



**Dunbar Harbour Developments
Limited**

Dunbar Harbour Regeneration

**Environmental Impact
Assessment
Scoping Report**

June 2012

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Developments Limited. The document has been compiled by



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1. INTRODUCTION

In 2011 Dunbar Harbour Trust (DHT) established Dunbar Harbour Developments Ltd (DHD), a community interest company, to manage the development and regeneration of Dunbar Harbour. The objectives of DHD are to:

- Establish a transparent organisation by which investment in the harbour could be attracted to support the development plans and;
- Provide sustainable community benefit to Dunbar and the wider East Lothian community using profits generated.

DHD offers potential investors, e.g. offshore renewables operators, a means to deliver community benefit through capital investment in infrastructure which is at the same time strategically and economically advantageous to them. Dunbar Harbour Trust is currently the only organisation with a financial interest in DHD but in time other investors will be identified from the local community and interested commercial parties.

DHD propose to improve the harbour to provide safe and improved all weather/all tides access and shelter to boats and prevent significant overtopping of the current harbour wall. A plan of the harbour is provided in Appendix 1.

1.1 Background

Dunbar Harbour comprises two harbours, the inner Cromwell Harbour and the outer Victoria Harbour. Both harbours are separated by an area called the Broadhaven which was the old entrance to Cromwell Harbour prior to Victoria Harbour being built. Access to Cromwell Harbour is gained through Broadhaven from Victoria Harbour. The old Broadhaven entrance is currently closed off to the sea by a rubble breakwater.

Dunbar Harbour is used by inshore fishing boats, leisure craft and a small number of commercial vessels providing day trips, diving and angling charters. The Royal National Lifeboat Institution (RNLI) operate an IB 1 class inshore lifeboat from Dunbar, however the Trent class all weather lifeboat is stationed at Torness due to the tidal restrictions in the harbour.

The orientation and design of Dunbar Harbour results in unfavourable wave conditions inside the Victoria Harbour basin and the harbour approaches during high winds from the north and north east. All of Dunbar harbour dries at low water springs and for vessels of 2m draft it is generally inaccessible 2 hours either side of low water. These conditions significantly limit the use of the harbour and affect all vessels during storm conditions¹.

The proposed improvements to the harbour comprise dredging and construction of a breakwater and would allow the harbour to operate safely and securely throughout the year and in all tidal conditions. This would thereby support the continuing development and expansion of the in-shore fishing fleet and

¹ Invitation to Tender, Engineering Design and Environmental Impact Assessment, Dunbar Harbour Development

the use of the harbour for leisure activities and tourism. In addition the improved access will allow the return of the (RNLI) lifeboat to within the harbour thereby improving incident response times. The proposed improvements would also provide greater opportunity for increased use of the Harbour by commercial vessels. In the longer term, the improvements will also assist the harbour to support the offshore renewables industry and to seek inward investment to support this aim. In establishing provision for the offshore industry, the harbour will be supporting government policy as set out in the National Renewables Infrastructure Plan (NRIP).

1.2 The Applicant

The Dunbar Harbour Trust is a charitable Trust set up in 1999 whose primary objective is to maintain and develop Dunbar Harbour as a working fishing port and an asset to the local community. The Trust was formed by a number of Dunbar harbour users who considered that the harbour could be developed with improved facilities for the professional and leisure users as well as becoming a focal point for the local community. An approach to East Lothian Council (ELC), the owners of the harbour, resulted in an agreement to negotiate a transfer of responsibility for the operation of the harbour to the Trust. This resulted in the Revision Order of 2004 which gave the Trust full responsibility for the harbour.² The applicant is represented by Arch Henderson who are responsible for all aspects of engineering and EnviroCentre who are managing the Environmental Impact Assessment (EIA). In addition, Amion Consulting (Amion) are undertaking a socio-economic study which will complement the EIA.

