



ABERDEEN HARBOUR
EXPANSION PROJECT
November 2015

*Volume 2:
Environmental
Statement*

CHAPTER 24: ARCHAEOLOGY AND CULTURAL HERITAGE



24. ARCHAEOLOGY AND CULTURAL HERITAGE

24.1 Introduction

This chapter assesses the potential effects on marine archaeology and cultural heritage from the construction and operation activities of the proposed Aberdeen Harbour Expansion Project. It is informed by an accompanying Technical Report detailing the assessment undertaken by Wessex Archaeology (WA) (ES Appendix 24-A: Historic Environment Desk-Based Assessment). The desk based assessment was carried out to determine, as far as is possible from existing information, the nature, extent and significance of the historic environment resource within the site and to provide an assessment of the effects of development on the cultural heritage assets identified.

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.'

Setting impacts arising from the proposed development upon the setting of Conservation Areas and Gardens and Designed Landscape are considered in Chapter 17: Seascape, Landscape and Visual Effects.

24.1.1 Designated Heritage Assets

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.

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.'

Statutory protection is provided to certain classes of designated heritage asset under the legislation presented in ES Appendix 24-A, Annex 2: Legislative and Planning Framework.

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 Historic Scotland 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).

24.2 Policy, Legislation and Guidance

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. Further information regarding policy, legislation and guidance pertinent to the Aberdeen Harbour Expansion Project is considered in Chapter 4: Planning and Legislation.

The following sub-sections summarise the main components of the national and local planning and legislative framework governing the treatment of the historic environment within the planning process. Further detail is presented in ES Appendix 24-A, Annex 2: Legislative and Planning Framework.

24.2.1 Local Planning Policy and Guidance

The Site is situated within the administrative boundaries of Aberdeen City Council (ACC), which adopted the Aberdeen Local Development Plan in February 2012. This plan is considered in Chapter 4: Planning and Legislation.

The plan 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.

Local planning policies contained within the plan, which relate to the historic environment and may be relevant to the proposed development, are provided as Supplementary Guidance Topic: Archaeology and Planning (March 2012). 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 such

sites 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.

24.2.2 Marine Planning Policy and Guidance

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 this legislation for the designation of areas of the seabed as historic Marine Protected Areas (hMPA) in response to instances where the cultural heritage importance of seabed features such as a wreck require formal protection. hMPA have replaced the use of Section 1 of the Protection of Wrecks Act 1973 for designation of historic shipwrecks in Scottish territorial waters.

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, which compliments the approach onshore.

24.3 Consultation

A number of statutory and non-statutory bodies were consulted to ensure that relevant local and national policies and interests were considered as part of the assessment. Comments received from consultees are provided in Table 24.1.

At the time the consultation was undertaken, the Historic Environment Record (HER) of Aberdeen City Council (ACC) was not available for consultation or data requests. Instead, Aberdeenshire Council provided temporary cover for archaeological advice for ACC and advised on efforts to reconstruct known archaeology baseline datasets that would typically have been available through the ACC HER.

Table 24.1: Summary of comments received from consultees regarding archaeology and cultural heritage

Consultee	Date	Summary of Consultation	Where addressed in ES
Historic Scotland	10 January 2014	Refer to relevant policy and advice for use in the assessment	Considered in Section 24.2 Policy, Legislation and Guidance
Historic Scotland	10 January 2014	Consideration of specific assets within the remit of Historic Scotland as part of any assessment	Considered in 24.14 Assessment of Impacts
Historic Scotland	18 February 2015	Request a qualified archaeologist undertakes the assessment utilising existing surveys and other relevant information	Appointment of qualified archaeologist considered in Section 24.1 and data sources are discussed in Section 24.4.2
Historic Scotland	18 February 2015	Further guidance advice provided	Considered as part of the assessment and referenced in ES Appendix 24-A, Annex 8.
Aberdeenshire Council	7 May 2015	Discussion regarding the provision of archaeological advice on behalf of Aberdeen City Council	Discussed in Section 24.4.3.

24.4 Methodology

Advice was sought from statutory and non-statutory consultees to develop the scope of the assessment and to identify relevant local and national policies to be considered in formulating the scope of the assessment (Table 24.1).

24.4.1 Study Area

An onshore study area was established within a 500 m radius of the site boundary (Figure 24.1). 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.

The offshore study area was established using the same 500 m buffer radius of the site boundary 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 and study area.

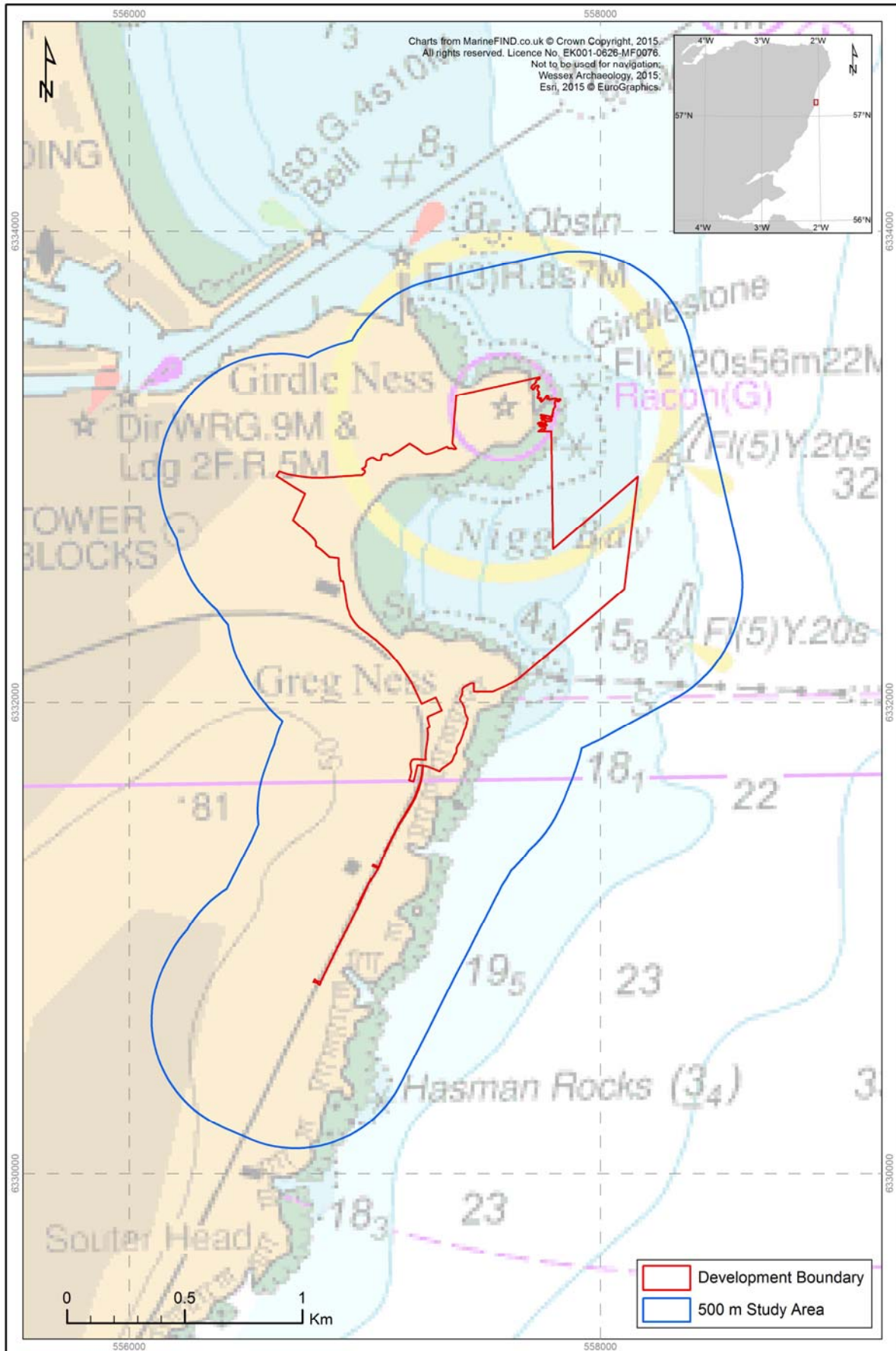


Figure 24.1: Site boundary and study area

24.4.2 Walkover Survey

A site was visited on the 5 May and 6 May 2015 and a walk-over survey undertaken to assess general aspect, character, condition and setting of the terrestrial and intertidal areas of the site, and to identify and assess any features of cultural heritage interest that could be affected by the Aberdeen Harbour Expansion Project (WA, 2015).

The walkover survey was undertaken at low tide and reasonable attempts have been made to verify the available HER data and record unrecorded features with surface expression. This includes digitising features from coastal 0.5 m LiDAR coverage for the study area with features observed on the ground.

24.4.3 Data Sources

A number of publicly accessible sources of primary and synthesised information were consulted and a walkover survey of the site undertaken. A bibliography of documentary, archive and cartographic sources consulted is included in ES Appendix 24-A, Annex 8.

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 (ES Appendix 24-A:, Annex 3: Aerial Photography consulted);
- Available historic manuscripts, surveyed maps, and Ordnance Survey (OS) maps held at the National Archives Scotland and National Library of Scotland (see references);
- 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);
- 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);
- Records located within the study area were integrated with the geophysical results as outlined in ES Appendix 24-A:, Annex 4.7; and
- Previous marine geophysical surveys undertaken by Caledonian Geotech (August 2012) and Aspect Land & Hydrographic Surveys Ltd (September 2014). The dataset comprised of sidescan sonar (SSS) and sub-bottom profiling (SBP) with multibeam bathymetry and LiDAR data also acquired by Aspect.

