possible piece of buried ferrous debris.	Target 5; Target 8 (Coastline)	Buffer Zone
7014	Magnetic	558010	6333111	A2	-	-	-	9	Magnetic anomaly identified by Coastline, no associated sidescan sonar or multibeam bathymetry anomaly identified by WA. Possible piece of buried ferrous debris.	Target 6 (Coastline)	Buffer Zone
7015	Magnetic	557990	6333128	A2	-	-	-	58	Magnetic anomaly identified by Coastline, no associated sidescan sonar or multibeam bathymetry anomaly identified by WA. Possible piece of buried ferrous debris.	Target 7 (Coastline)	Buffer Zone
7016	Magnetic	557420	6332424	A2	-	-	-	9	Magnetic anomaly identified by Coastline, no associated sidescan sonar or multibeam bathymetry anomaly identified by WA. Possible piece of buried ferrous debris.	Target 9 (Coastline)	Site Boundary
7017	Magnetic	557412	6332744	A2	-	-	-	23	Magnetic anomaly identified by Coastline, no associated sidescan sonar or multibeam bathymetry anomaly identified by WA. Possible piece of buried ferrous debris.	Target 10; Target 30 (Coastline)	Site Boundary



WA ID	Classification	Easting	Northing	Archaeological Discrimination	Length (m)	Width (m)	Height (m)	Magnetic Amplitude (nT)	Description	External References	Area
7018	Magnetic	557454	6332482	A2	-	-	-	1341	Magnetic anomaly identified by Coastline, no associated sidescan sonar or multibeam bathymetry anomaly identified by WA. Possible piece of buried ferrous debris.	Target 11; Target 12; Target 31 (Coastline)	Site Boundary
7019	Magnetic	557676	6332845	A2	-	-	-	46	Magnetic anomaly identified by Coastline, no associated sidescan sonar or multibeam bathymetry anomaly identified by WA. Possible piece of buried ferrous debris.	Target 13 (Coastline)	Site Boundary
7020	Magnetic	557894	6333117	A2	-	-	-	34	Magnetic anomaly identified by Coastline, no associated sidescan sonar or multibeam bathymetry anomaly identified by WA. Possible piece of buried ferrous debris.	Target 14 (Coastline)	Buffer Zone
7021	Magnetic	558026	6333220	A2	-	-	-	26	Magnetic anomaly identified by Coastline, no associated sidescan sonar or multibeam bathymetry anomaly identified by WA. Possible piece of buried ferrous debris.	Target 15 (Coastline)	Buffer Zone
7022	Magnetic	557922	6333120	A2	-	-	-	51	Magnetic anomaly identified by Coastline, no associated sidescan sonar or multibeam bathymetry anomaly identified by WA. Possible piece of buried ferrous debris.	Target 16 (Coastline)	Buffer Zone
7023	Magnetic	557876	6332997	A2	-	-	-	20	Magnetic anomaly identified by Coastline, no associated sidescan sonar or multibeam bathymetry anomaly identified by WA. Possible piece of buried ferrous debris.	Target 17 (Coastline)	Buffer Zone
7024	Magnetic	557934	6333121	A2	-	-	-	64	Magnetic anomaly identified by Coastline, no associated sidescan sonar or multibeam bathymetry anomaly identified by WA. Possible piece of buried ferrous debris.	Target 18 (Coastline)	Buffer Zone



WA ID	Classification	Easting	Northing	Archaeological Discrimination	Length (m)	Width (m)	Height (m)	Magnetic Amplitude (nT)	Description	External References	Area
7025	Magnetic	557889	6332214	A2	-	-	-	45	Magnetic anomaly identified by Coastline, no associated sidescan sonar or multibeam bathymetry anomaly identified by WA. Possible piece of buried ferrous debris.	Target 19 (Coastline)	Buffer Zone
7026	Magnetic	557875	6332208	A2	-	-	-	33	Magnetic anomaly identified by Coastline, no associated sidescan sonar or multibeam bathymetry anomaly identified by WA. Possible piece of buried ferrous debris.	Target 20; Target 25 (Coastline)	Buffer Zone
7027	Magnetic	557768	6332951	A2	-	-	-	53	Magnetic anomaly identified by Coastline, no associated sidescan sonar or multibeam bathymetry anomaly identified by WA. Possible piece of buried ferrous debris.	Target 21; Target 27 (Coastline)	Site Boundary
7028	Magnetic	557801	6332630	A2	-	-	-	12	Magnetic anomaly identified by Coastline, no associated sidescan sonar or multibeam bathymetry anomaly identified by WA. Possible piece of buried ferrous debris.	Target 22 (Coastline)	Site Boundary
7029	Magnetic	557742	6332859	A2	-	-	-	17	Magnetic anomaly identified by Coastline, no associated sidescan sonar or multibeam bathymetry anomaly identified by WA. Possible piece of buried ferrous debris.	Target 23 (Coastline)	Site Boundary
7030	Magnetic	557876	6332504	A2	-	-	-	10	Magnetic anomaly identified by Coastline, no associated sidescan sonar or multibeam bathymetry anomaly identified by WA. Possible piece of buried ferrous debris.	Target 24 (Coastline)	Site Boundary
7031	Magnetic	557748	6332440	A2	-	-	-	13	Magnetic anomaly identified by Coastline, no associated sidescan sonar or multibeam bathymetry anomaly identified by WA. Possible piece of buried ferrous debris.	Target 26 (Coastline)	Site Boundary



WA ID	Classification	Easting	Northing	Archaeological Discrimination	Length (m)	Width (m)	Height (m)	Magnetic Amplitude (nT)	Description	External References	Area
7032	Magnetic	557692	6332935	A2	-	-	-	6	Magnetic anomaly identified by Coastline, no associated sidescan sonar or multibeam bathymetry anomaly identified by WA. Possible piece of buried ferrous debris.	Target 28 (Coastline)	Site Boundary
7033	Magnetic	557729	6332846	A2	-	-	-	17	Magnetic anomaly identified by Coastline, no associated sidescan sonar or multibeam bathymetry anomaly identified by WA. Possible piece of buried ferrous debris.	Target 29 (Coastline)	Site Boundary
7034	Magnetic	557449	6332755	A2	-	-	-	38	Magnetic anomaly identified by Coastline, no associated sidescan sonar or multibeam bathymetry anomaly identified by WA. Possible piece of buried ferrous debris.	Target 32 (Coastline)	Site Boundary
7035	Magnetic	557687	6332504	A2	-	-	-	9	Magnetic anomaly identified by Coastline, no associated sidescan sonar or multibeam bathymetry anomaly identified by WA. Possible piece of buried ferrous debris.	Target 33 (Coastline)	Site Boundary

Notes

1. Co-ordinates are in WGS 1984 UTM Zone 30N
2. Positional accuracy estimated $\pm 10\text{m}$



Appendix 5: Gazetteer of terrestrial and intertidal Cultural Heritage Assets within the Study Area

WA ID	Name	Description	Status	Easting	Northing	Source ID	Link
1000	South Breakwater, Aberdeen Harbour	Breakwater, Aberdeen Harbour entrance	Undesignated	396740	805700	NMRS 104095	http://canmore.rcahms.gov.uk/en/site/104095/
1001	Aberdeen South Fundamental Bench Mark	Fundamental Bench Mark	Undesignated	396728	805683	NMRS 315686	http://canmore.rcahms.gov.uk/en/site/315686/
1002	Torry Battery, battery 130m ESE of Old South Breakwater	Torry battery, mid-19th century military battery manned during WW1 and WW2, Greyhope Road.	Scheduled	396543	805631	SM 9215; NMRS 80762	http://data.historic-scotland.gov.uk/pls/html/db/f?p=2300:35:::::P35_SELECTED_MONUMENT:09215;http://canmore.rcahms.gov.uk/en/site/80762/
1003	Greyhope Cottages, Balnagask Golf Course	Cottage(s), Girdle Ness, Torry Battery	Undesignated	396700	805620	NMRS 204780	http://canmore.rcahms.gov.uk/en/site/204780/
1004	War Memorial, Torry Battery	Commemorative monument (20th century), war memorial (20th century), Balnagask Seafarers Lost At Sea cross	Undesignated	396441	805601	NMRS 339877	http://canmore.rcahms.gov.uk/en/site/339877/
1005	Sand Pit, Balnagask Golf Course	Sand and gravel workings, Torry	Undesignated	396630	805570	NMRS 204777	http://canmore.rcahms.gov.uk/en/site/204777/
1006	Anti-tank Blocks, Greyhope Bay	Anti-tank blocks (20th century) Greyhope Road, Torry battery	Undesignated	396850	805570	NMRS 205468	http://canmore.rcahms.gov.uk/en/site/205468/
1007	Boundary Stone, Balnagask Golf Course	Boundary stone, Torry	Undesignated	396170	805560	NMRS 204773	http://canmore.rcahms.gov.uk/en/site/204773/
1008	Balnagask Golf Course, St Fittick's Road	Golf course	Undesignated	396498	805467	NMRS 308753	http://canmore.rcahms.gov.uk/en/site/308753/
1009	Boundary Stone, Girdle Ness	Boundary stone, Balnagask golf course	Undesignated	396750	805430	NMRS 204755	http://canmore.rcahms.gov.uk/en/site/204755/
1010	North Kirkhill, Torry	Cottage, croft; Balnagask golf course	Undesignated	395940	805420	NMRS 204759	http://canmore.rcahms.gov.uk/en/site/204759/



WA ID	Name	Description	Status	Easting	Northing	Source ID	Link
1011	Rig and Furrow, Balnagask Golf Course	Rig and furrow	Undesignated	396300	805400	NMRS 134456	http://canmore.rcahms.gov.uk/en/site/134456/
1012	Boundary Stone, Abbey Road, Torry	Boundary stone	Undesignated	395820	805370	NMRS 204761	http://canmore.rcahms.gov.uk/en/site/204761/
1013	Stone, Girdle Ness	Stone, Walker Park, Balnagask golf course	Undesignated	396970	805370	NMRS 204752	http://canmore.rcahms.gov.uk/en/site/204752/
1014	Sand Pit, Balnagask Golf Course	Sand and gravel workings; Torry	Undesignated	396340	805360	NMRS 204776	http://canmore.rcahms.gov.uk/en/site/204776/
1015	Girdle Ness, Lighthouse, Greyhope Road	Girdle Ness lighthouse, Greyhope road, including fog signal at south side at NJ 9724 0530. Built in 1833 is a well-preserved example of a Stevenson lighthouse, designed by Robert Stevenson. The lighthouse overlooks Aberdeen and Nigg Bays. The lighthouse is flanked by single-storey buildings and to the south and west by the keeper's cottages. A fog horn was added in 1876, known as the 'Torry Coo', above the cliff to the east of the lighthouse. OS mapping indicates further buildings within a circular feature in the plot to the southwest of the lighthouse, at the location of Walker Park today.	Category A-listed	397159	805348	LB 20078	http://data.historic-scotland.gov.uk/pls/html/db/f?p=2200:15:0:::BUILDING:20078
1016	Girdle Ness Lighthouse Keepers Cottages	Lighthouse Keepers house(s) (19th century)	Undesignated	397150	805320	NMRS 19995	http://canmore.rcahms.gov.uk/en/site/19995/
1017	Boundary Stone, Girdle Ness	Boundary stone, Walker Park, Balnagask golf course	Undesignated	396960	805310	NMRS 204753	http://canmore.rcahms.gov.uk/en/site/204753/
1018	Girdle Ness Lighthouse Fog Siren, Greyhope Road	Fog horn, Girdle Ness, Aberdeen Harbour, 'Torry coo'	Category A-listed	397228	805300	NMRS 280963	http://canmore.rcahms.gov.uk/en/site/280963/
1019	City of Aberdeen Main Drainage Work, Greyhope Road	Girdle Ness sewage works, Girdle Ness. Valve house & penstock chamber (Aberdeen Corp. S. Wks)	Undesignated	397220	805260	NMRS 83811	http://canmore.rcahms.gov.uk/en/site/83811/
1020	Coast Defence Battery, Girdle Ness	Coastal battery (second world war), Greyhope Road, Walker Park, Aberdeen Harbour, Balnagask golf course	Undesignated	396900	805200	NMRS 81485	http://canmore.rcahms.gov.uk/en/site/81485/