1.3 The Legislative Context

The continued management and development of the harbour is subject to European and national legislation of which the following comprise the principal legislation relevant to the current development programme:

- Harbours Act 1964 (in respect to existing Harbour Order)
- Marine (Scotland) Act 2010;
- Town and Country Planning (Scotland) Act 1997, as amended by the Planning etc. (Scotland) Act 2006;
- Marine and Coastal Access Act 2009;
- Council Directive 85/337/EEC as amended by 97/11/EEC and 2003/35/EC (The EIA Directive), as transposed into Scottish law through the Environmental Impact Assessment (Scotland) Regulations 1999 (SSI 1999/1);
- Council Directive 92/43/EEC (The Habitats Directive), as transposed in to Scottish law through the Nature Conservation (Scotland) Act 2004 and the 2007 Amendments (i.e. in relation to Ecological and Appropriate Assessment);
- The Marine Works (Environmental Impact Assessment) Regulations 2007; and
- Coast Protection Act 1949.

DHT currently operate the harbour under the powers granted through the Harbour Act 1964 set out within *The Dunbar Harbour Revision Order 2004* with a primary aim to operate the harbour for the benefit of all stakeholders.

² <http://www.dunbarharbourtrust.co.uk/index.php/about-us>

The proposals are considered EIA development and will fall under Marine Works (Environmental Impact Assessment) Regulations 2007, which came into force 24 June 2007, replacing Part 2 of the 1999 Regulations, which is repealed.

The assessment will be carried out with reference to the following regulatory controls and associated guidance:

- Marine (Scotland) Act 2010 (MSA);
- Water Framework Directive (WFD) 2000;
- Coast Protection Act 1949 (as still applicable following MSA);
- The Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended);
- The Harbour Works (Environmental Impact Assessment) Regulations 1999 (as amended);
- The Bathing Waters (Scotland) Regulations 2008;
- Harbours (Scotland) Act 1982;
- EC Habitats Directive;
- The Food and Environment Protection Act (FEPA) 1985 (as still applicable following MSA);
- CIRIA – Environmental good practice on site (C692); and
- SEPA Pollution Prevention Guidelines 1 – 26 (as appropriate).

1.4 Scoping Process

For projects that require Environmental Impact Assessment (EIA), the scoping exercise, undertaken early in the project, allows identification of the environmental issues which require assessment. Scoping provides an opportunity for dialogue between the applicant and the relevant Statutory and Non-Statutory Consultees, including Non-Government Organisations, to:

- Obtain their views on the proposal;
- Identify potential impacts;
- Identify existing environmental information; and
- Agree methods for the assessment of the nature and significance of these impacts, thus ensuring that all relevant environmental issues are covered by the EIA.

This enables the project to be designed to avoid or minimise negative environmental impacts and provides an opportunity to incorporate positive environmental enhancements into the project.

This document has been prepared to assist Marine Scotland and their statutory consultees, as well as other stakeholders, to form an opinion as to the likely effects of the development. It describes the proposal and provides information with regard to the legislative and physical environment and aims to provide information sufficient to assist their decision making. Further, this document also seeks to identify and obtain agreement on the relevant environmental issues that are likely to be associated with the proposed development in order to ensure that the EIA is correctly focused. Equally the scoping exercise aims to eliminate those issues that are deemed to be insignificant to this proposed development.

Additional objectives of EIA scoping are:

- To establish the availability of baseline data;
- To request the statutory consultees' to provide any relevant environmental information relating to the site and surrounding area;
- To define a survey and assessment framework from which a comprehensive overall assessment can be produced; and
- To provide a focus for the consenting authorities and the consultees' considerations – in terms of:
 - The potential impacts to be assessed;
 - The assessment methodologies to be used;
 - Other areas which should be assessed; and
 - Other issues of perceived concern.

The information contained in this document is based on the current understanding of the nature of the proposed development.