Any sites found to be outside the study area are deemed beyond the scope of the assessment and are subsequently not included in this report.

24.4.4 Archaeological Data

The records held by RCAHMS, the UKHO and the other sources outlined above detail a record of all surviving heritage assets. The information contained within these records is updated upon new heritage discoveries. As such, these records are a continually expanding source of information. The data obtained from these sources for the purposes of this assessment was accurate at the time of its retrieval.

At the time of this assessment, the Historic Environment Record (HER) of ACC was not available for consultation or data requests. In discussion with Aberdeenshire Council Archaeology Service, who were providing temporary cover for archaeological advice provision for ACC, efforts were made to reconstruct known archaeology baseline datasets that would typically have been available from the HER. This included archaeological fieldwork events (sourced through the ADS Grey Literature archive).

24.4.5 Geophysical Data

The SSS and SBP coverage begins 200 m from the nearshore area of the site, meaning that a portion of the study area is not covered by either of these data sets (Figure 24.2). The survey vessel worked as close to the shore as was safely feasible to provide as complete coverage as possible. However, the multibeam bathymetry data did cover the entire marine study area and the assessed borehole logs, collected as part of the geotechnical survey campaign, partially fill in the SBP data gap, although only at point locations rather than continuous coverage (Figure 24.3).

The magnetometer assessment in this report is based on identified magnetic anomalies identified in the survey undertaken by Coastline (Coastline, 2013).

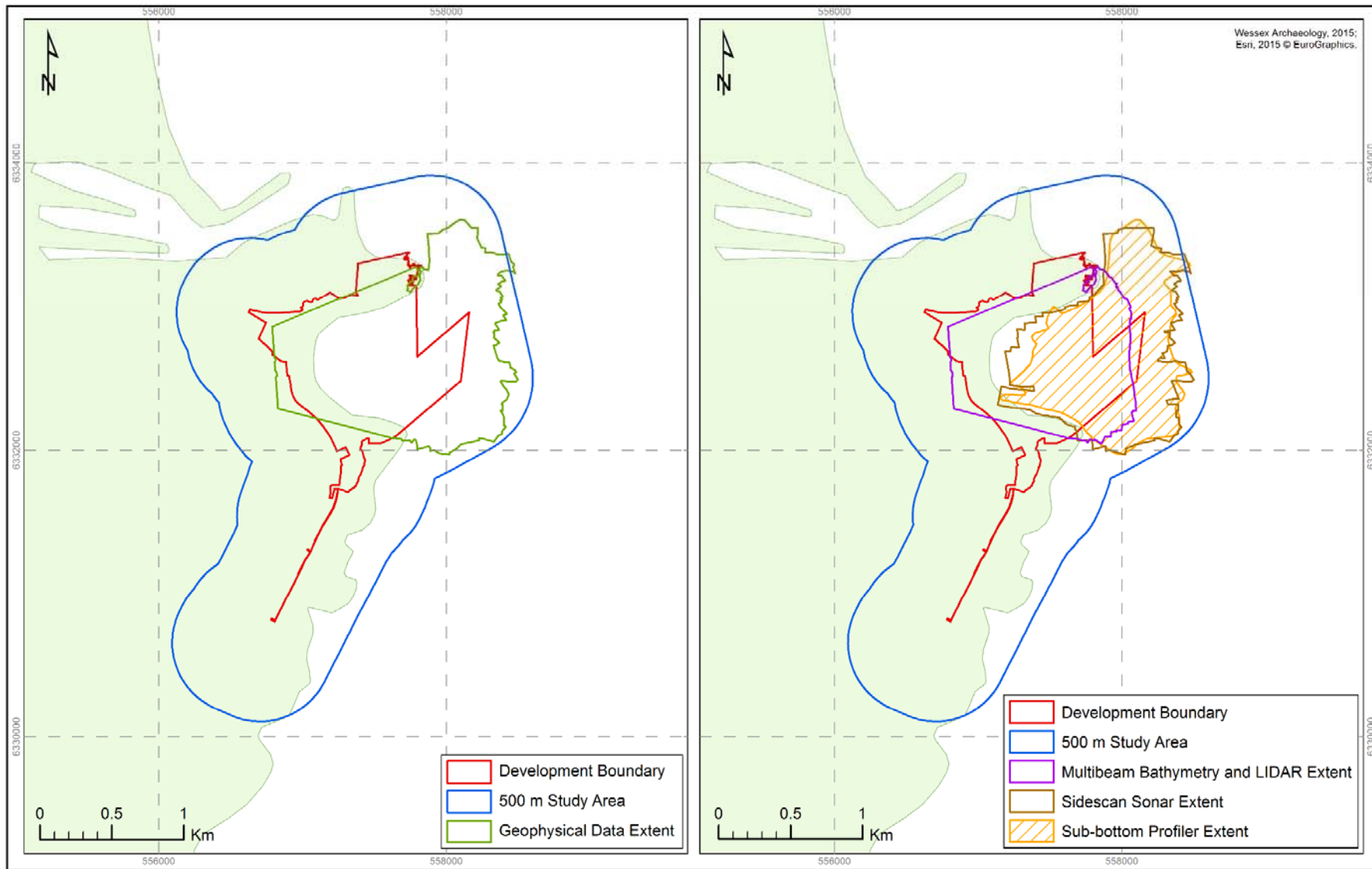
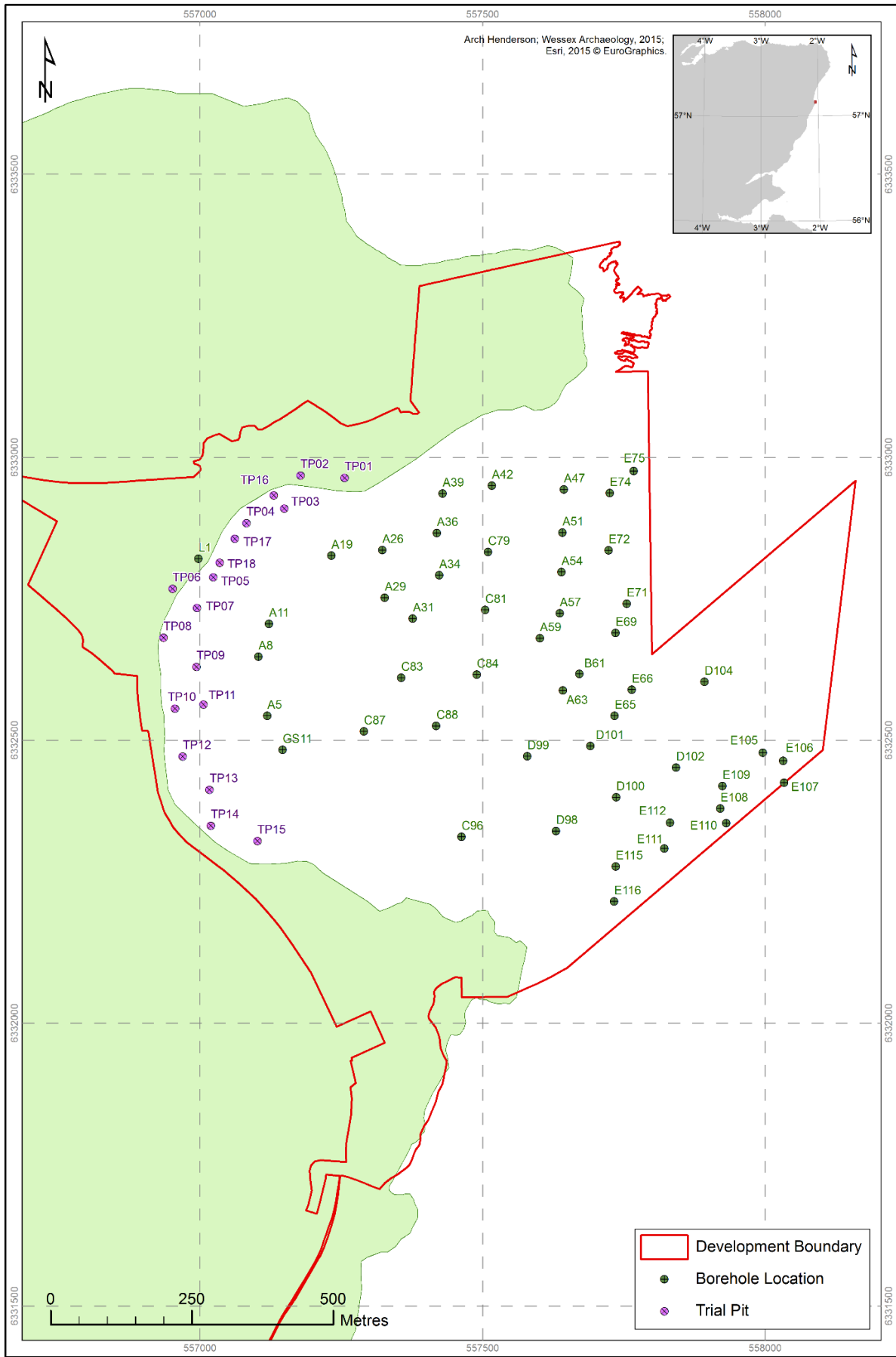


Figure 24.2: Total geophysical survey coverage and survey type



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Figure 24.3: Geotechnical sample locations

24.5 General Impact Assessment Methodology

The methodology employed during this assessment has been based upon relevant professional guidance including the Chartered Institute for Archaeologist's Standard and Guidance for Historic Environment Desk-Based Assessment (CIfA, 2014).