WA ID	Name	Description	Status	Easting	Northing	Source ID	Link
1021	Boundary Stone, Girdle Ness	Boundary stone, Walker Park, Balnagask golf course	Undesignated	396950	805190	NMRS 204754	http://canmore.rcahms.gov.uk/en/site/204754/
1022	Gravel Pit, Balnagask	Sand and gravel workings; Torry	Undesignated	395790	805170	NMRS 204779	http://canmore.rcahms.gov.uk/en/site/204779/
1023	South Kirkhill farmstead	Farmhouse, farmstead; Balnagask golf course, Torry	Undesignated	396100	805150	NMRS 204769	http://canmore.rcahms.gov.uk/en/site/204769/
1024	South Kirkhill farmstead, Victoria Road	Farmhouse, farmstead; Victoria Road	Undesignated	395910	805130	NMRS 204768	http://canmore.rcahms.gov.uk/en/site/204768/
1025	Balnagask Mains, Torry	Farmhouse, farmstead; Balnagask house, steading, Balnagask house policies	Undesignated	395800	805120	NMRS 204767	http://canmore.rcahms.gov.uk/en/site/204767/
1026	Balnagask motte, Baxter Place, Aberdeen	Medieval motte, located in grounds of Balnagask house. Possibly 12th -13th century. Located around 20m above the motte itself is around 6m high and 74x54m at the widest part of the base (along a NNW-SSE axis), overlooking the mouth of the river Dee and Nigg bay. Originally would have supported a timber castle and represents a fortified settlement within the feudal landscape of the area. Historic Scotland notes that the land during the 12th century was attributed to de Nug, a Normanised Celtic family.	Scheduled	395743	805110	SM 10403; NMRS 19989	http://data.historic-scotland.gov.uk/pls/html/db/f?p=2300:35:::::P35_SELECTED_MONUMENT:10403 ; http://canmore.rcahms.gov.uk/en/site/19989/
1027	Boundary Stone, Girdle Ness	Boundary stone; Balnagask golf course	Undesignated	396700	805080	NMRS 204756	http://canmore.rcahms.gov.uk/en/site/204756/



WA ID	Name	Description	Status	Easting	Northing	Source ID	Link
1028	Slipway and roofless building.	Vernacular slipway, north side of Nigg bay. Possibly illustrated on 25" 1st edition OS mapping as cleared area of beach, in 1868, seaward of small building at back of beach above mean high water recorded at this location. Slipway observed as faced boulders embedded in surface of beach extending at least 40m south. Obscured partially by boulders and beach armouring. Upper sections near MHWS have been skimmed in concrete (presumably a later phase of use). A number of iron fittings and holes for fittings are observed here. Anecdotally said to have been used by lobster fishermen until the 1960s (Cameron 2013). Western gable of roofless, partly demolished building is a brick-built extension, perhaps early 20th as depicted on 1901 25" 2nd edition OS mapping; three abutting bays with porch or lean-to on seaward side (15x6m long axis facing the sea), a well is also annotated. Potentially linked to the development of the marine laboratory nearby. Vernacular slipway exhibits substantial boulder built form and is the only remaining extant element of the bays historic maritime/fishery heritage.	Undesignated	396840	805080	NMRS 134454	http://canmore.rcahms.gov.uk/en/site/134454/
1029	St Fittick's Church Manse, Nigg	Manse for St Fittick's Church, Nigg parish	Undesignated	396200	804980	NMRS 207540	http://canmore.rcahms.gov.uk/en/site/207540/
1030	St Fittick's Church, Aberdeen	A church was built on the site in the 12th century. Current 17th century church with later 18th century additions (bell-cote and weather vane), east gable demolished. A well associated with St Fittick is also annotated by the OS to the southeast of the kirk near the seaward location of the modern sewage treatment works; inferred as destroyed, by the publication of the 3rd edition 1928 OS map as annotated as "site of".	Category B-listed; Scheduled	396270	804958	LB 19955; SM 10400; NMRS 20234	http://data.historic-scotland.gov.uk/pls/html/db/f?p=2200:15:0:::BUILDING:19955; http://data.historic-scotland.gov.uk/pls/html/db/f?p=2300:35:::P35_SELECTED_MONUMENT:10400; http://canmore.rcahms.gov.uk/en/site/20234/
1031	Flint arrowhead	Arrowhead (flint), found near St Fittick's church	Undesignated	396200	804900	NMRS 214325	http://canmore.rcahms.gov.uk/en/site/214325/
1032	Morven Court, Balnagask Circle	Point blocks. Three high-rise tower blocks constructed from the late 1960s	Undesignated	395753	804892	NMRS 173789	http://canmore.rcahms.gov.uk/en/site/173789/
1033	Boundary Stone, Nigg Bay	Boundary stone	Undesignated	396490	804880	NMRS 207539	http://canmore.rcahms.gov.uk/en/site/207539/



WA ID	Name	Description	Status	Easting	Northing	Source ID	Link
1034	Balnagask Circle	Point block, Balnagask south section 14. High-rise tower block constructed from the late 1960s	Undesignated	395796	804862	NMRS 300061	http://canmore.rcahms.gov.uk/en/site/300061/
1035	Brimmond Court, Balnagask Circle	Point block, Balnagask south section 14. High-rise tower block constructed from the late 1960s	Undesignated	395782	804852	NMRS 173038	http://canmore.rcahms.gov.uk/en/site/173038/
1036	Grampian Court, Balnagask Circle	Point block, Balnagask south section 14. High-rise tower block constructed from the late 1960s	Undesignated	395811	804812	NMRS 172993	http://canmore.rcahms.gov.uk/en/site/172993/
1037	Anti-tank Blocks, Nigg Bay	Anti-tank blocks (20th century). Line of ww2 anti-tank blocks running from pillbox in south of Nigg bay to Greyhope road, removed).	Undesignated	396510	804750	NMRS 174655	http://canmore.rcahms.gov.uk/en/site/174655/
1038	Boundary Stone, Nigg Bay	Boundary stone	Undesignated	396460	804700	NMRS 207538	http://canmore.rcahms.gov.uk/en/site/207538/
1039	Sewage Treatment Works, Balnagask	Sewage works, Nigg bay, waste water treatment plant, Nigg headworks	Undesignated	396370	804580	NMRS 173300	http://canmore.rcahms.gov.uk/en/site/173300/
1040	Pillbox, Nigg Bay	Pillbox (20th century), ww2 type 22 pillbox, removed. Located at southern end of line of anti-tank blocks (removed).	Undesignated	396510	804560	NMRS 174654	http://canmore.rcahms.gov.uk/en/site/174654/
1041	Boundary Stones, Nigg Bay	Boundary stone(s)	Undesignated	396470	804550	NMRS 207537	http://canmore.rcahms.gov.uk/en/site/207537/
1042	Farmhouse, Ness	Farmhouse, farmstead, L-plan farmsteading at Ness, developed to a U-plan, now destroyed. Site was subsequently used as a quarry and thence as landfill site.	Undesignated	396530	804200	NMRS 207532	http://canmore.rcahms.gov.uk/en/site/207532/
1043	House (possible)	House marked on 1902 admiralty chart, located at top of cliffs on north coast of cove to the south of Greg Ness. Structure not observed on ground. Possible platform/terrace partly disturbed by modern coastal path. General location given. A further feature is noted on 1901 OS 6" mapping halfway down the cliff, around 25m SW of the cliff top feature.	Undesignated	397040	804165	Walkover Survey	
1044	Tullos Cairn, cairn	Tullos cairn stands on the ridge about 50m above Nigg bay, south of the bay, overlooking Aberdeen to the north. The monument is a boulder built cairn, disturbed but surviving to around 20m diameter and 2m height.	Scheduled	395902	804103	SM 4055	http://data.historic-scotland.gov.uk/pls/html/db/f?p=2300:35:::P35_SELECTED_MONUMENT:04055
1045	Greg Ness Coastguard Station	Coastguard station Greg Ness, Doonie's Hill, Loirston Country Park. Depicted on	Undesignated	396830	804040	NMRS 193176	http://canmore.rcahms.gov.uk/en/site/193176/
1046	Boundary Stone, Tullos Hill	Boundary stone	Undesignated	396300	804000	NMRS 207549	http://canmore.rcahms.gov.uk/en/site/207549/



WA ID	Name	Description	Status	Easting	Northing	Source ID	Link
1047	Pillbox, Radar Station, Doonie's Hill	Pillbox (20th century) Loirston Country Park, site of 8-sided type 27 pillbox during ww2.	Undesignated	396650	803940	NMRS 174650	http://canmore.rcahms.gov.uk/en/site/174650/
1048	Radar Station, Doonie's Hill	Radar station, site located within area of Loirston Country Park, part of WW2 Chain Home Low (CHL) early warning detection system.	Undesignated	396680	803910	NMRS 138978	http://canmore.rcahms.gov.uk/en/site/138978/
1049	Boundary Stone, Doonie's Hill	Boundary stone, Ness farm gully	Undesignated	396710	803860	NMRS 207530	http://canmore.rcahms.gov.uk/en/site/207530/
1050	Pillbox, Radar Station, Doonie's Hill	Site of ww2 pillbox to south of radar station, Doonie's hill	Undesignated	396660	803830	NMRS 205458	http://canmore.rcahms.gov.uk/en/site/205458/
1051	Boundary Stone, Doonie's Hill	Boundary stone	Undesignated	396870	803800	NMRS 207531	http://canmore.rcahms.gov.uk/en/site/207531/
1052	Anti-tank Blocks, Bridge of One Hair	Anti-tank blocks (20th century) Doonie's hill. Anti-tank blocks reported at foot of cliff, dumped as landfill, ex-situ.	Undesignated	396880	803770	NMRS 214226	http://canmore.rcahms.gov.uk/en/site/214226/
1053	Crabs Cairn, cairn	Prehistoric burial cairn of possible bronze age date, Loirston Country Park, Tullos Hill. Found to contain a short cist containing a cinerary urn during the 18th century. The boulder built cairn is around 14m in diameter and a height of around 1.5m. The site is heavily overgrown with gorse, with access recently cleared on the northeast side.	Scheduled	396325	803750	SM 4060; NMRS 20240	http://data.historic-scotland.gov.uk/pls/html/db/f?p=2300:35:::P35_SELECTED_MONUMENT:04060 ; http://canmore.rcahms.gov.uk/en/site/20240/
1054	Quarry, Peterseat	Quarry located in boundary of Loirston Country Park to the immediate southwest of crab's cairn.	Undesignated	396300	803700	NMRS 207529	http://canmore.rcahms.gov.uk/en/site/207529/
1055	Barons Cairn, cairn	Baron's cairn is located at a prominent highpoint (c.83m od; OS trig point has been built through the monument). Site overlooks Nigg bay, Aberdeen and to the south. Built of boulders, the monument is around 18m in diameter and around 1.5m high.	Scheduled	395770	803692	SM 4126	http://data.historic-scotland.gov.uk/pls/html/db/f?p=2300:35:::P35_SELECTED_MONUMENT:04126
1056	Quarry, Peterseat	Quarry, Loirston, Tullos Hill	Undesignated	396170	803670	NMRS 207527	http://canmore.rcahms.gov.uk/en/site/207527/
1057	Quarry, Peterseat	Quarry	Undesignated	396140	803530	NMRS 207550	http://canmore.rcahms.gov.uk/en/site/207550/