The scoping process enables a preliminary assessment of the potential environmental impacts to be considered, with the key subjects addressed as follows:

- Legal requirements;
- Proposed framework for the Environmental Impact Assessment;
- Consultation;
- A description of the nature and purpose of the development;
- The proposed methodology for assessment of alternatives;
- The potential for cumulative impacts;
- A description of the developments possible effects on the environment;
- Charts and plans sufficient to identify the site and any other matters considered of relevance;
- Identification of potential principal emissions;
- Potential sensitivity of receiving environment;
- Results of initial desk studies and site surveys;
- Outline of environmental assessment methodology; and
- Comment on issues not to be addressed.

This scoping report comprises the following sections:

Section 2:	Project Description
Section 3:	Stakeholder Consultation
Section 4:	Planning Context
Section 5:	EIA Methodology
Section 6-10:	EIA Topic Areas
Section 11:	Conclusions

In addition, to ensure an appropriate level of consultation, the scoping report will be forwarded to key stakeholders on approval from DHT. A full list of actual and potential stakeholders is given in Section 3 of this report.

2. DESCRIPTION OF THE PROPOSED DEVELOPMENT

2.1 Site History

Dunbar Harbour is located within the heart of Dunbar on the east coast of Scotland. It is a man-made harbour protected by a large outcrop of rock on which the ruins of Dunbar Castle stand. The remains of a battery, built in circa 1781 is located on Lammer Island situated between Broadhaven and Victoria Harbour. Due to its location on the Firth of Forth and proximity to Edinburgh the town has a long history dating back to the Roman times.

There has been a harbour at Dunbar since the fourteenth century. Cromwell Harbour was built in the early seventeenth century with the original entrance being via Broadhaven. In the eighteenth century this harbour was modified as a result of storm damage and later enlarged. It was used for fishing and for a time, whaling purposes. Victoria Harbour was built in the 1840's with part of Dunbar Castle being removed to create the current entrance to the port. It was later enlarged in 1858 to accommodate the growing herring fishing fleet.

As a result of its location on the Outer Firth of Forth the RNLI lifeboat station has operated from Dunbar Harbour since 1804. Currently, although the in-shore life boat remains at the harbour, as a result of the problems in approaching the harbour entrance, especially in severe weather, the all-weather life boat is now based at Torness although the RNLI are committed to returning the lifeboat to Dunbar. The project outlined below aims to facilitate the return of the lifeboat to Dunbar as well as improving the harbour facilities for all users. This can be achieved by mitigating the issues which limit the potential of the harbour, namely the difficulties in navigating the entrance channel during adverse weather conditions, wave surge inside the harbour during storms from the north and east and the tendency for the harbour to dry out at low tide. The works planned will improve operability and commercial viability by creating sufficient water depth and protection to allow pontoons to be placed thus increasing the number of all weather berths available in all conditions. The works will also resolve ongoing maintenance requirements such as the storm damage and undermining of the northern Victoria Harbour wall and provide additional protection against overtopping.

2.2 Description of the Proposed Development

The following civil engineering works are envisaged as part of the Dunbar Harbour Regeneration Project in order to improve conditions within the harbour and navigation to the harbour:

- a. A main breakwater to reduce wave heights at the harbour approach and wave conditions within the harbour.
- b. An approach structure for vehicular access to the new breakwater from the existing North Wall.
- c. A new breakwater at the entrance to the Broadhaven Harbour.
- d. Dredging of the harbour entrance channel and harbour floor to allow full harbour use for a wider range of boats in all states of the tide.
- e. Remediation of the structure to the North Wall, possibly including a new structure outside the wall to dissipate wave energy.

These proposals are presented in the Arch Henderson drawing enclosed as Appendix 2.

The main breakwater is to be vertical walled with a 15m by 160m footprint extending outward from the rock formation at the west of Johnston's Hole. This structure would comprise a series of precast concrete caissons that are floated into position and flooded with water for controlled lowering onto the prepared sea bed. The breakwater would then be filled with aggregate before constructing the deck and wave wall in in-situ reinforced concrete.