The overall methodology covers terrestrial, intertidal and marine environments which utilise a range of data sources, some of which are specific to the environment that is being assessed. 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 restricted to areas of the study area which are below MHWS. The terrestrial environment is derived from historic mapping, aerial photography and existing databases of cultural heritage assets, underpinning coastal and intertidal walkover surveys and site visits, and is limited to areas of the study area above MLWS. The intertidal area is therefore covered by both scopes and methodologies.

The overlap between the terrestrial, intertidal and marine study areas is reflected in the scope of terrestrial and marine planning legislation as discussed in Section 24.2.

The significance of potential effects has been assessed through correlation of magnitude of the effect arising from the proposals with the value of the asset in question. The final criteria used to categorise both impact magnitude and asset value is specific to each asset group/topic assessment, but is developed in regard to the following:

- Extent and magnitude of the impact (see Table 24.2);
- Likelihood of occurrence;
- Reversibility of the impact;
- Whether the impact is direct or indirect and occurs in isolation or cumulatively;
- Value of the receptor (see Table 24.3);
- Whether the effects are positive or negative; and
- Any mitigation measures that can be implemented to avoid, reduce or offset the impact.

24.5.1 Assessment Criteria – Magnitude

Within this ES chapter, the magnitude of impacts has been defined by the criteria detailed in Table 24.2. The magnitude of impact is ranked without regard to the value of the asset (i.e. the total destruction of a low value asset will have the same magnitude of impact as the total destruction of a High Value asset).

Table 24.2: Magnitude of impact

Impact Category	Definition
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 and irreversibly changed.
Major	Major alteration to key elements 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.

24.5.2 Assessment Criteria – Receptor Value

Significance for heritage policy is defined in ES Appendix 24-A: Annex 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.’

For the purposes of this assessment, value has been weighted by consideration of the potential for the receptor 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.

The overall value of heritage assets has been determined in accordance with the categories set out in Table 24.3, which has been adapted from a report by the Highways Agency (2007). Ultimately, the assessment of a receptor’s cultural heritage value is made according to the professional judgement of the assessor, therefore this table is not intended to be prescriptive and is for guidance only for the purposes of this assessment. An estimate of receptor value is made based on this scheme.

Table 24.3: Value of the receptor

Value	Definition
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
Moderate	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

* The importance 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 a receptor as 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-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.

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.

24.5.3 Assessment Criteria – Significance of Effects

The significance of an effect on a cultural heritage asset, whether direct or indirect, physical, or an effect on its setting, is assessed by combining the magnitude of the impact (Table 24.2) with the value of the value of the cultural heritage asset (Table 24.3). The resultant matrix in Table 24.4 provides a guide to the assessment. However, this is not a substitute for professional judgement and interpretation, particularly where the value or magnitude levels are not clear or are borderline between categories.

Effects that are considered to be of moderate or major significance in Table 24.4 indicate significant effects in EIA terms.

Table 24.4: Determining significance of effect

Magnitude of Impact	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

24.6 Cumulative Impact Assessment Methodology

24.6.1 Limitations and Assumptions

24.6.1.1 Archaeological Data

Limitations of the archaeological data used and subsequent assumptions made in the consideration of the data are discussed in Section 24.4.4 of this chapter.

24.6.1.2 Geophysical Data – Data Gaps

Information on potential data gaps in the geophysical survey data are discussed in Section 24.4.5 of this chapter.

24.7 Baseline Description

24.7.1 Introduction

The following section provides a summary of the archaeological and historical development of the site and the study area, compiled from the sources identified in Section 24.4.3, with further detail provided in ES Appendix 24-A: : Historic Environmental Desk Based Assessment. The aim is to establish the known and potential historic environment resource that could be affected by the development proposals.

24.7.2 Previous Studies

No previous marine archaeological investigations have been undertaken within the offshore part of the site; however 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 previously. These comprise:

- CAMERON, A., 2012. South Kirkhill, St. Fittick's Road, Aberdeen. Aberdeen: Cameron Archaeology [doi:10.5284/1019383](https://doi.org/10.5284/1019383)
<http://archaeologydataservice.ac.uk/archsearch/record.jsf?titleId=2589137>
- CAMERON, A.S., 2009. Fisheries Research Service, Victoria Road, Torry, Aberdeen. Aberdeen: Aberdeen City Council Archaeological Unit [doi:10.5284/1004099](https://doi.org/10.5284/1004099)
<http://archaeologydataservice.ac.uk/archsearch/record.jsf?titleId=1945422>
- CAMERON, A.S., 2009. St. Fittick's Church and Manse, Aberdeen. Aberdeen: Aberdeen City Council Archaeological Unit [doi:10.5284/1003891](https://doi.org/10.5284/1003891)

<http://archaeologydataservice.ac.uk/archsearch/record.jsf?titleId=1945192>.

A number of watching briefs have been undertaken both within the site and the study area, associated with other projects. These comprise:

- A watching brief of geotechnical trial pits was previously undertaken at locations across the beach at Nigg Bay (Cameron Archaeology, 2013) 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 south-west of St Fittick's Kirk (WA 1031) also suggesting some prehistoric activity in the area; and
- 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.

24.7.3 Archaeological and Historical Context

A summary of the historical development of the site and the study area and the known cultural heritage assets compiled from the sources detailed above is provided below and illustrated in Figure 24.4.

24.7.3.1 Maritime Wreck and Aviation Crash Sites

There are no known maritime or aviation wrecks located within the study area.

24.7.3.2 Later Upper Palaeolithic and Mesolithic (c.12,700 to 4100 BC)

There are no known Palaeolithic sites in the north-east of Scotland.

There are no known Mesolithic sites within the study area.

Further information on such sites and activity in the wider Aberdeenshire area from these periods is detailed in ES Appendix 24-A: Historic Environmental Desk Based Assessment.

24.7.3.3 Neolithic (4,100 to 2,500 BC)

There are no known Neolithic sites within the study area.

Further information on such sites and activity in the wider Aberdeenshire area from these periods is detailed in ES Appendix 24-A: Historic Environmental Desk Based Assessment.

24.7.3.4 Bronze Age (2,500 to 800 BC)

Key clusters of funerary cairns, reportedly of Bronze Age date, are located to the south of the study area within the area of Loirston Country Park on Tullos Hill. Tullos Cairn (WA 1044), Baron's Cairn (WA 1055), Cat Cairn (WA 1062), Crab's Cairn (WA 1053) and nearby smaller cairn in Loirston Country Park (WA 1060) are constructed from sub-angular glacial boulders in roughly circular plan of

various sizes, Tullos Cairn and Cat Cairn having the largest area. Of these assets, Crab's Cairn is the closest to the site and is situated approximately 500 m away.

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

There are no known Iron Age or Roman sites within the study area. Further information on such sites and activity in the wider Aberdeenshire area from these periods is detailed in ES Appendix 24-A: Historic Environmental Desk Based Assessment.

24.7.3.6 Medieval (AD 400 to 1500)

There are no known medieval sites within the site.

Locally, the motte at Balnagask (WA 1027), within the study area, 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).

24.7.3.7 Post Medieval (AD 1500 to 1800)

St Fittick's Kirk (WA 1030), reconstructed in the 17th and 18th centuries is noted on Roy's military map of the 1750s. Annotated as *Kirk of Nigg*, Roy's map depicts settlement along the south half of Nigg Bay.

24.7.3.8 19th Century (1800 to 1900)

A number of historical assets from this era are recorded within the study area. A summary of the assets is presented here with additional information found in the ES Appendix 24-A: Historic Environmental Desk Based Assessment.

The Girdleness Lighthouse (WA 1015), built in 1833 overlooking Aberdeen Harbour and Nigg Bay, is a well-preserved example of a (Robert) Stevenson lighthouse. 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.

A vernacular slipway is located on the north side of Nigg Bay (WA 1028). The slipway is the only remaining extant element of the historic maritime/fishery heritage within Nigg Bay.

24.7.3.9 Modern (AD 1900 to Present Day)

A number of historical assets from this era are recorded within the study area. A summary of the assets is presented here with additional information found in ES Appendix 24-A: Historic Environmental Desk Based Assessment.

The wartime heritage of the area is highlighted by the use of the Torry Battery (WA 1002) in both World Wars. During World War II, 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) 400 m north to Greyhope Road around the marine laboratory.

Further sites include another pillbox (WA 1047) with a further pillbox on the south side of Doonie's Hill (WA 1050).

24.7.3.10 Undated

The Aberdeen South Ordnance Survey Fundamental Beach Mark (WA 1001) is located to the south of the South breakwater (WA 1000), seaward of Greyhope Road.

Rig and furrow, a pattern of ridges and troughs created in fields by ploughing, is recorded in areas of Balnagask Golf Course (WA 1011) and is likely to be of post – medieval date but may be earlier.

24.7.4 Site-specific Marine Geophysical Survey

No pre-existing marine geophysical or geotechnical data of value for 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. The collection of this data is considered in Section 24.4.

A full geophysical survey data assessment of the offshore part of the study area was undertaken by WA, and the results are discussed below. The complete results are presented in gazetteer format in ES Appendix 24-A, Annex 4: Seabed Features of Archaeological Potential and the distribution of identified anomalies illustrated in Figure 24.5.