WA ID	Name	Description	Status	Easting	Northing	Source ID	Link
1058	Doonie's farm, Loirston Country Park	Doonie's farmstead. Developing L-plan farmhouse with ancillary buildings depicted on 1st edition OS mapping into complex of buildings and damhead during 19th and 20th centuries. Small reservoir located to the southwest in 1st edition, depicted as marshland in subsequent editions. Buildings develop around a central yard with L-plan range on north side. Now a rare breeds model farm.	Undesignated	396531	803411	NMRS 207524	http://canmore.rcahms.gov.uk/en/site/207524/
1059	Loirston Country Park, cairn and dyke 220m NE of Cat Cairn	Prehistoric cairn scheduled along with a section of post-medieval consumption dyke; cairn is reported to be built of turf and loose stones. The site is presently heavily covered in gorse.	Scheduled	395357	803314	SM 12342	http://data.historic-scotland.gov.uk/pls/html/db/f?p=2300:35:::::P35_SELECTED_MONUMENT:12342
1060	Quarries, Loirston Country Park	Quarries, Loirston Country Park	Undesignated	396070	803300	NMRS 207526	http://canmore.rcahms.gov.uk/en/site/207526/
1061	Cat Cairn, cairn	Boulder-built cairn, thought to be of Bronze Age date located on ridge around 85m OD overlooking Aberdeen from the south, Loirston Country Park. Survives to around 20m in diameter and around 2.5m high. Possible terraced areas may indicate original form of the monument.	Scheduled	395190	803173	SM 4125	http://data.historic-scotland.gov.uk/pls/html/db/f?p=2300:35:::::P35_SELECTED_MONUMENT:04125
1062	Mains of North Altens farmstead	Farmstead farmstead, North Altens,	Undesignated	396070	803050	NMRS 207515	http://canmore.rcahms.gov.uk/en/site/207515/
1063	Doonie's Hill	Iron spearhead reported by OS, from a structure on Doonie's Hill in a collection from a regional museum.	Undesignated	396000	803000	NMRS 20243	http://canmore.rcahms.gov.uk/en/site/20243/
1064	Cottages, Altens Haven	Pair of abutting cottages, Altens Haven	Undesignated	396130	802460	NMRS 207519	http://canmore.rcahms.gov.uk/en/site/207519/
1065	Ice-house, Altens Haven	Site of clifftop ice-house depicted on 2nd edition OS mapping. Site of later ww2 structure, anti-tank blocks.	Undesignated	396320	802450	NMRS 207553	http://canmore.rcahms.gov.uk/en/site/207553/

Notes

1. Co-ordinates are in British National Grid (BNG), OSGB 1936.



Appendix 6: Reported Losses

Name	Description	Source ID	Link
Aid	19th century sloop lost off Girdle Ness point.	NMRS_206260	http://canmore.rcahms.gov.uk/en/site/206260/
Ann And Elizabeth	19th century schooner lost "off Girdle Ness".	NMRS_206370	http://canmore.rcahms.gov.uk/en/site/206370/
Anna	19th century smack lost off Aberdeen Bay.	NMRS_311933	http://canmore.rcahms.gov.uk/en/site/311933/
Ben Torc	20th century steam trawler lost off Greg Ness.	NMRS_209739	http://canmore.rcahms.gov.uk/en/site/209739/
Benscreel	20th century steam trawler lost off Girdle Ness, Aberdeen.	NMRS_115538	http://canmore.rcahms.gov.uk/en/site/115538/
Betsey	19th century craft lost off Bay of Nigg, Aberdeen.	NMRS_312531	http://canmore.rcahms.gov.uk/en/site/312531/
Betty Allan	19th century craft lost "on the beacon inside the old breakwater", Aberdeen Bay.	NMRS_267629	http://canmore.rcahms.gov.uk/en/site/267629/
Brothers Gem	20th century auxiliary lugger, lost off Aberdeen Bay.	NMRS_311948	http://canmore.rcahms.gov.uk/en/site/311948/
Caledonia	19th century craft lost off Aberdeen.	NMRS_206291	http://canmore.rcahms.gov.uk/en/site/206291/
Carl	19th century schooner lost "east of Aberdeen pier", "among the rocks a little to the southward of the harbour mouth", Aberdeen Harbour entrance.	NMRS_275881	http://canmore.rcahms.gov.uk/en/site/275881/
Carlo	20th century steamship lost off Girdle Ness, Aberdeen Harbour.	NMRS_115539	http://canmore.rcahms.gov.uk/en/site/115539/
Collynie	19th century steam ship lost "one mile WNW of Girdle Ness", Girdle Ness, Aberdeen Harbour entrance.	NMRS_207124	http://canmore.rcahms.gov.uk/en/site/207124/



Name	Description	Source ID	Link
Cretan	Steam ship.	NMRS_326918	http://canmore.rcahms.gov.uk/en/site/326918/
D W Fitzgerald	20th century steam trawler lost "[on the] rocks near Girdle Ness Lighthouse".	NMRS_208567	http://canmore.rcahms.gov.uk/en/site/208567/
Duncan	18th century galley lost off Girdle Ness.	NMRS_312522	http://canmore.rcahms.gov.uk/en/site/312522/
Falcoun	16th century craft lost off Aberdeen Bay.	NMRS_312017	http://canmore.rcahms.gov.uk/en/site/312017/
Fisher	19th century smack lost "17 miles south of Girdle Ness.	NMRS_285513	http://canmore.rcahms.gov.uk/en/site/285513/
Frederikke	19th century brig, lost off Aberdeen.	NMRS_298333	http://canmore.rcahms.gov.uk/en/site/298333/
G Koch	20th century steamship lost off Girdle Ness.	NMRS_312523	http://canmore.rcahms.gov.uk/en/site/312523/
George Stroud	20th century steam trawler lost off south breakwater of Aberdeen Harbour entrance: near "pier at [the] entrance to Aberdeen Harbour".	NMRS_208377	http://canmore.rcahms.gov.uk/en/site/208377/
Harbottle Castle	19th century schooner, lost "off Girdle Ness", "Approximately 0.25 miles off Aberdeen Harbour".	NMRS_298191	http://canmore.rcahms.gov.uk/en/site/298191/
Helena	19th century craft lost off Aberdeen Harbour Entrance; estimated about 1 mile WNW from Girdle Ness Lighthouse.	NMRS_261116	http://canmore.rcahms.gov.uk/en/site/261116/
HMT Princess Victoria	Acquisitioned steam trawler lost off Girdle Ness.	NMRS_312521	http://canmore.rcahms.gov.uk/en/site/312521/
Jane	19th century craft, lost "near Aberdeen".	NMRS_206030	http://canmore.rcahms.gov.uk/en/site/206030/
Jane Shearer	Schooner.	NMRS_326969	http://canmore.rcahms.gov.uk/en/site/326969/



Name	Description	Source ID	Link
Jenny	18th century craft lost off Aberdeen.	NMRS_205879	http://canmore.rcahms.gov.uk/en/site/205879/
Johan Augusta	Schooner.	NMRS_325522	http://canmore.rcahms.gov.uk/en/site/325522/
John	18th century craft lost "on the north side of Aberdeen Harbour, Aberdeen Beach.	NMRS_312276	http://canmore.rcahms.gov.uk/en/site/312276/
John Callam	19th century brig lost "a little north of Girdle Ness".	NMRS_312482	http://canmore.rcahms.gov.uk/en/site/312482/
John Callam	19th century brig lost Girdle Ness Point, Girdle Ness, Aberdeen Harbour.	NMRS_206385	http://canmore.rcahms.gov.uk/en/site/206385/
Jupiter	19th century brigantine lost Bay of Nigg, Aberdeen.	NMRS_312529	http://canmore.rcahms.gov.uk/en/site/312529/
Karen Nickelstein	19th century craft (possibly) lost "two miles north of Cove", Aberdeen.	NMRS_266889	http://canmore.rcahms.gov.uk/en/site/266889/
Klara	20th century schooner, lost off Girdle Ness, Aberdeen.	NMRS_207870	http://canmore.rcahms.gov.uk/en/site/207870/
Lady Forbes	19th century craft lost "near the mouth of the [River] Dee", Aberdeen Harbour entrance.	NMRS_206290	http://canmore.rcahms.gov.uk/en/site/206290/
Latona	19th century craft lost off Aberdeen Harbour".	NMRS_270674	http://canmore.rcahms.gov.uk/en/site/270674/
Levang	19th century schooner, lost off Aberdeen.	NMRS_207178	http://canmore.rcahms.gov.uk/en/site/207178/
Logie O'Buchan	Schooner.	NMRS_326992	http://canmore.rcahms.gov.uk/en/site/326992/
Lord Archibald Hamilton	19th century brigantine lost "on the point of Girdle Ness".	NMRS_272417	http://canmore.rcahms.gov.uk/en/site/272417/



Name	Description	Source ID	Link
Ludwig	19th century craft lost "near Aberdeen Harbour".	NMRS_261100	http://canmore.rcahms.gov.uk/en/site/261100/
Luna	19th century craft lost "Aberdeen Harbour entrance", "near Aberdeen".	NMRS_206016	http://canmore.rcahms.gov.uk/en/site/206016/
Margaret And Jane	19th century craft lost between Girdle Ness and Aberdeen Harbour entrance, "between the Ness and the Pier".	NMRS_275883	http://canmore.rcahms.gov.uk/en/site/275883/
Marjorie And William	18th century craft lost off Aberdeen Bay.	NMRS_311974	http://canmore.rcahms.gov.uk/en/site/311974/
Mary	Schooner.	NMRS_327000	http://canmore.rcahms.gov.uk/en/site/327000/
Mary Jane	20th century schooner lost "between Girdle Ness Light[house] and Aberdeen [south] breakwater", Greyhope.	NMRS_207419	http://canmore.rcahms.gov.uk/en/site/207419/
MGB 2007	20th century motor gun boat, lost "150 yards east of the south breakwater, Aberdeen [Harbour]", Aberdeen Harbour entrance, Balnagask, Greyhope Bay.	NMRS_312282	http://canmore.rcahms.gov.uk/en/site/312282/
Middleton	19th century craft lost off Aberdeen Harbour.	NMRS_270673	http://canmore.rcahms.gov.uk/en/site/270673/
Norfolk Spinner	20th century trawler, lost "against the south breakwater at Aberdeen".	NMRS_312382	http://canmore.rcahms.gov.uk/en/site/312382/
Oscar	19th century craft, lost "between Girdle and Shirtness".	NMRS_206146	http://canmore.rcahms.gov.uk/en/site/206146/
Paquebot Du Havre Et Bordeaux	Craft (possible).	NMRS_326835	http://canmore.rcahms.gov.uk/en/site/326835/
Persuit	19th century craft lost off Aberdeen.	NMRS_205934	http://canmore.rcahms.gov.uk/en/site/205934/
Prince Consort	19th century steamship lost off Altens Rocks, Burnbanks Cove.	NMRS_193001	http://canmore.rcahms.gov.uk/en/site/193001/