Two further vertical walled structures are proposed. The approach structure (access road to main breakwater) would connect the existing North Wall with the new breakwater thereby preventing wave surges through Johnston's Hole (towards the entrance channel) as well as providing services to the breakwater and vehicle access. Similarly, a vertical walled breakwater at the Broadhaven Harbour will provide pedestrian access between Cromwell Harbour and the North Wall to Victoria Harbour at the same time as acting as a sea defence.

It is proposed to dredge the entrance channel and Victoria Harbour to 2.5m below chart datum and this, together with the new breakwaters, will enable the use of the harbour for boats of up to 2m draft in all states of the tide.

Some strengthening of the existing North Wall will be required to facilitate the construction of the Main Breakwater and this will likely include ground improvement measures to the deck plus some strengthening of the outer basalt faced sea wall.

2.3 Alternative Sites

Due to the established location and infrastructure present within the present harbour, no alternative sites for the proposed development have been considered. However, alternative approaches to the depth of dredging and harbour entrance improvement works, and the alignment of the breakwater have been considered. As outlined above, the scoping process and EIA is anticipated to influence the final design and construction method.

3. STAKEHOLDER CONSULTATION

The consultation process on the proposed development is already underway and the feedback gained is already contributing to the EIA process. The approach is split into three different methods and clearly there is some overlap, but this is necessary to ensure that the consultation is far reaching and inclusive of all relevant stakeholders.

DHD are keen to ensure proactive engagement with and involvement of the local community in this project, as the development of the Harbour is considered pivotal in the sustainable growth and prosperity of Dunbar as a whole, DHT have therefore invested time and resources into a comprehensive programme of community engagement and communication including the establishment of the Consultative Panel, and a series of open public meetings to run throughout the design process.

The approach to stakeholder consultation is summarised below.

- Three Community Engagement Events with the first having taken place on the 27th March 2012. These events are aimed at the Dunbar community as whole as well as statutory organisations, such as SNH, and non-statutory bodies or groups as well as local residents and businesses. At this stage, these events are focused on the obtaining feedback on the overall development proposals to ensure community involvement in shaping the final development;
- Formation of Consultation Panel with members representing key interest groups within the Dunbar community, meeting three times during the design stages. The members being appointed as representatives of local interest groups, to act as a two-way conduit for exchanging information. This approach will help to ensure that relevant local knowledge can feed into the design process and that any concerns or issues can be tabled and addressed during the design process; and

The EIA specific consultation, whereby this scoping report is submitted to Marine Scotland who in turn will consult with their statutory, and possibly some non-statutory, consultees to provide a consensus on the scope of the EIA and content of the ES. Other consultations are being undertaken by Arch Henderson in relation to the engineering design and also by Amion with regards to their socio-economic assessment.

With specific reference to the proposed development it is likely that the following statutory and non-statutory consultees will be consulted through the EIA process, although some of these organisations will also be aware of the development proposals through the community engagement events.

Statutory consultees:

- Marine Scotland;
- East Lothian Council (ELC);
- Scottish Environment Protection Agency (SEPA);
- Scottish Natural Heritage (SNH);
- Health and Safety Executive (HSE); and
- Historic Scotland.

Non-statutory consultees:

- The Crown Estate;
- Forth Ports (FP);
- Maritime and Coastguard Agency (MCA);
- Northern Lighthouse Board (NLB);
- British Geological Survey (BGS);
- Royal Society for the Protection of Birds (RSPB);
- British Trust for Ornithology (BTO);
- Scottish Seabird Centre (SBC); and
- The Wildlife Information Centre (TWIC) for Edinburgh and the Lothians.
- Other non-government organisations (NGO's) and local interest groups
- Utility providers.