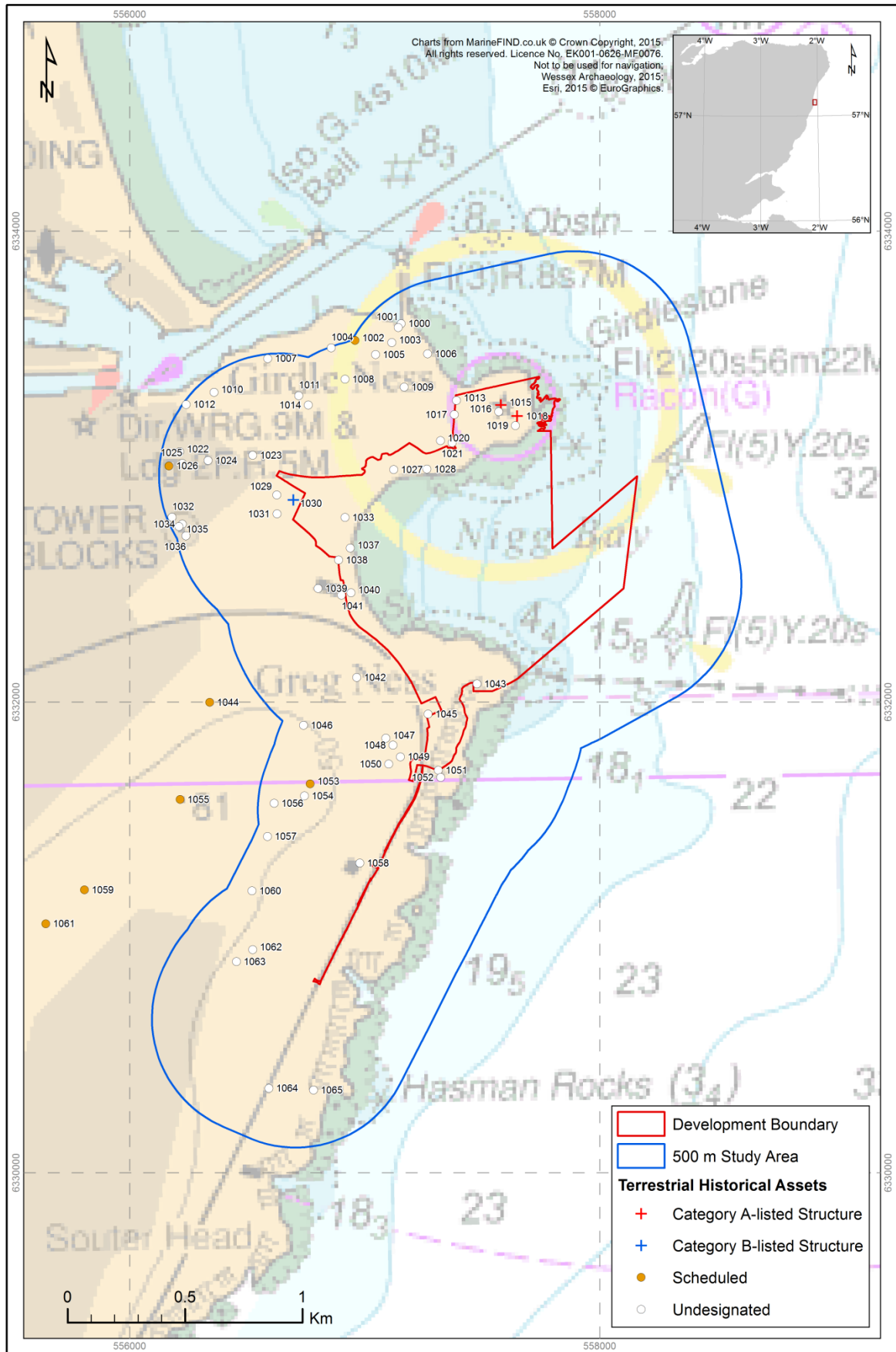
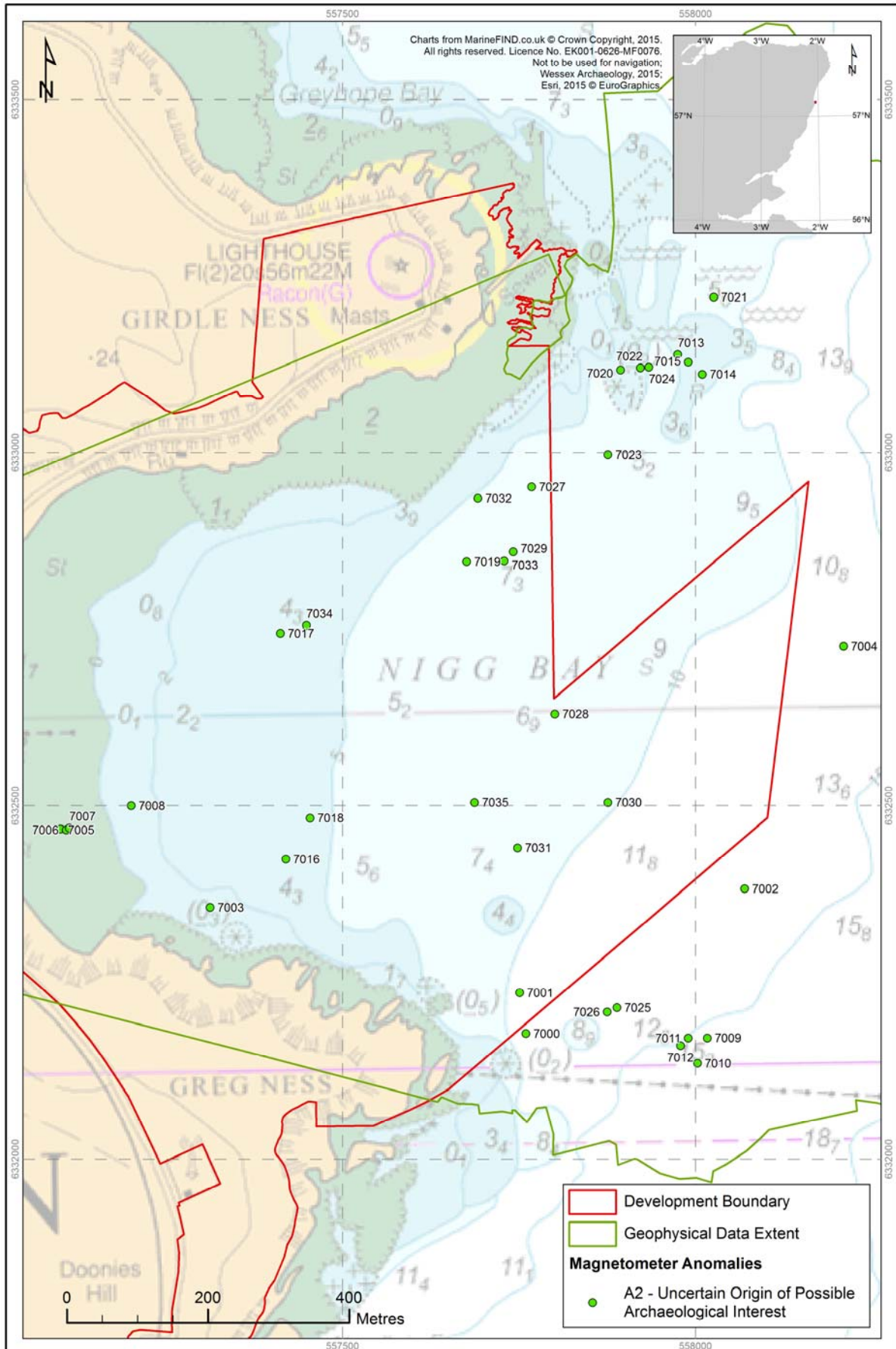


Figure 24.4: Recorded terrestrial heritage assets identified for assessment of effects from the Aberdeen Harbour Expansion Project



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Figure 24.5: Potential maritime and aviation archaeology

Fifteen anomalies were identified by WA in the 2012 sidescan sonar and bathymetry datasets. A previous survey of Nigg Bay undertaken by Coastline (Coastline, 2013) identified 27 magnetic anomalies which were present within the study area, some of which are the result of grouping by WA of more than one previously recorded anomaly.

As such, a total of 36 features of possible archaeological potential have been identified within the study area, 26 of which are within the site boundary and 10 of which are within the 500 m buffer zone. These anomalies have been discriminated as follows:

Table 24.5: 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	

A number of RCAHMS wreck records are located with the Study Area (ES Appendix 24-A, Annex 6: Reported Losses), none of which were identified within the geophysical data (ES Appendix 24-A, Annex 4: Seabed Features of Archaeological Potential). 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. As they do not represent the locations of structural remains, these records are not included in the geophysical results. No actual wreck records from the UKHO database are present within the study area.

24.8 Assessment of Survival and Previous Impacts

24.8.1 Previous Impacts

The preservation of any archaeological material in situ will be linked, at a given location, to the extent to which modifications to the Nigg Bay coastal hinterland and dune-field area have removed earlier deposits. The terrestrial area has been subject to substantial changes including road construction, golf course construction, wartime development and, more recently, outflow works at the beach for the Waste Water Treatment Plant. It is not clear to what extent this development included major groundworks which would have removed earlier material.

Other areas such as Loirston Country Park around St Fittick's Kirk, which are primarily under agriculture, are likely to have been largely disturbed by ploughing. Further disturbance may have been caused by works undertaken to canalise the burns draining into Nigg Bay during the post medieval period, which are recorded on early edition OS mapping.

There is substantial modern coastal protection 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 Nigg Bay Site of Special Scientific Interest (SSSI) on the

south coast. The more recent development of the Balnagask Golf Course has also resulted in landscaping of large areas of Girdle Ness between St Fittick's Road and Greyhope Road.

It is anticipated that disturbance is highly variable across the site due to parts of it having been historically developed (linked to the 19th century rifle range, and subsequent marine laboratory) and other parts more recently so.

24.8.2 Potential for Early Prehistory

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; however this may be in reworked contexts. Potential may therefore be greatest within the beach area of Nigg Bay where disturbance to underlying deposits has not been comprehensive. Any material of early prehistoric age would be regarded as high significance.