Name	Description	Source ID	Link
Providence	19th century schooner lost off Bay of Nigg.	NMRS_135422	http://canmore.rcahms.gov.uk/en/site/135422/
Providence	19th century schooner lost off Bay of Nigg, Aberdeen.	NMRS_312537	http://canmore.rcahms.gov.uk/en/site/312537/
Rodney	18th century craft lost off Aberdeen.	NMRS_205885	http://canmore.rcahms.gov.uk/en/site/205885/
Rumleigh	20th century steamship lost off Altens rocks "two miles south of Girdle Ness.	NMRS_207437	http://canmore.rcahms.gov.uk/en/site/207437/
Saint Andrew	19th century craft lost "back of north pier", Aberdeen Beach".	NMRS_270672	http://canmore.rcahms.gov.uk/en/site/270672/
Scott	19th century smack lost off Girdle Ness, Aberdeen Harbour.	NMRS_135418	http://canmore.rcahms.gov.uk/en/site/135418/
Seahorse	19th century craft lost off Aberdeen.	NMRS_312022	http://canmore.rcahms.gov.uk/en/site/312022/
Sheepfold (Possibly)	19th century craft (possibly) lost Nigg Bay.	NMRS_312538	http://canmore.rcahms.gov.uk/en/site/312538/
Sir William Wallace	19th century steam tub, lost off Girdle Rocks, Aberdeen Harbour.	NMRS_206449	http://canmore.rcahms.gov.uk/en/site/206449/
Sisters	19th century sloop, lost off Aberdeen, Slain's Castle	NMRS_206329	http://canmore.rcahms.gov.uk/en/site/206329/
Stockton	Brig	NMRS_327042	http://canmore.rcahms.gov.uk/en/site/327042/
Susan	19th century sloop lost Aberdeen Harbour entrance, pier.	NMRS_247711	http://canmore.rcahms.gov.uk/en/site/247711/
Swift	Craft (possible).	NMRS_326846	http://canmore.rcahms.gov.uk/en/site/326846/



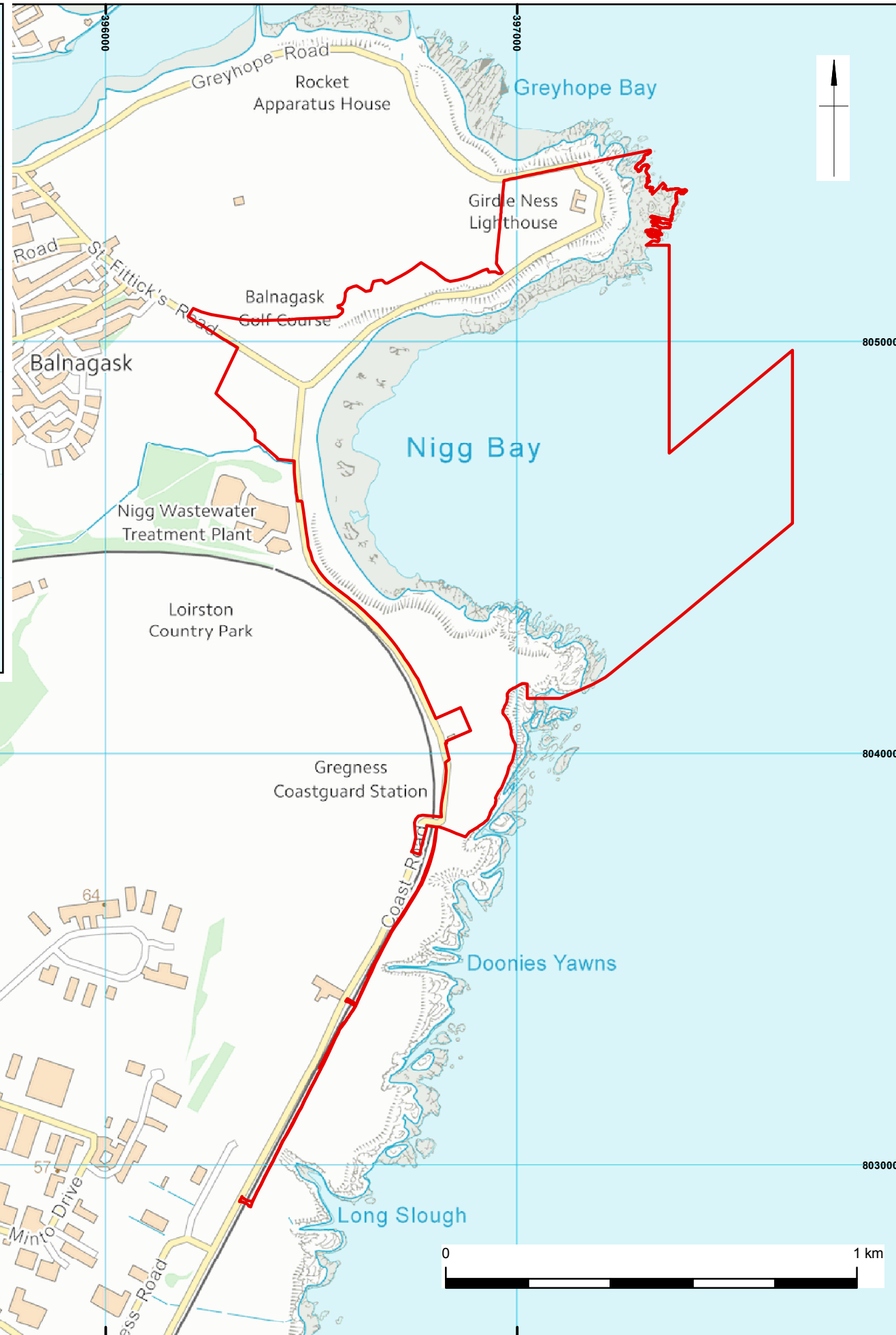


Name	Description	Source ID	Link
Tajus	19th century craft, lost off Aberdeen, Whiteness, Slain's.	NMRS_205938	http://canmore.rcahms.gov.uk/en/site/205938/
Thames	19th century smack lost off "Rocks of Greyhope", Girdle Ness.	NMRS_206154	http://canmore.rcahms.gov.uk/en/site/206154/
Thomas	19th century brig lost "Nigg, south of Aberdeen", "near Aberdeen".	NMRS_205936	http://canmore.rcahms.gov.uk/en/site/205936/
Two Brothers	19th century craft, lost off Nigg Bay.	NMRS_312528	http://canmore.rcahms.gov.uk/en/site/312528/
Unicorn	29th century craft reports "0.5 mile form Aberdeen", off harbour entrance.	NMRS_312540	http://canmore.rcahms.gov.uk/en/site/312540/
Unknown	19th century craft lost off Aberdeen.	NMRS_206337	http://canmore.rcahms.gov.uk/en/site/206337/
Unknown	18th century craft lost off Aberdeen in 1785.	NMRS_312019	http://canmore.rcahms.gov.uk/en/site/312019/
Unknown	Unknown 18th century craft, lost off Aberdeen.	NMRS_205882	http://canmore.rcahms.gov.uk/en/site/205882/
Unknown	18th century craft lost off Aberdeen	NMRS_205883	http://canmore.rcahms.gov.uk/en/site/205883/
Unknown	16th century craft lost off Girdle Ness, ? off St Machar's Church, Aberdeen in 1568.	NMRS_312520	http://canmore.rcahms.gov.uk/en/site/312520/
Unknown	19th century craft, lost off Aberdeen.	NMRS_206336	http://canmore.rcahms.gov.uk/en/site/206336/
Unknown	18th century craft lost Bay of Nigg, Aberdeen.	NMRS_312527	http://canmore.rcahms.gov.uk/en/site/312527/
Unknown	18th century craft, lost off Aberdeen.	NMRS_205884	http://canmore.rcahms.gov.uk/en/site/205884/



Name	Description	Source ID	Link
Unknown	19th century craft lost off Aberdeen.	NMRS_206273	http://canmore.rcahms.gov.uk/en/site/206273/
Unknown 1720	Unknown, galliot, lost 1720.	NMRS_328798	http://canmore.rcahms.gov.uk/en/site/328798/
Unknown 1786	Craft, lost 1786 (possible).	NMRS_328950	http://canmore.rcahms.gov.uk/en/site/328950/
Unknown 1787	Unknown sloop lost 1787.	NMRS_328998	http://canmore.rcahms.gov.uk/en/site/328998/
Unknown 1796	Unknown fishing vessel lost 1796.	NMRS_328568	http://canmore.rcahms.gov.uk/en/site/328568/
Unknown 1819	Craft (possible), lost 1819.	NMRS_329404	http://canmore.rcahms.gov.uk/en/site/329404/
Unknown 1876	Unknown craft lost 1876 (possible).	NMRS_327090	http://canmore.rcahms.gov.uk/en/site/327090/
Unknown 1928	Unknown craft (possible) lost 1928.	NMRS_327679	http://canmore.rcahms.gov.uk/en/site/327679/
Venetia (A 560)	Steam trawler.	NMRS_326025	http://canmore.rcahms.gov.uk/en/site/326025/
Victoria	19th century schooner, lost "near Girdle Ness", Cove.	NMRS_262641	http://canmore.rcahms.gov.uk/en/site/262641/
Welsh Prince	20th century steam trawler lost off Girdle Ness.	NMRS_207911	http://canmore.rcahms.gov.uk/en/site/207911/
William Osten	20th century steam trawler lost south breakwater, Aberdeen Harbour entrance.	NMRS_207479	http://canmore.rcahms.gov.uk/en/site/207479/



Appendix 7: Figures and Photomontages

Site

EIA Boundary

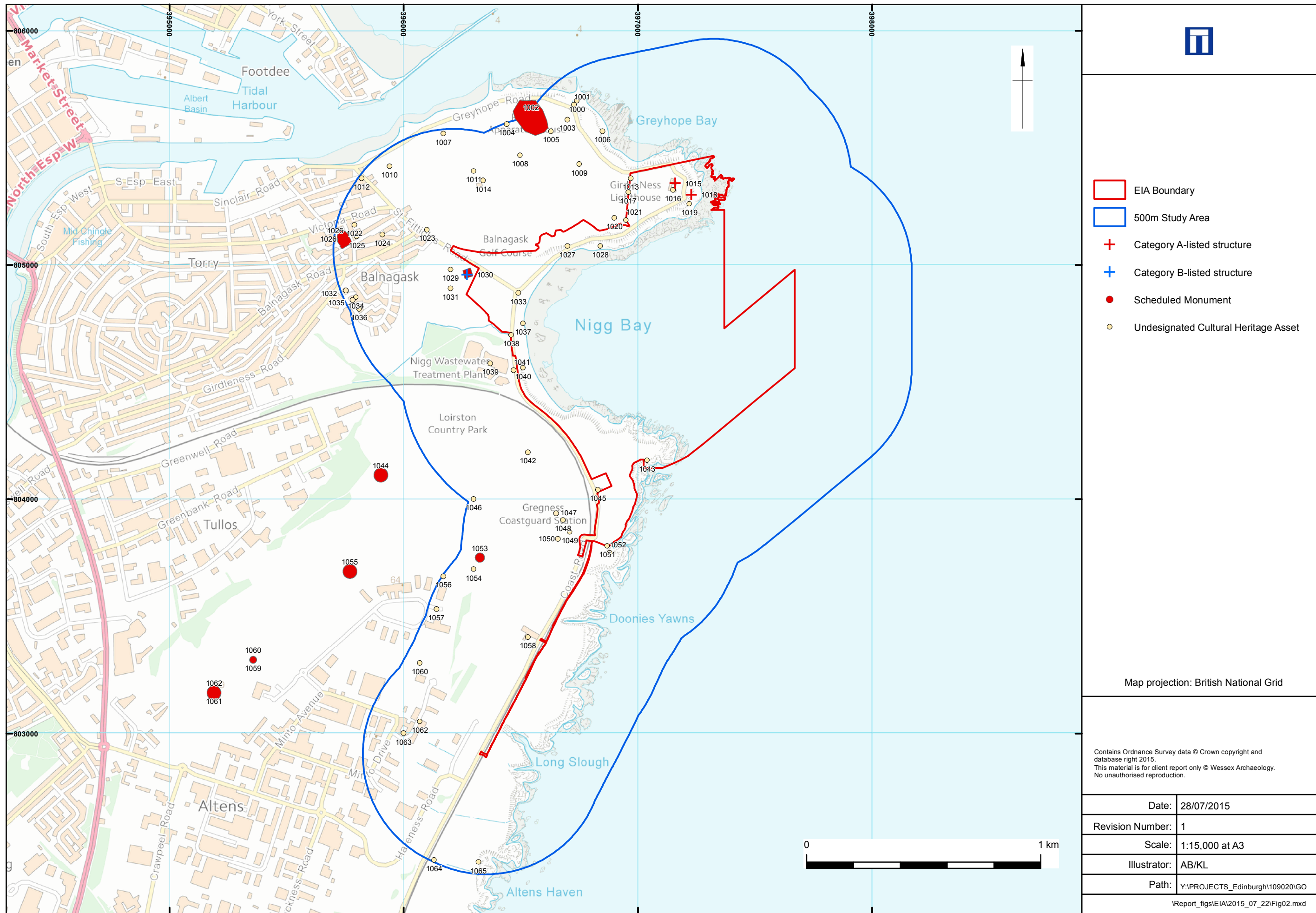
Map projection: British National Grid

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Site location

Figure 1





EIA Boundary
 500m Study Area
+ Category A-listed structure
+ Category B-listed structure
● Scheduled Monument
○ Undesignated Cultural Heritage Asset