As noted above, the consultation panel has a specific remit to engage with representatives from the local community. Currently the panel consists of representatives from the following organisations:

- RNLI
- Dunbar Fishermen's Association
- Dunbar Harbour Management Committee
- Sustaining Dunbar
- Dunbar Shore and Harbour Neighbourhood Group
- Dunbar Sailing Club
- Dunbar Coastal Rowing Club; and
- Dunbar Historical Society

4. PLANNING CONTEXT

DHT is the statutory authority responsible for the management and development of Dunbar Harbour, however the harbour functions within the geographical context of the Firth of Forth and it is valuable to review National, Regional and Local Policy when undertaking EIA.

Whilst the key objective of the EIA is to support the application for a Marine Work License from Marine Scotland the EIA will also consider relevant planning policy and review how the harbour improvement works align with the stated aims of these. East Lothian Council will be involved as a statutory consultee to Marine Scotland and will therefore input with regards to the consistency of the development proposals when compared to local government planning policy. If required, an application will be made for planning permission to East Lothian Council.

Common environmental objectives in the management of Dunbar Harbour and coastal zone include safeguarding fishing interests, ensuring safe navigation is maintained, consideration of recreational interests, protection of the environment and natural heritage and ensuring availability of necessary infrastructure. To this end the EIA will assess the compatibility of the proposal with the stated aims of the Statutory Authorities as well as other interested parties.

5. EIA METHODOLOGY

5.1 Introduction

The purpose of the EIA process is to ensure that likely significant environmental impacts of the proposed development, both positive and negative, are assessed systematically, prior to a planning decision being made. The results of the EIA will be presented in an Environmental Statement (ES) and used to inform the decision-making process. The ES should identify, describe and assess the likely significant impacts of the development on the environment, both direct and indirect, with reference to:

- Human beings;
- Flora and fauna;
- Landscape;
- Geology;
- Air;
- Water; and
- Any interactions between the above.

Following the scoping stage, which is discussed in detail in Section 1.3, the EIA process, leading to the submission of relevant environmental information, involves the following key stages:

Baseline Studies: identification of existing environmental conditions through review of existing information and monitoring and field studies as required, to provide a datum against which to assess the likely significant impacts of the proposed development;

Potential impacts: identification of potential impacts specific to the development;

Assessment of Impacts: identification and assessment of likely significant impacts on the environment from the proposed development, with quantification of impacts where possible;

Mitigation: the identification of measures to avoid, reduce or compensate these impacts; and

Residual Impacts: identification of residual impacts after mitigation.

5.2 Assessment Terminology and Criteria

In order to evaluate environmental impacts and determine their significance, it is important that assessment criteria are identified. In most instances environmental standards and guidelines are available. The various methodologies that will be used within each specialist area will be identified within the appropriate section of the ES.

Where formal guidance is not available, the assessment of impact significance will rely on IEMA guidance and professional judgment that is based on a documented methodology for that assessment. While there may be some variation between topic areas, the assessment will generally take into account the following:

- The type of impact (i.e. positive, negative, direct, indirect);
- The probability of the impact occurring (i.e. certain, uncertain, reversible, irreversible);
- The policy importance or sensitivity of the resource under consideration, in a geographical context (i.e. international, national, regional, district or local);
- The magnitude of the impact in relation to the resource that has been evaluated (quantified if possible or, if not, using the scale high, medium, or low); and
- Any potential cumulative impacts.

Where practicable, mitigation measures to avoid reduce or offset any adverse environmental impacts of the proposed development will be built into the overall scheme design. Other mitigation measures may include constraints on particular aspects of construction methodology or mode of operation. Therefore, the final assessment will take account of the mitigation measures and will only consider any predicted residual impacts.

With regard to potential cumulative impacts these will be discussed in relation to development impacts between different topic areas, (*e.g.* the cumulative impacts of noise and dust from the proposals) and also in terms of other developments in the local area which are already established. This will also include developments that are proposed and for which a planning application has been submitted, such that they are in the public domain. The EIA will rely to some extent on information from East Lothian Planning Authority with regard to understanding the potential cumulative impacts of proposed development with whom DHD will seek to consult in order to agree the parameters of the study.