24.8.3 Potential for Later Prehistory

There is potential for encountering sites, artefacts and material from all periods of prehistory in the area, particularly that of the Bronze Age, due to the importance of Tullos Hill during later prehistory. The discovery of such material would be regarded as high significance.

24.8.4 Potential for Historical Archaeology

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. Any further discovery of such material would be regarded as high significance.

24.8.5 Potential for Maritime and Aviation Archaeology

A number of seabed anomalies have been identified within the site (Figure 24.5) which 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).

Nigg Bay, as a natural harbour, is likely to have been used historically 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 marine laboratory and hatchery may also have contributed to the archaeological record on the seabed given the original location of the laboratory at Nigg Bay before the move to its current location at Wood Street. More generally, as a centre for maritime activity linked to historic trade, and more recently for industrial uses, the coasts around Aberdeen and the mouth of the River 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 the area of Nigg Bay. A significant number of reported losses are associated with this stretch of coastline, detailed in the ES Appendix 24-A, Annex 6: Reported Losses. The vessels, mainly of post-medieval and 19th century date, are known to have been lost but accurate positions are not known. 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, unknown wrecks and associated material, if present, may be well preserved.

Similarly, due to the concentration of wartime activity around Aberdeen, including Luftwaffe bombing raids and anti-aircraft installation, there is the potential for unknown aircraft wrecks generally across the area; and a number of search and rescue missions are known to have taken place in this region during World War II (WA 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, 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 Protection of Military Remains Act 1986 and receive automatic legal protection.

24.9 Assessment of Effects

The following section describes the effects that are predicted to arise from the construction and operation of the Aberdeen Harbour Expansion Project, based on the project description that can be found in Chapter 3: Description of the Development.

Table 24.6 presents the potential construction and operational impacts arising from the project and the pathways through which these impacts may result in effects on archaeology and cultural heritage.

Table 24.6: Predicted impacts and effects on archaeology and cultural heritage and associated pathways

Activity	Impact and Transmission Pathway	Receptor	Description of Potential Effects
Construction			
Construction of quays, breakwaters and other infrastructure	Disturbance, demolition and/or burial of known and unknown archaeological features	Archaeological and Cultural Heritage Assets (known and unknown)	Total and/or partial loss of these assets
Dredging	Disturbance, demolition and/or burial of known and unknown archaeological features	Archaeological and Cultural Heritage Assets (known and unknown)	Total and/or partial loss of these assets
Site investigation works	Disturbance, demolition and/or burial of known and unknown archaeological features	Archaeological and Cultural Heritage Assets (known and unknown)	Total and/or partial loss of these assets
Road/path/car park construction	Disturbance, demolition and/or burial of known and unknown archaeological features	Archaeological and Cultural Heritage Assets (known and unknown)	Total and/or partial loss of these assets
Landscaping	Disturbance, demolition and/or burial of known and unknown archaeological features	Archaeological and Cultural Heritage Assets (known and unknown)	Total and/or partial loss of these assets

Table 24.6: Predicted impacts and effects on archaeology and cultural heritage and associated pathways continued

Activity	Impact and Transmission Pathway	Receptor	Description of Potential Effects
Operation			
Relocation of outfalls/intakes (if required)	Disturbance, demolition and/or burial of known and unknown archaeological features	Archaeological and Cultural Heritage Assets (known and unknown)	Total and/or partial loss of these assets
Physical presence of project/development	Visual impacts of development infrastructure such as breakwaters, tanks in Nigg Bay	Designated Archaeological and Cultural Heritage Assets	Changes to the landscape or seascape affecting the setting of the asset
Berthing of large vessels in/outside harbour	Visual impacts from the presence of (large) vessels in and around Nigg Bay	Designated Archaeological and Cultural Heritage Assets	Changes to the landscape or seascape affecting the setting of the asset
Operational activities	Visual impacts from the operation of quayside infrastructure such as cranes	Designated Archaeological and Cultural Heritage Assets	Changes to the landscape or seascape affecting the setting of the asset

24.9.1 Assessment of Effects – Physical Impacts

This section provides an initial assessment of the likely effects of the proposed development on elements of the historic environment resource that may be subject to physical impacts. The following assessments of the likely effects of the Aberdeen Harbour Expansion Project are based upon the latest iteration of the design proposals.

24.9.1.1 Overview

The construction of the proposed Aberdeen Harbour Expansion Project is expected to lead to a number of sources of ground or seabed disturbance. Construction activities comprising direct and indirect physical impacts include, but are not limited to, the following:

- Preliminary site investigation works;
- Marine dredging;
- Quay and breakwater construction;
- Construction of access tracks, roads or routes and diversions;
- Plant movement;
- Topsoil stripping;
- Piling and/or excavation of new foundation trenches;
- 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); and
- Works to existing outfalls or intakes within the development site.

These activities have the potential to result in damage, alteration or loss of any archaeological features which may be present within the footprint of the works. As a consequence, this could result in a total or partial loss of significance of these heritage assets. Any physical impact to an archaeological feature would lead to a permanent and irreversible effect.

Table 24.7 presents a summary of the known and potential elements of the terrestrial and maritime 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 24.7.

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; and
- **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.

The value of known and potential heritage assets, summarised in Table 24.7 and considered in more detail in ES Appendix 24-A: Historic Environmental Desk Based Assessment, Table 11, has been determined in accordance with the criteria set out in Section 24.5.

Table 24.7: Value of known and potential heritage assets

Potential	Period and Description	Value	Previous Impacts
High	19 th century Vernacular slipway (WA 1028), north side of Nigg bay. Possibly illustrated on 25" 1 st 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. Anecdotally said to have been used by lobster fishermen until the 1960s (Cameron 2013) and is the only remaining extant element of the bays historic maritime/fishing heritage. Western gable of roofless, partly demolished building is a brick-built extension, perhaps early 20 th as depicted on 1901 25" 2 nd edition OS mapping; three abutting bays with porch or lean-to on seaward side, a well is also annotated. Potentially linked to the development of the marine laboratory nearby.	Regional/Medium: The slipway and adjacent building dates to at least the 1 st Edition OS map, c. mid-19 th 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 priorities. As the last remaining in-situ element of this fishing heritage within Nigg Bay, it is judged to have regional significance.	Early 20 th century additions to slipway – concrete skim over upper sections of the boulder-built structure beneath. May be considered as beneficial as likely to have protected upper section at MHWS.
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 in situ.	Local/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.
High	Unknown A range of seabed anomalies of unknown origin of possible archaeological interest have been identified within the marine geophysical data which 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.	National/High: A precautionary approach to considering unknown, potential archaeological receptors demands that a high potential value be applied prior to ground investigation.	Seabed processes, Unknown anthropogenic impacts.

Table 24.7: Value of known and potential heritage assets continued

Potential	Period and Description		Value	Previous Impacts
Moderate	Early prehistory to modern	There is potential for encountering unknown cultural heritage assets within the Site and it is judged that there is moderate potential for encountering buried archaeological artefacts and sites. However, this is tempered by the historic and modern development in the Bay. The extent to which this modification has removed any potential archaeological deposits is unknown.	National/High: A precautionary approach to considering unknown, potential archaeological receptors demands that a high potential value be applied prior to ground investigation.	Modification of Nigg Bay coastal geomorphology. Historic development associated with rifle range and marine laboratory in 19 th century. 20 th century landfill and emplacement of made ground and coastal engineering (i.e. at car park) and beach armouring.
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.	Local/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.	Local/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.	Local/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.

Table 24.7: Value of known and potential heritage assets continued

Potential	Period and Description		Value	Previous Impacts
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.	Local/Low	Modern construction of Coast Road.
Unknown	Marine area: Early prehistory (Mesolithic)	The palaeo geographical assessment of Nigg Bay identified low to moderate potential for encountering archaeological and palaeo environmental resources within the submerged palaeo landscape features located beneath the seabed.	National/High: Archaeological material of early prehistoric date, specifically Mesolithic and Late Upper Palaeolithic are regarded as being of high value.	Fluvial and marine reworking of seabed sediments and underlying sedimentary units. Anchoring or seabed disturbance by jack-up vessels, dredging or other processes of seabed disturbance.