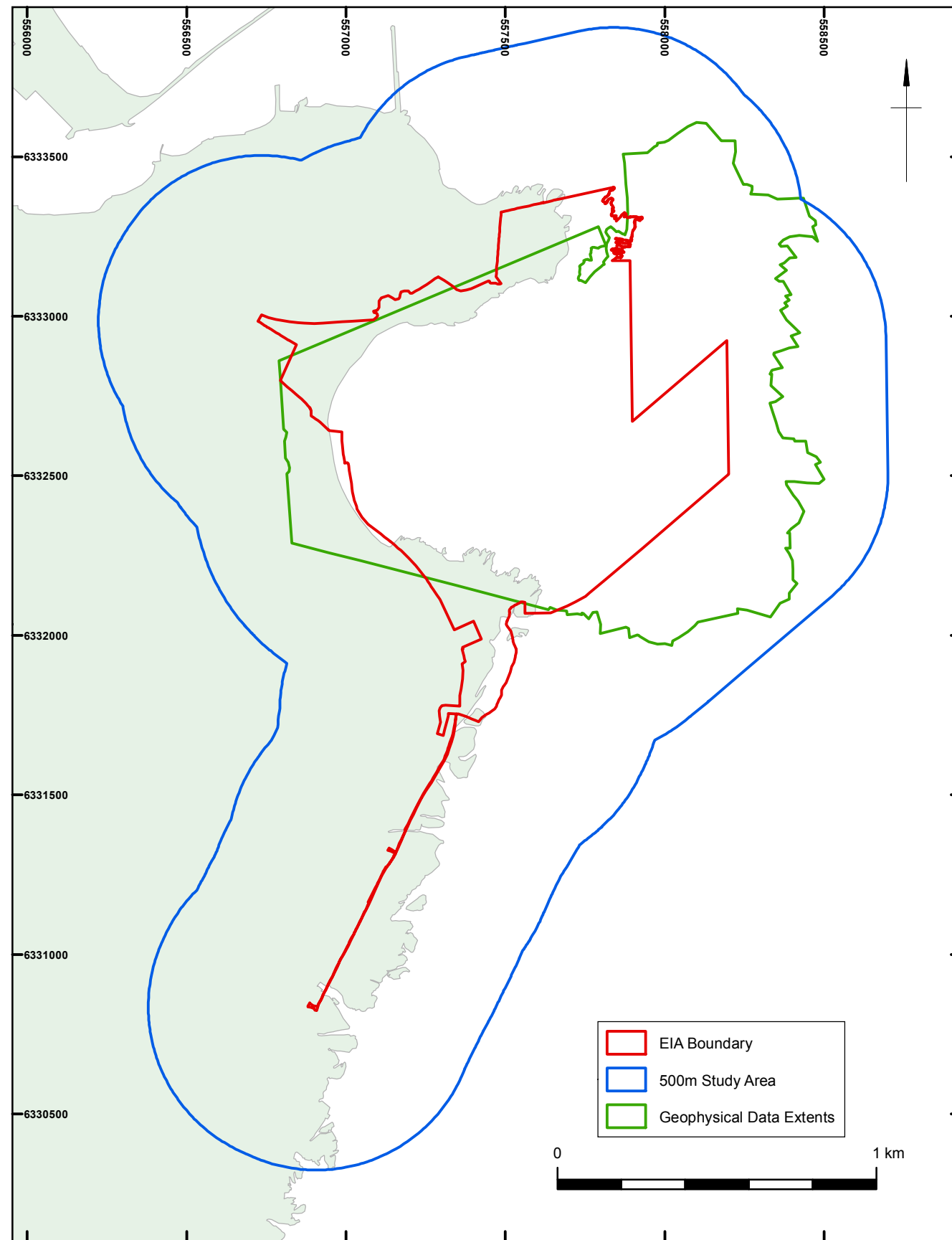
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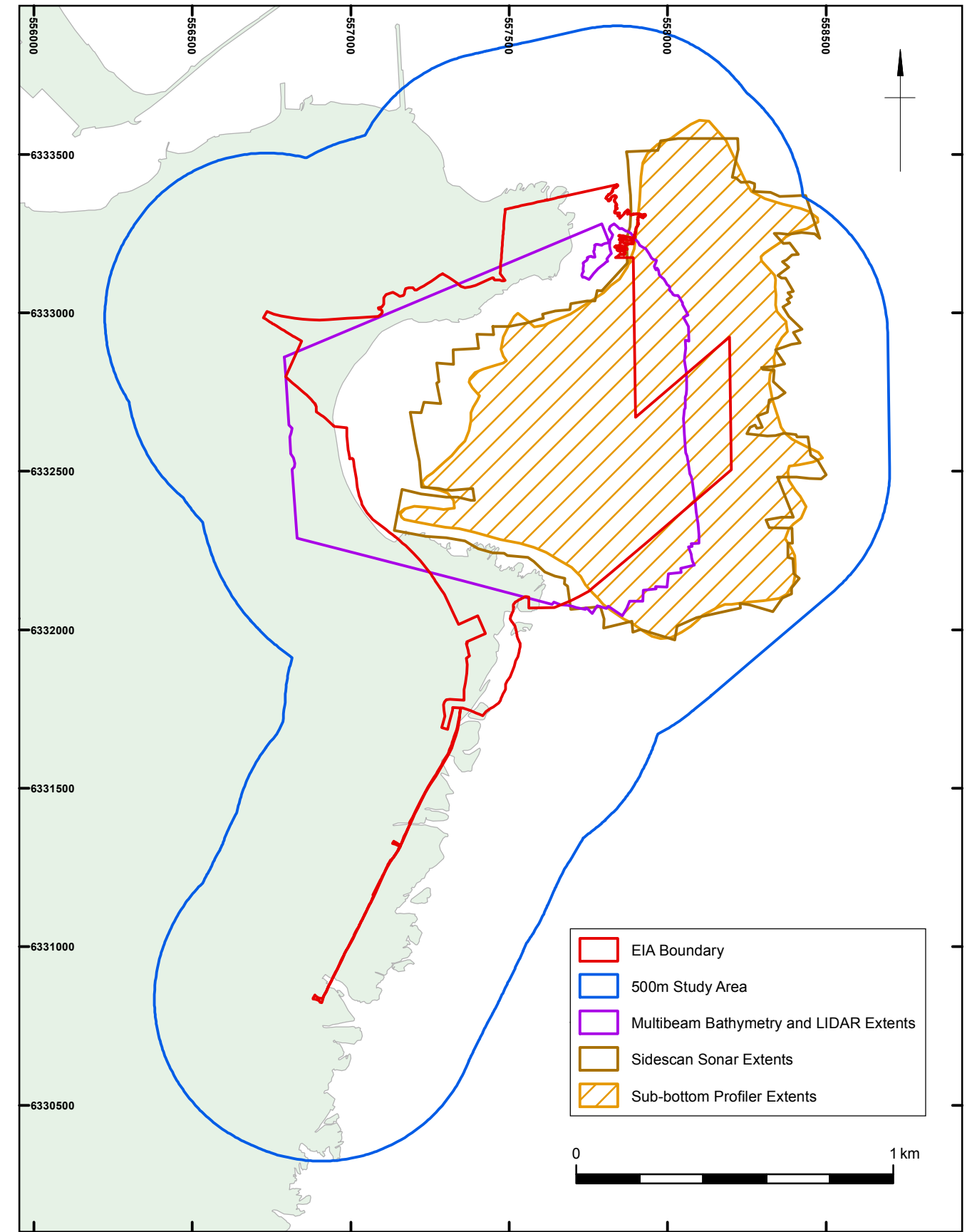
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Site, Study Area and recorded historic environment resource

Figure 2



A. Total Geophysics Coverage



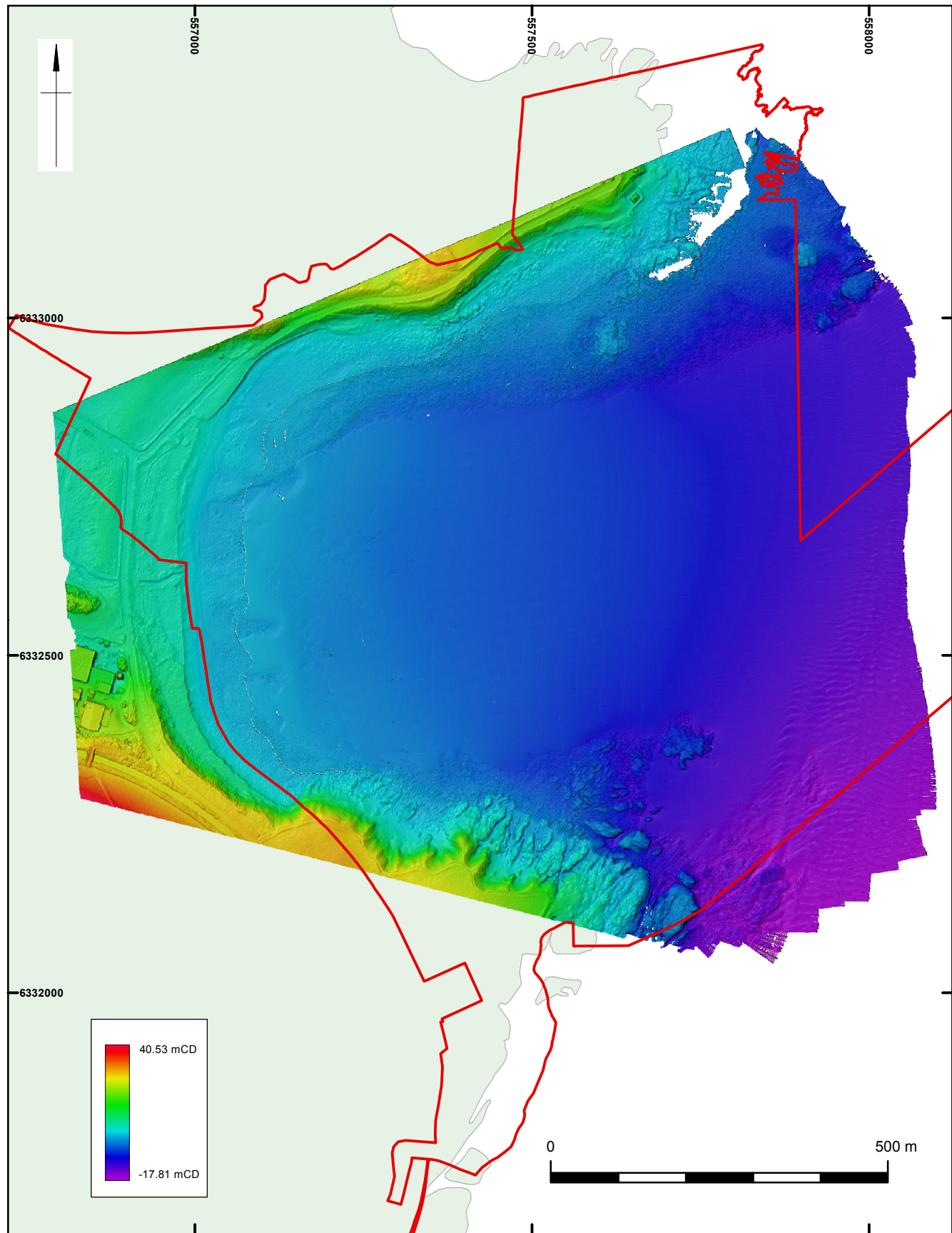
B. Geophysics Coverage by Data Type



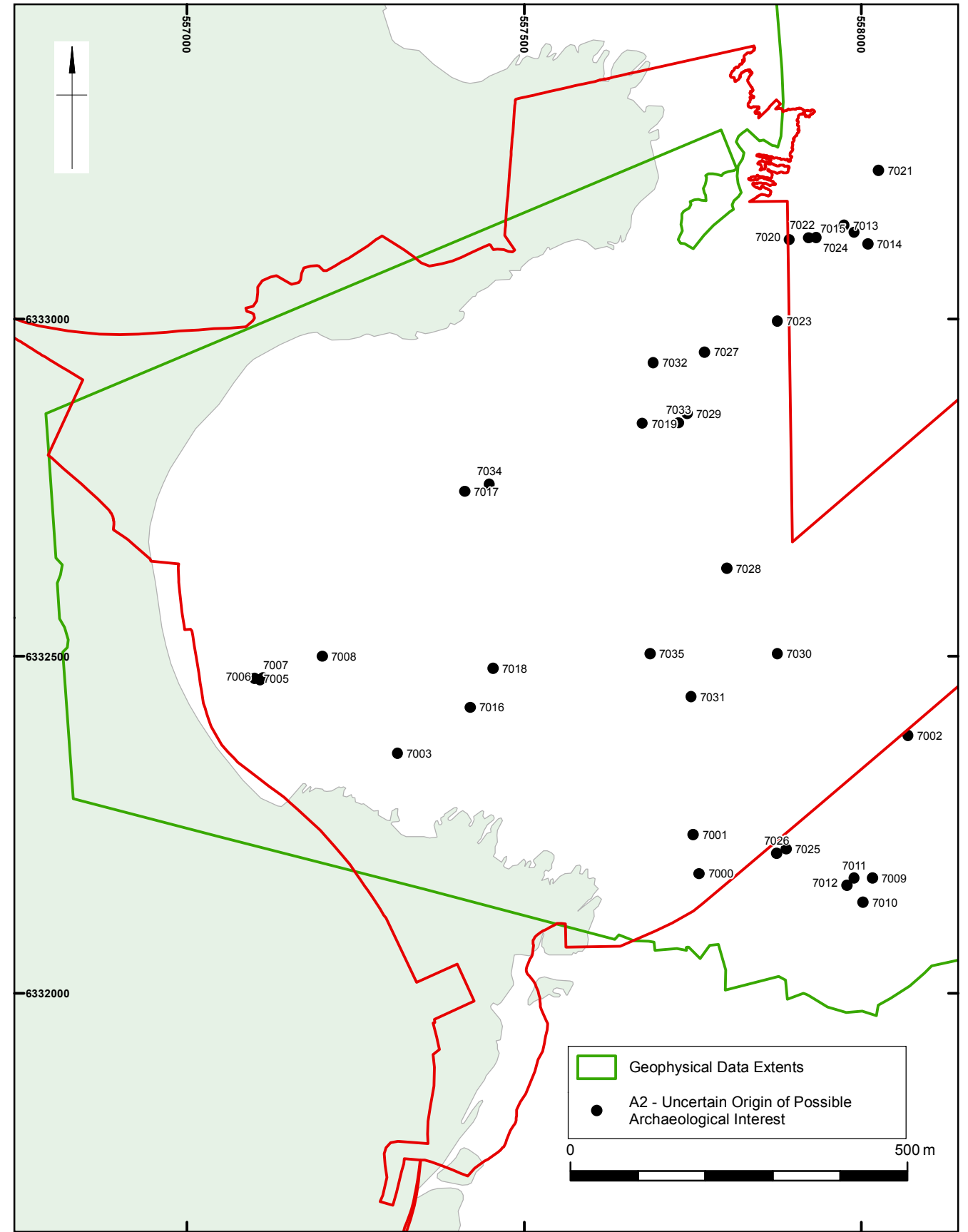
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GB High Water Coastline

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A. Multibeam Bathymetry and LIDAR Data



B. Features of Archaeological Potential



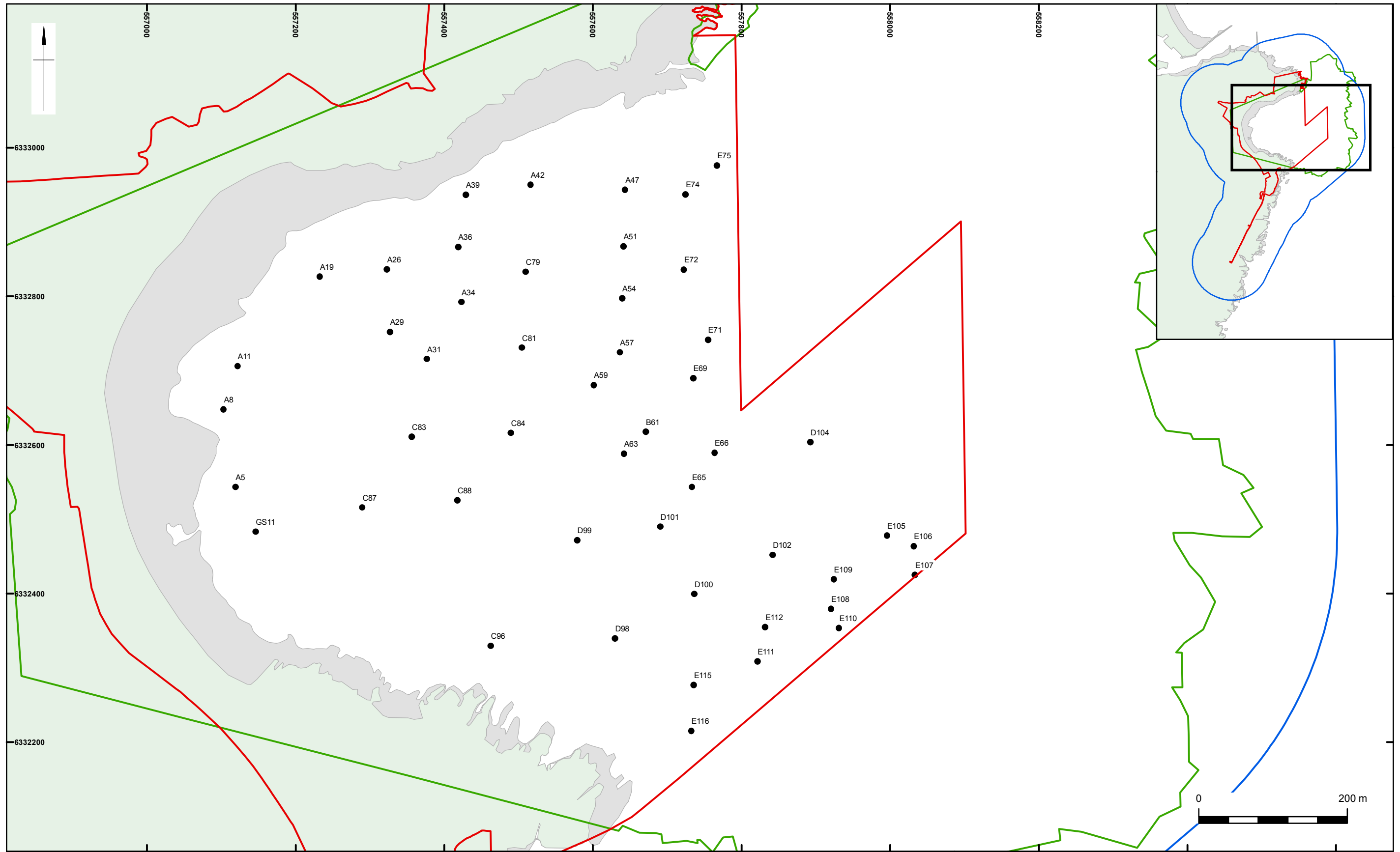
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 EIA Boundary

 GB High Water Coastline

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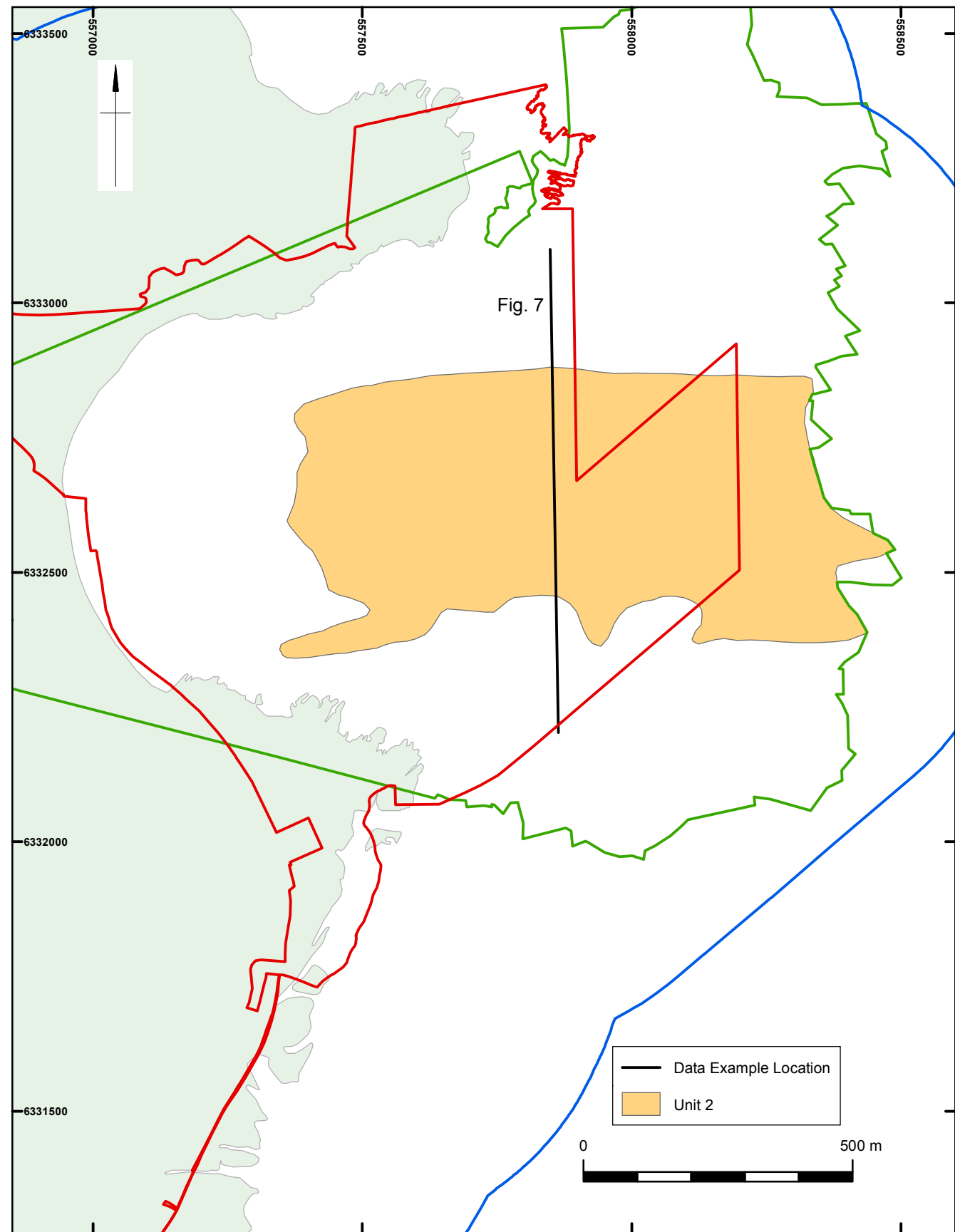
- EIA Boundary
- 500m Study Area
- Geophysical Data Extents
- Geotechnical sample
- GB High Water Coastline
- GB Low Water Coastline