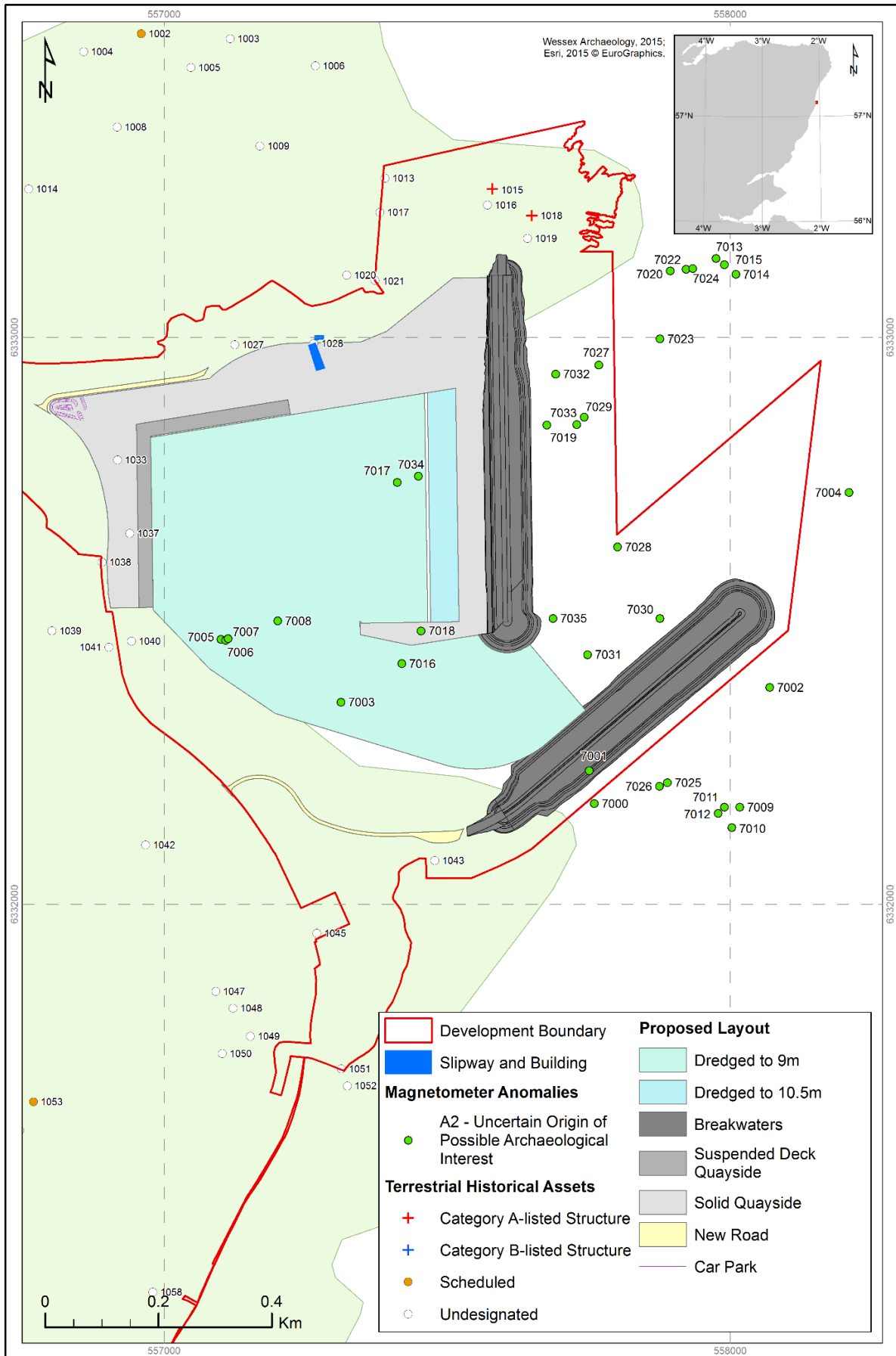


Figure 24.6: Historical assets within the footprint of the project

24.9.1.2 Designated Heritage Assets

Within the study area there are a number of designated heritage assets, as shown in Figure 24.6. The proposed development of the Aberdeen Harbour Expansion Project would not result in any physical impacts to designated heritage assets therefore there will be no effects on these assets. The potential for the development to affect the settings of designated heritage assets is considered in Section 24.9.2.

24.9.1.3 Undesignated Heritage Assets

The proposed Aberdeen Harbour Expansion Project will directly impact upon undesignated heritage assets. The vernacular slipway (WA 1028) on the north coast of Nigg Bay is anticipated to be permanently buried by the construction of the North Quay of the harbour however the adjacent roofless building may remain in situ.

As this effect is irreversible and would amount to a total loss of the asset the magnitude of impact to this receptor is judged to be severe. The vernacular slipway (WA 1028) is considered to be of medium value. Therefore the resultant effect of this impact on this cultural heritage receptor is considered to be of **major adverse significance**, which is significant in EIA terms.

24.9.1.4 Maritime and Aviation Archaeology

The Aberdeen Harbour Expansion Project will require capital dredging of the marine area and construction of quays and breakwaters. These activities are likely to interact directly with identified seabed anomalies of potential archaeological interest (Figure 24.6).

The magnitude of potential physical impacts to these receptors is considered to be major. The receptors, based on a precautionary approach for considering unknown, buried archaeology, are judged to be of high value. Therefore the resultant effect of these direct and indirect physical impacts upon these cultural heritage receptors are judged to be of **major adverse significance**, which is significant in EIA terms.

24.9.1.5 Unknown Archaeological Remains

The most intrusive activities associated with the construction of the development in terms of below ground archaeology, should any be present within the site, are anticipated to be associated with the main construction areas such as dredging of the bay, ground preparation for construction of quaysides and sites of other buildings and infrastructure such as storage tanks and supply trenches. In the event that landscaping or levelling works are required to assist in preparing the site, these too could result in widespread truncation of any archaeological remains present within the working area.

The magnitude of likely physical impacts to unknown archaeology and cultural heritage assets if encountered both onshore and offshore is considered to be major. These receptors, based on a precautionary approach for considering unknown, buried archaeology, are judged to be of high value. Therefore the resultant effect of these direct and indirect physical impacts upon these cultural heritage receptors are judged to be of **major adverse significance**, which is significant in EIA terms.

24.9.2 Assessment of Effects - Settings

This section discusses the assessment of the likely effects of the development proposals in relation to the settings of heritage assets, in accordance with the methodology detailed in Section 24.5 of this chapter. Representations of the viewpoints are provided in Figure 24.7 at the end of this chapter. At the request of ACC a photomontage from Chapter 17: Seascape, Landscape and Visual Effects considered relevant for this assessment is also included at the end of this chapter.

24.9.2.1 Overview

Due to intervening topography, vegetation and the presence of 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 Aberdeen Harbour Expansion Project would not result in any negative effects on the settings of historical assets.

Two designated cultural heritage assets within the study area are judged to have unrestricted views of the site at relatively close proximity. These comprise:

- Girdleness Lighthouse, Greyhope Road, including Fog Horn at south site at NJ 9274 0530 (Category A-listed structure), WA 1015, 1018); and
- St Fittick's Church (Scheduled Monument, also Category B-listed structure, WA 1030.

Views towards the site from the Girdleness 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.

A further five scheduled monuments (the group of cairns on Tullos Hill, Loirston Country Park) are considered together as possible relict funerary landscape of likely Bronze Age date. The views from these scheduled monuments towards the site are partly screened by intervening topography, vegetation and industrial features.

Views towards the proposed development from the scheduled monuments Torry Battery (WA 1002) and Balnagask motte (WA 1026) are screened by intervening topography and vegetation as well as, in the case of Balnagask motte, 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 effects on their setting are not considered further.

The setting of the various designated cultural heritage receptors considered within this chapter 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 (Girdleness Lighthouse and Fog Horn). The settings of monuments and buildings associated with each of these themes are not interrelated and are considered to be independent of each other i.e. the setting of the cairns on Tullos Hill are not defined by St Fittick's Church, or Girdleness Lighthouse and vice versa, nor is the setting of Girdleness Lighthouse defined by inter-visibility between St Fittick's Church or the scheduled monuments on Tullos Hill.

24.9.2.2 Scheduled Monuments on Tullos Hill, Loirston Country Park

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 south-eastern flanks of Tullos Hill are constrained by the industrial estates around Peterseat and Altens and the north-east tip, at Doonie's Hill, historically farmland and a quarry, is now reinstated as landfill (not publically accessible) and surrounded by high security fencing.

The scheduled monuments of 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 define highpoints along the ridge along the northeast to south-west axis of ridge. Open views are generally to the north and north-west, and south and south-east. Views towards Nigg Bay, Girdle Ness and Greg Ness are generally interrupted by the summit of Tullos Hill and other intervening local topography.

It is often observed that prehistoric funerary monuments, such as the cairns on Tullos Hill, 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 consistent with this, and it is noted that there is inter-visibility between several of the cairns, particularly with Baron's Cairn (WA 1055) at a high point within the centre of the clustered cairns.

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

Potential Effects

Tullos Hill cairn (WA 1044), at a distance of approximately 750 m south-west of the site, is screened by nearby intervening topography on Tullos Hill.

The view from Crab's Cairn (WA 1053) located approximately 800 m 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.

Baron's Cairn (WA 1055) is located approximately 1.1 km south-west of the site. The Cairn occupies a notable high point, and has been disturbed by the construction of an Ordnance Survey trig point. Of all the monuments within this cluster, this location has the most uninterrupted views towards Nigg Bay at a distance of just over 1 km to the north-east. 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.

Views north from Loirston Country Park Cairn (WA 1060) (1.7 km to the south-west of the site), and from Cat Cairn (WA 1062) (1.9 km south-west of the site) are screened by intervening topography and vegetation. The cupola of Girdle Ness Lighthouse is just visible at a distance of up to 2.7 km and 2.9 km, respectively indicating that the proposed quays, buildings and maritime traffic associated with the site would not be visible from these locations.

Generally, there will be no or minimal inter-visibility from any of the cairns, and the ability to appreciate the proximity of the group of monuments to the sea is not considered to be affected. The site is not located within key views to and from the scheduled monuments on Tullos Hill, and potential inter-visibility of structures and maritime traffic is likely to be partially visible at only one location (Baron's Cairn (WA 1055)). It is therefore judged that likely effects on the setting of the monuments would be of negligible magnitude.

The scheduled monuments on Tullos Hill are judged to be of high value. Therefore setting effects to these Cultural Heritage Receptors are judged to be of **negligible significance**, which is not significant in EIA terms.

24.9.2.3 St Fittick's Church (WA 1030)

The Category B-listed Church and scheduled area around the structure and churchyard is located approximately 250 m 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. The church has clear views across the bay constrained between the rocky headlands of Girdle Ness and Greg Ness. The bay is currently largely undeveloped with few modern elements visible in views in this direction apart from a modern 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.

Despite the encroachment of modern housing to the west of the asset, 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 and the proximity to the sea can be appreciated today contributing to the significance of the setting to the significance of the asset.

Potential Effects

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. 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.