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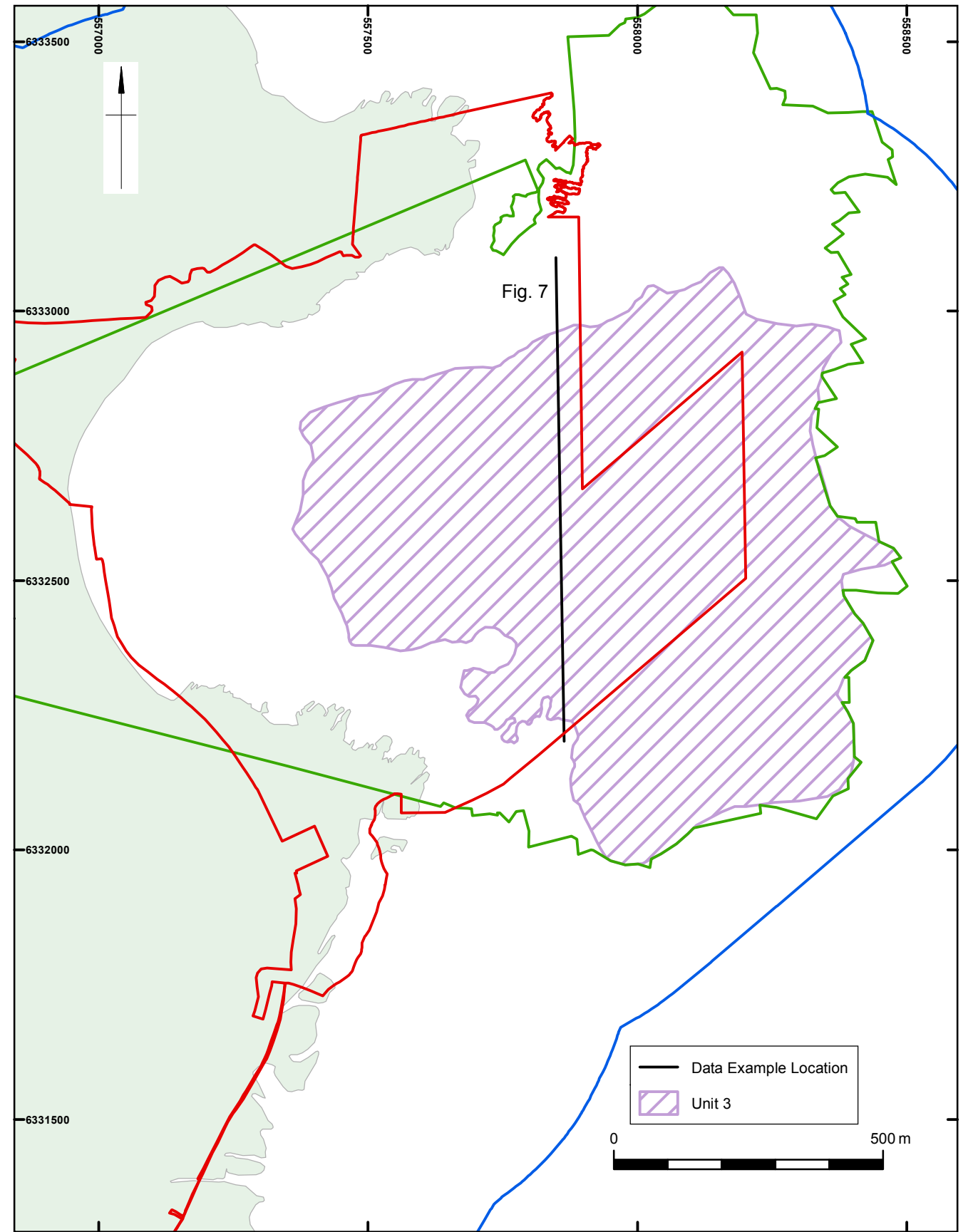
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Geotechnical Sample Locations

Figure 5



A. Extent of Unit 2



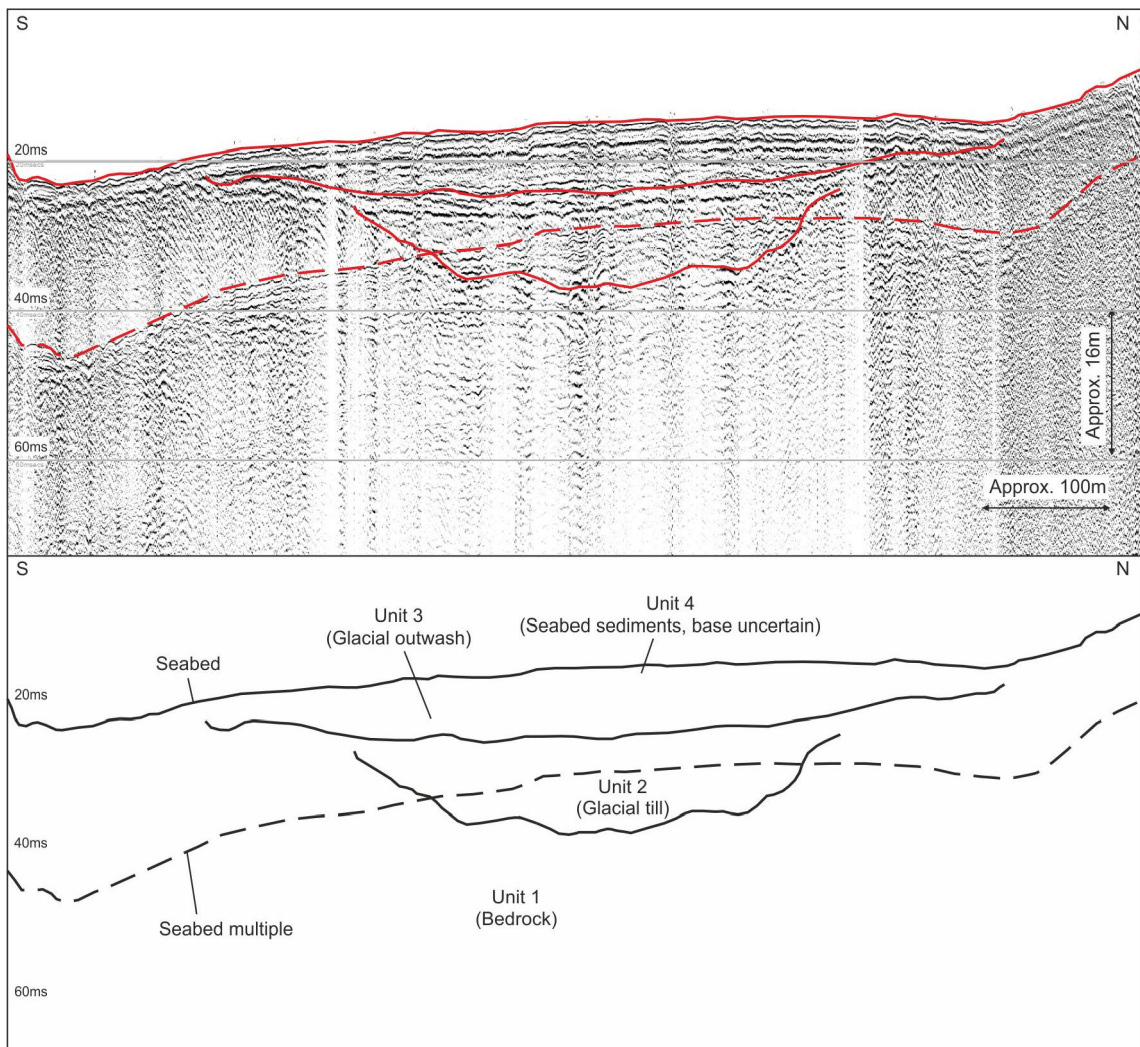
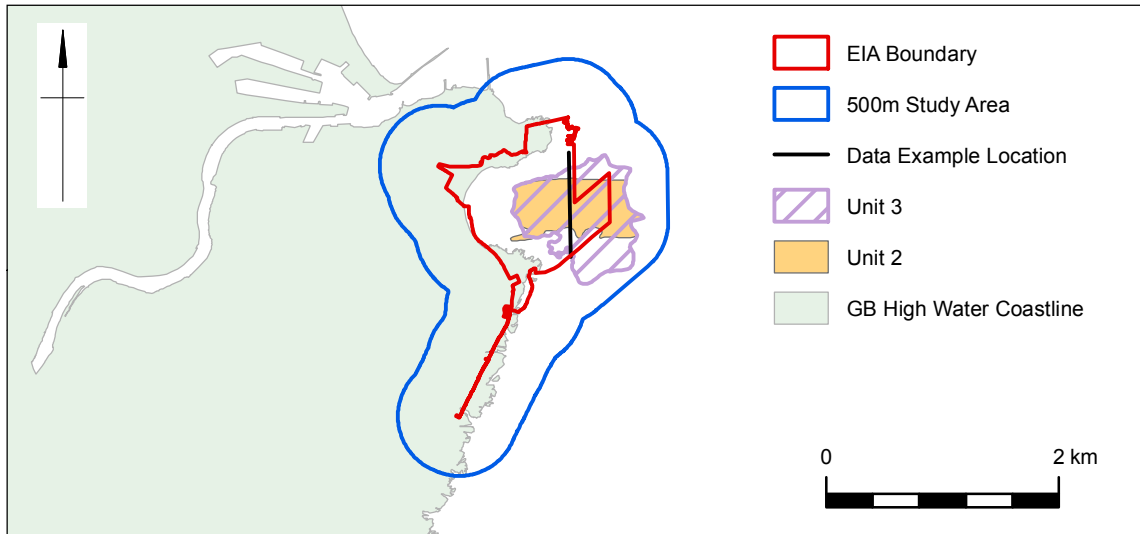
B. Extent of Unit 3



Map projection: WGS 1984 UTM Zone 30N
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- EIA Boundary
- Geophysical Data Extents
- 500m Study Area
- GB High Water Coastline

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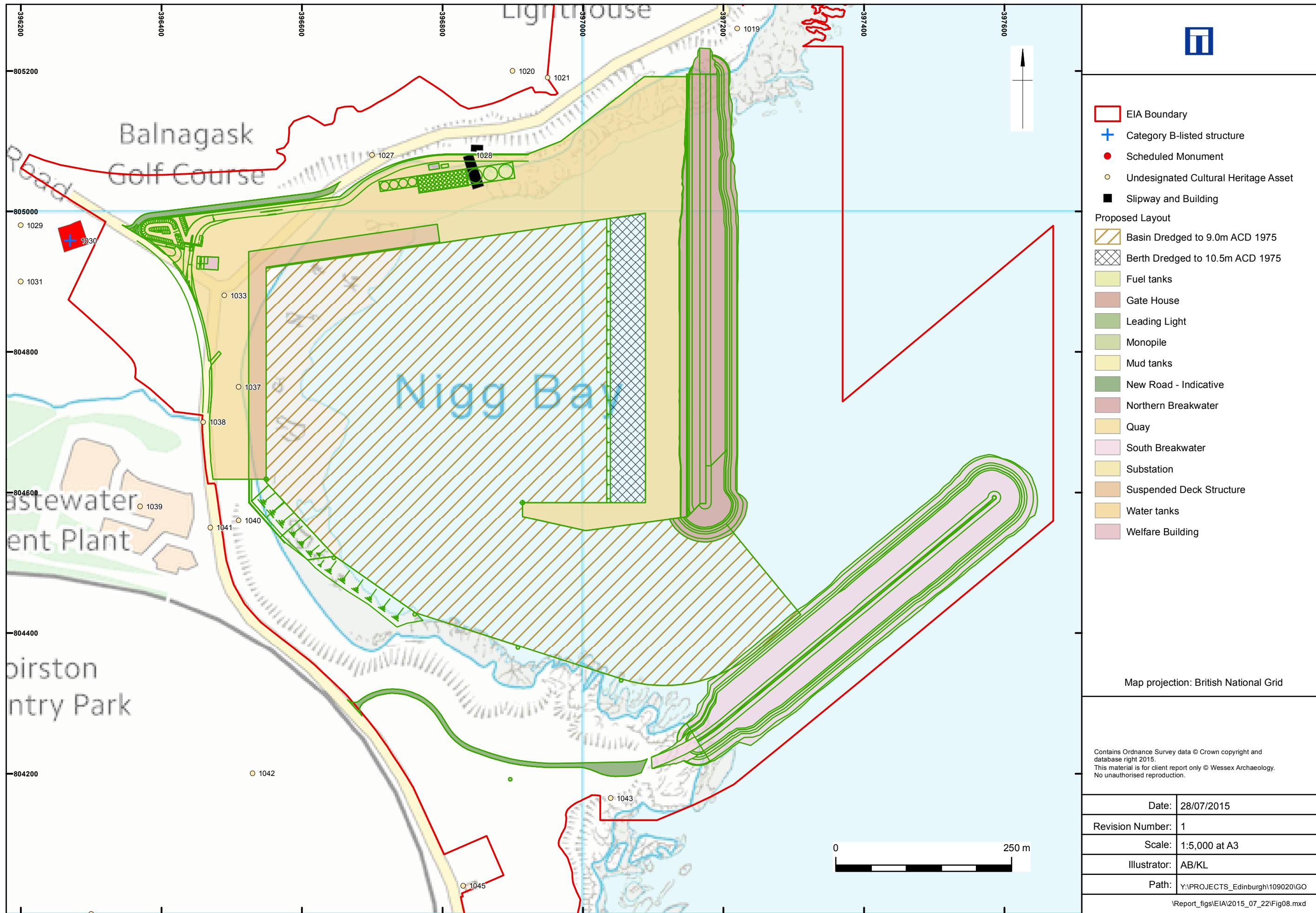
Map projection: WGS 1984 UTM Zone 30N

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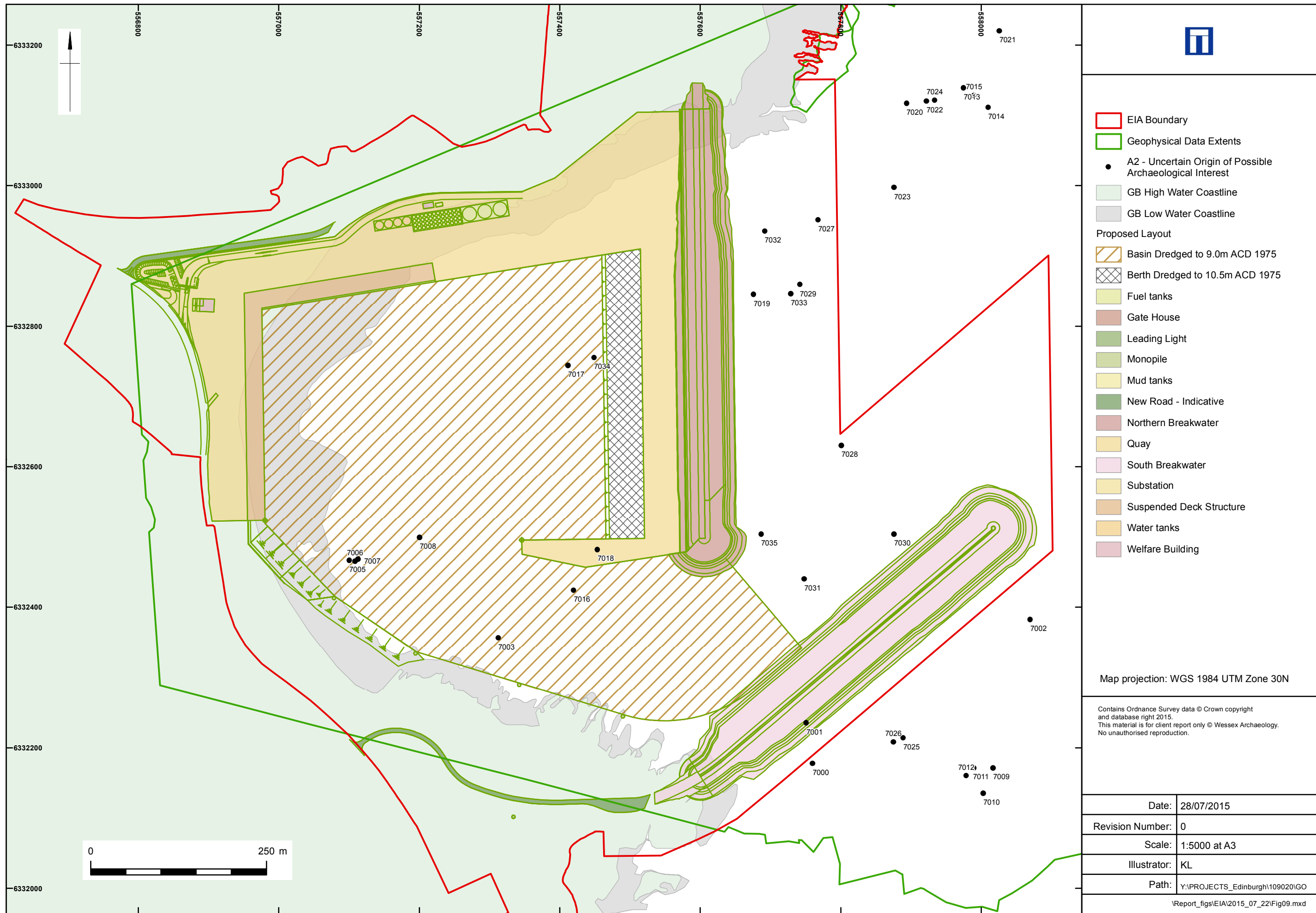
Sub-Bottom Profiler Data Example

Figure 7



Potential physical impacts: Onshore cultural heritage receptors (BNG)

Figure 8



Potential physical impacts: Marine cultural heritage receptors (WGS84 UTM30N)

Figure 9



A



B

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A. Balnagask motte (WA 1027)



B. Balnagask motte (WA 1027), view towards Nigg Bay

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A. Tullos Cairn (WA 1045)



B. Baron's Cairn (WA 1056)



C. Baron's Cairn (WA 1056)



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A. Loirston Country Park cairn (WA 1061)



B. Cat Cairn (WA 1063)



C. Cat Cairn (WA 1063) looking towards the Site

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A



B

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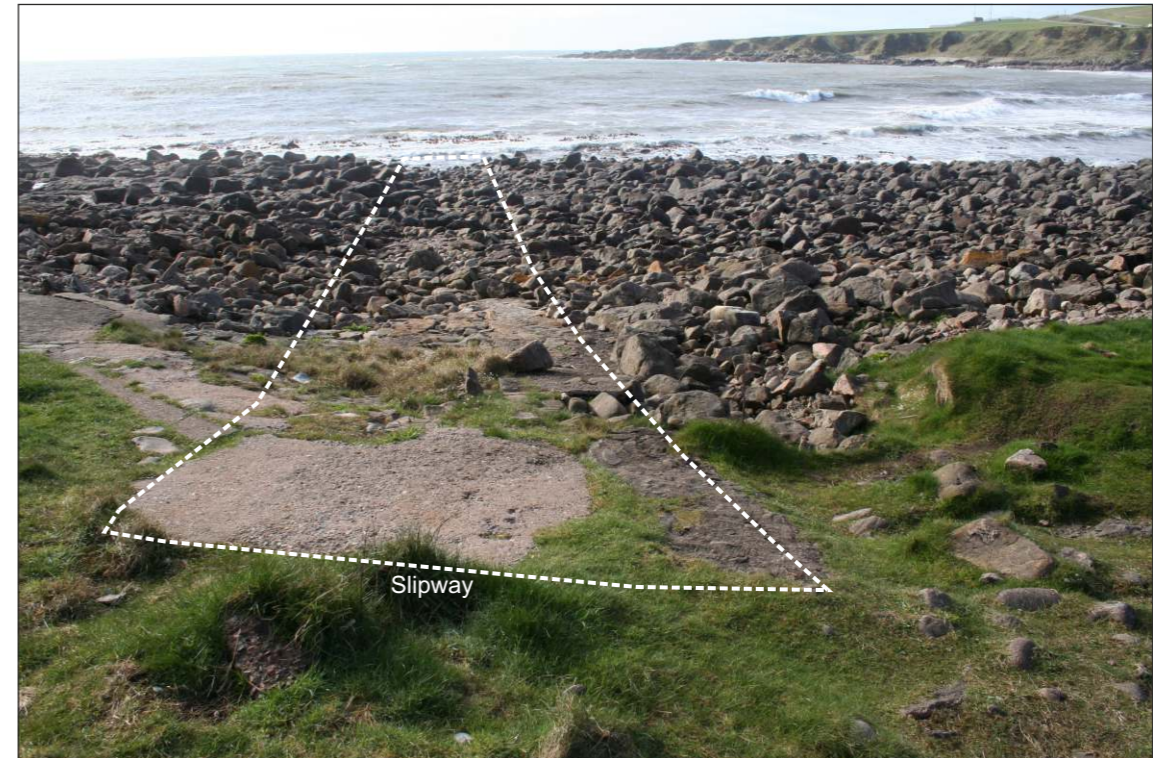
A. Slipway (fastenings highlighted by arrows)



B. Slipway and roofless building



C. Roofless building



D. Slipway and north coast of Nigg Bay



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A. View from top of Girdle Ness Lighthouse overlooking Nigg Bay and Aberdeen Harbour



B. View from inside cupola



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A. Tullos Cairn (WA 1044)



B. Crab's Cairn (WA 1053)



C. Baron's Cairn (WA 1055),



D. Loirston Park cairn (WA 1060)



E. Cat Cairn (WA 1062)



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