Therefore, it is considered that the worst-case scenario development proposals, comprising the permanent infrastructure at the site but mainly the temporary, but recurrent, berthing of large vessels, would result in changes to the setting of the receptor of major magnitude.

The scheduled monuments and category B-listed St Fittick's Church is judged to be of high value. Therefore setting effects upon these cultural heritage receptors are judged to be of **major adverse significance**, which is significant in EIA terms.

24.9.2.4 Girdleness Lighthouse, Greyhope Road, including Fog Horn (WA 1015, WA 1018)

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, and is still 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. 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 hallway up the lighthouse and from within the cupola.

The Lighthouse and Fog Horn are considered to be of national significance. Much of this derives from the inter-visibility 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).

The building's significance is enhanced as a result of its setting within the wider maritime landscape and seascape within Aberdeen Harbour, existing south breakwater (WA 1000) and seascape of Aberdeen Bay for example including 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

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. Views toward the site, which lies approximately 100 m to 200 m to the south-west, 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.

It is considered that the proposed development would not substantially intrude upon the maritime character of the Lighthouse and Fog Horn. Maritime traffic using the new harbour represents an additional element to the existing setting of the Lighthouse and Fog Horn. Accordingly, it is considered that the development proposals would result in changes to the setting of minor magnitude.

The category A-listed Girdleness Lighthouse and Fog Horn are judged to be of high value. Therefore setting effects upon these cultural heritage receptors are judged to be of **minor adverse significance**, which is significant in EIA terms.

24.10 Mitigation Measures and Residual Effects

24.10.1 Mitigation Measures

The primary form of mitigation to avoid significant effects is avoidance of direct impacts to cultural heritage receptors. In instances where avoidance is not possible a programme of archaeological works will be established in the form of a Written Scheme of Investigation (WSI). The WSI would be agreed with the relevant authorities such as ACC and Historic Scotland and would cover both the onshore and offshore elements of the proposal.

Using currently available data, the presence, location and significance of unknown, buried archaeological remains within the onshore and offshore areas of the site cannot be fully established. During the course of construction of the Aberdeen Harbour Expansion Project there will be potential to encounter unknown subsurface cultural heritage assets relating to all periods of archaeology from early prehistory to the modern day. Mitigation measures may include watching briefs during the course of ground or seabed disturbance to evaluate and, if required, excavate discovered historical assets.

The historic vernacular slipway located on the north side of Nigg Bay (WA 1028) will be buried by the construction of the North Quay. It is proposed that the slipway is cleared of any boulders and other debris to allow it to be surveyed and recorded in situ prior to any preparation works being undertaken, which could form the basis of a Historic Buildings Report and supplementary Heritage Statement.

Mitigation measures designed to minimise visual impacts, as discussed in Chapter 17: Seascape, Landscape and Visual Effects, may help to reduce the significant setting effects which are predicted for St Fittick's Church (WA 1030). Potential mitigation measures employed during construction could include careful siting of construction machinery and materials to avoid any unnecessary intrusion particularly with regards to the privacy of adjacent areas and the erection of temporary hoardings around construction areas. Once the construction phase is complete, mitigation measures could include screening around the landward periphery of the site, including the planting of vegetation such as trees and shrubs; however, it is likely that vessels moored within the harbour would extend above any vegetation planted, thereby limiting the effectiveness of screening the development by this means. Additionally, screening using vegetation would likely contrast the character of the area which is one of open, grassy cliff tops and headlands.

24.11 Residual Effects

The assessment considers that there will be effects of major adverse significance on undesignated and unknown historical assets within the site. Mitigation measures set out in Section 24.10.1 will allow for such assets to be recorded as part of a WSI but ultimately it is considered that these assets would be permanently buried or removed. Therefore, the residual effects are considered to be the same as the pre-mitigation effects for all receptors.

The assessment identifies that effects on the settings of the majority of historical assets within the site and study area will be minor or negligible. However, it is considered that there will be effects of major

adverse significance on the setting of St Fittick's Church. To reduce these effects screening could be undertaken by planting vegetation such as trees and shrubs; however, it is considered that there is limited opportunity for any such measures to significantly reduce any effects. Therefore it is likely that any landscaping is likely to comprise the reinstatement of temporary working areas disturbed by the works, and therefore residual effects are considered to be the same as the pre-mitigation effects.

24.12 Cumulative Impacts

No other developments within the study area are considered to result in cumulative direct impacts on cultural heritage receptors within Nigg Bay.

Potential cumulative effects associated with construction of the European Offshore Wind Deployment Centre (EOWDC) in Aberdeen Bay to the north may lead to similar scale direct impacts on the seabed on unknown seabed cultural heritage receptors in the wider area. However, mitigation measures required for the EOWDC, similar to those proposed for the Aberdeen Harbour Expansion Project, such as avoidance and a reporting protocol (WSI), would leave no unmitigated impacts or cumulative effects.

The Kincardine Offshore Wind Farm proposed to the south-east of Nigg Bay 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.

Other local development plans 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.

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 on cultural heritage receptors considered in this assessment.

24.13 Summary and Conclusions

A desk-based study and walk over survey has been carried out to identify the potential cultural heritage assets that may be affected by the proposed Aberdeen Harbour Expansion Project. The study has identified no overriding cultural heritage constraints which are likely to prohibit development however it is considered that there would be a major adverse effect on the setting of St Fitticks Church.

24.13.1 Physical Impacts

There is one known undesignated cultural heritage asset within the site: the historic slipway to the north coast of Nigg Bay. Construction of the harbour quay will likely permanently bury this feature therefore, the magnitude of impact is judged to be severe leading to effects of major adverse significance.

There are two designated cultural heritage assets within the proposed development boundary: the Girdleness Lighthouse and the associated Fog Horn. 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.

The assessment has established that there is 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. There is also potential for encountering remnants of wartime infrastructure from World War II. In addition, prehistoric artefacts have been found in the vicinity of the study area 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. Therefore a precautionary approach has been adopted for the purposes of this assessment.

There is low moderate potential of encountering early prehistoric artefacts, palaeo environmental resources and other material of archaeological interest within the submerged palaeo landscape features preserved under the seabed in Nigg Bay.

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.

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

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.

24.13.2 Setting Impacts

It is noted that the proposed Aberdeen Harbour Extension Project is a major infrastructure development which would inevitably change the characteristics of the area where it is located.

Significant adverse effects are predicted on the setting of St Fittick's Church and churchyard, considered to be of high value, primarily due to the addition of substantial levels of maritime traffic utilising the harbour facilities which is not an existing component of the receptor's setting. Therefore the magnitude of the impact is judged to be major, leading to effects of major adverse significance. There are considered to be limited opportunities for effective screening to reduce any effects of the Aberdeen Harbour Expansion Project on the setting of St Fittick's Church and, as a consequence, residual effects are considered to be the same as the pre-mitigation situation.

Adverse effects to the setting of prehistoric scheduled monuments on Tullos Hill within Loirston Country Park: Tullos Cairn, Crab's Cairn, Baron's Cairn, Loirston Country Park Cairn and Cat Cairn,

and Girdleness Lighthouse and Fog Horn, are considered to be of negligible to minor adverse significance.

24.13.3 Mitigation Measures

The primary form of mitigation will be to avoid direct impacts to cultural heritage receptors. A WSI will be prepared to set out procedures for managing any features that appear to be of archaeological importance that are discovered in the course of construction works and minimise any effects on heritage assets both known and unknown. Screening could be undertaken to reduce the significant effects predicted on the setting of historical assets, namely St Fittick's Church; however, it is considered that such measures would be unlikely to significantly reduce the effect of the development.

24.14 References

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Figure 24.7: Heritage Photomontage Viewpoints

Figure 24.7a: Heritage Photomontage Viewpoint A
Ref: WIB14221-100-GR-SLVIA-05a

Figure 24.7b: Heritage Photomontage Viewpoint B
Ref: WIB14221-100-GR-SLVIA-05b

Figure 24.7c: Heritage Photomontage Viewpoint C
Ref: WIB14221-100-GR-SLVIA-05c

Figure 24.7d: Heritage Photomontage Viewpoint D
Ref: WIB14221-100-GR-SLVIA-05d

Figure 24.7e: Heritage Photomontage Viewpoint E
Ref: WIB14221-100-GR-SLVIA-05e

Photoviewpoint A - Existing View



Photoviewpoint A - Proposed Wireframe View



Project Details | WIB14221-100: Aberdeen Harbour Expansion Project

Figure Title | Figure 24.7a: Heritage Photomontage Viewpoint A

Figure Ref | WIB14221-100-GR-SLVIA-24.7a

File Location | \\nt-inc\weed\projects\eed14221\100\graphics\via\working images

- Key**
- Extent of proposals occluded by existing features
 - Quays (north, east & west) and South Pier
 - North Breakwater
 - South Breakwater
 - Tanks, Monopiles and Sector Light
 - New Roads
 - Mobile Cranes
 - Lighting Columns
 - Vessels



Viewpoint Information			
OS Grid Reference	396290.2 804990.4	Horizontal Field of View	90°
Ground Height (AOD)	9.8m	Camera / Lens	Nikon D800 / Nikon 50mm f/1.4
Viewer Height	1.65m	Date / Time	11/06/2015 - 13:58

Note: This is a composite image made up of 50mm photographs joined together horizontally (by means of cylindrical projection) to form an overall field of view which is wider than that seen in detail by the human eye. For correct perspective viewing, this image should be viewed at a distance of approximately 250mm when printed at A3.

Date: 22 July 2015
 Drawing Number: EED14221/13b
 Drawn by: MP
 Checked by: AP

Photoviewpoint B - Existing View



Photoviewpoint B - Proposed Wireframe View



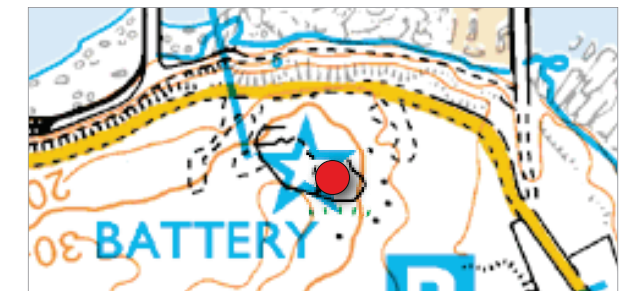
Project Details | WIB14221-100: Aberdeen Harbour Expansion Project

Figure Title | Figure 24.7b: Heritage Photomontage Viewpoint B

Figure Ref | WIB14221-100-GR-SLVIA-24.7b

File Location | \\nt-1ncslweed\projects\eed14221\100\graphics\via\working images

- Key**
- Extent of proposals occluded by existing features
 - Quays (north, east & west) and South Pier
 - North Breakwater
 - South Breakwater
 - Tanks, Monopiles and Sector Light
 - New Roads
 - Mobile Cranes
 - Lighting Columns
 - Vessels



Viewpoint Information			
OS Grid Reference	396552.1 805615.5	Horizontal Field of View	90°
Ground Height (AOD)	28.1m	Camera / Lens	Nikon D800 / Nikon 50mm f/1.4
Viewer Height	1.65m	Date / Time	11/06/2015 - 11:15

Note: This is a composite image made up of 50mm photographs joined together horizontally (by means of cylindrical projection) to form an overall field of view which is wider than that seen in detail by the human eye. For correct perspective viewing, this image should be viewed at a distance of approximately 250mm when printed at A3.

Date: 22 July 2015
 Drawing Number: EED14221/14b
 Drawn by: MP
 Checked by: AP

Photoviewpoint C - Existing View



Photoviewpoint C - Proposed Wireframe View



Project Details | WIB14221-100: Aberdeen Harbour Expansion Project

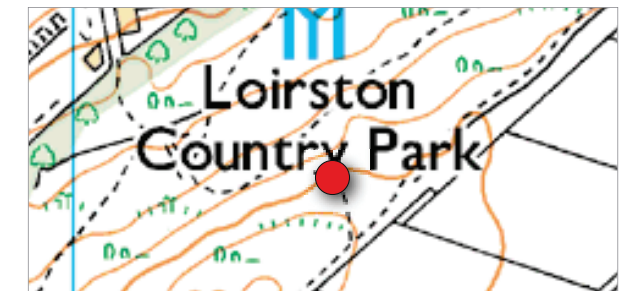
Figure Title | Figure 24.7c: Heritage Photomontage Viewpoint C

Figure Ref | WIB14221-100-GR-SLVIA-24.7c

File Location | \\nt-1ncsweed\projects\eed14221\100\graphics\lvia\working images

- Key**
- Extent of proposals occluded by existing features
 - Tanks, Monopiles and Sector Light
 - New Roads
 - Quays (north, east & west) and South Pier
 - Mobile Cranes
 - North Breakwater
 - Lighting Columns
 - South Breakwater
 - Vessels

Note: The view of the proposed Development would be entirely obstructed by intervening topography from this location.



Viewpoint Information			
OS Grid Reference	395278.0 803320.8	Horizontal Field of View	90°
Ground Height (AOD)	75.7m	Camera / Lens	Nikon D800 / Nikon 50mm f/1.4
Viewer Height	1.65m	Date / Time	11/06/2015 - 16:32

Note: This is a composite image made up of 50mm photographs joined together horizontally (by means of cylindrical projection) to form an overall field of view which is wider than that seen in detail by the human eye. For correct perspective viewing, this image should be viewed at a distance of approximately 250mm when printed at A3.

Date: 22 July 2015
 Drawing Number: EED14221/15b
 Drawn by: MP
 Checked by: AP

Photoviewpoint D - Existing View



Photoviewpoint D - Proposed Wireframe View



Project Details | WIB14221-100: Aberdeen Harbour Expansion Project

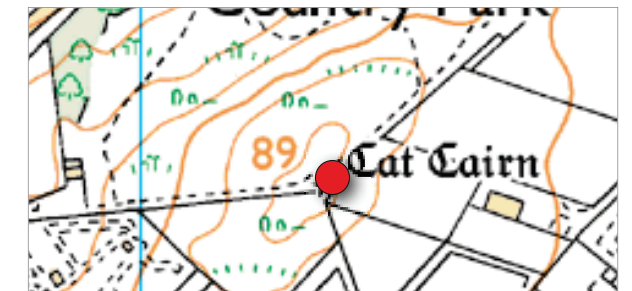
Figure Title | Figure 24.7d: Heritage Photomontage Viewpoint D

Figure Ref | WIB14221-100-GR-SLVIA-24.7d

File Location | \\nt-inc\weed\projects\eed14221\100\graphics\lvia\working images

- Key**
- Extent of proposals occluded by existing features
 - Quays (north, east & west) and South Pier
 - North Breakwater
 - South Breakwater
 - Tanks, Monopiles and Sector Light
 - New Roads
 - Mobile Cranes
 - Lighting Columns
 - Vessels

Note: The view of the proposed Development would be entirely obstructed by intervening topography from this location.



Viewpoint Information			
OS Grid Reference	395189.9 803172.2	Horizontal Field of View	90°
Ground Height (AOD)	86.2m	Camera / Lens	Nikon D800 / Nikon 50mm f/1.4
Viewer Height	1.65m	Date / Time	11/06/2015 - 16:11

Note: This is a composite image made up of 50mm photographs joined together horizontally (by means of cylindrical projection) to form an overall field of view which is wider than that seen in detail by the human eye. For correct perspective viewing, this image should be viewed at a distance of approximately 250mm when printed at A3.

Date: 22 July 2015
 Drawing Number: EED14221/16b
 Drawn by: MP
 Checked by: AP

Photoviewpoint E - Existing View



Photoviewpoint E - Proposed Wireframe View



Project Details | WIB14221-100: Aberdeen Harbour Expansion Project

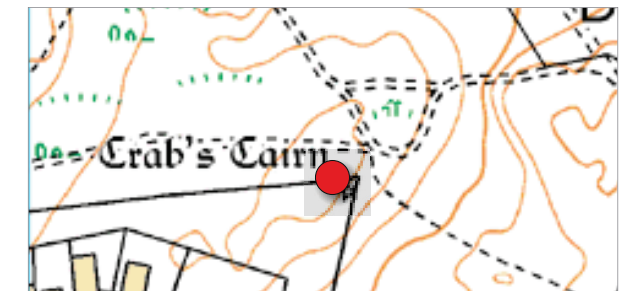
Figure Title | Figure 24.7e: Heritage Photomontage Viewpoint E

Figure Ref | WIB14221-100-GR-SLVIA-24.7e

File Location | \\nt-incs\weed\projects\eed14221\100\graphics\lvia\working images

- Key**
- Extent of proposals occluded by existing features
 - Tanks, Monopiles and Sector Light
 - Quays (north, east & west) and South Pier
 - New Roads
 - North Breakwater
 - Mobile Cranes
 - South Breakwater
 - Lighting Columns
 - Vessels

Note: The view of the proposed Development would be entirely obstructed by intervening topography from this location.



Viewpoint Information			
OS Grid Reference	396325.1 803758.2	Horizontal Field of View	90°
Ground Height (AOD)	66.9m	Camera / Lens	Nikon D800 / Nikon 50mm f/1.4
Viewer Height	1.65m	Date / Time	11/06/2015 - 15:28

Note: This is a composite image made up of 50mm photographs joined together horizontally (by means of cylindrical projection) to form an overall field of view which is wider than that seen in detail by the human eye. For correct perspective viewing, this image should be viewed at a distance of approximately 250mm when printed at A3.

Date: 22 July 2015
 Drawing Number: EED14221/17b
 Drawn by: MP
 Checked by: AP

Photoviewpoint 3 - Existing View



Photoviewpoint 3 - Proposed Block Model View

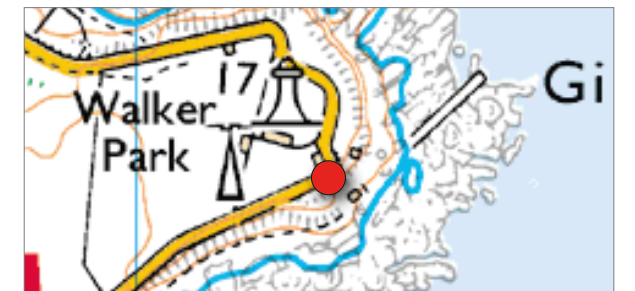


Project Details | WIB14221-100: Aberdeen Harbour Expansion Project

Figure Title | Figure 4b: Photomontage Viewpoint 03

Figure Ref | WIB14221-100-GR-SLVIA-04b-RevA

File Location | \\nt-incs\weed\projects\eed14221\100\graphics\lvia\working images



Viewpoint Information			
OS Grid Reference	397203.6 805279.9	Horizontal Field of View	90°
Ground Height (AOD)	16.7m	Camera / Lens	Nikon D800 / Nikon 50mm f/1.4
Viewer Height	1.65m	Date / Time	11/06/2015 - 11:54

Note: This is a composite image made up of 50mm photographs joined together horizontally (by means of cylindrical projection) to form an overall field of view which is wider than that seen in detail by the human eye. For correct perspective viewing, this image should be viewed at a distance of approximately 250mm when printed at A3.

Date: 23 October 2015
 Drawing Number: EED14221/01b
 Drawn by: MP
 Checked by: AP