5.3 EIA Topic Areas

At this stage, based on the information available and our experience of undertaking similar EIA, it is envisaged that the ES will include the following chapters:

- Water Environment (including Coastal Processes);
- Terrestrial Ecology;
- Marine Ecology;
- Noise and Vibration;
- Landscape and Visual; and
- Archaeology and Cultural Heritage.

The ES will utilise other complementary studies such as the Socio-Economics study and be based on the development of a final engineering design. The Socio-Economics study will be included as a technical annexe to the ES.

Based on the current development proposals, the following topic area is considered acceptable to be excluded from the scope of the Environmental Statement. The reasons for the exclusion are also provided.

Air Quality

Dunbar harbour is located on the east coast of Scotland and as such air quality is considered to be good as it is primarily dominated by maritime weather. East Lothian Council have not declared an Air Quality Management Area (AQMA) within its boundaries and review of the Scottish Pollutant

Release Inventory (SPRI) on SEPA's website does not identify any industrial activity within Dunbar town which is required to report its pollution emissions.

As the proposals are to upgrade the current harbour to allow safe passage through the harbour approach channel during stormy weather it is considered that there will be minimal impact on local air quality post construction. As the local car park is constrained by topography the impact from traffic emissions associated with the operation of the proposed development is also considered not to be significant. During the construction phase, although there will be some increase in traffic as a result of construction workers and materials being brought to site, this is not considered to be a significant increase in traffic movement. In addition the material to form the breakwater is likely to be brought to site via boat.

The key issues in relation to air quality that require to be addressed arise from the management of dust during the construction phase. Dust generated by construction activities could potentially cause a nuisance to local residents and impact water quality and ecology, unless properly controlled. As such a construction dust qualitative desk based assessment will be undertaken, taking into account the findings of the water and ecology assessments, with a summary of the key points included in the ES. The Environmental Management Plan will list the key good practices measures required and will be applied to ensure compliance with any license conditions.

5.4 Additional Studies – Socio-Economic

As a complement to the EIA, a detailed socio-economic impact assessment is being undertaken by AMION Consulting. The resulting non-technical summary will be presented within the ES, with the full report included as a technical appendix.

The socio-economic impact assessment will be conducted based on the HM Treasury Green Book Guidance, together with the Scottish Enterprise guidance on Additionality & Economic Impact Assessment³ and additionality guidance⁴ developed by AMION Consulting for the UK Government⁵.

The key objectives of the socio-economic impact assessment are:

- To determine the nature of the local economy and associated social and economic issues, taking account of the local context;
- To identify the principle social and economic impacts (both positive and negative) that may result from the proposed development and assess the significance of these impacts;
- To recommend measures for avoiding or reducing any identified adverse impacts, and/or enhancing positive impacts, where possible; and
- To highlight any residual negative impacts that cannot be mitigated and to identify any positive impacts from the proposed development.

³ Scottish Enterprise, Additionality & Economic Impact Assessment Guidance Note 'A Summary Guide to Assessing the Additional Benefit, or Additionality, of an Economic Development Project or Programme', 1st November 2008

⁴ HM Treasury, *Green Book: Appraisal and evaluation in central government*. London: TSO.

⁵ English Partnerships, *Additionality Guidance*. Third edition. 2008.

There are two main aspects to the socio-economic impact assessment:

- The first part reviews baseline socio-economic data relating to the Dunbar and East Lothian economies. This element of the report sets the scene in terms of economic, population and employment statistics, and includes:
 - Population and demographic trends;
 - Gross Value Added (GVA);
 - Economic activity / unemployment
 - Industrial structure;
 - Occupational profile;
 - Earnings and income;
 - Structure of the business population;
 - Quality of life indicators / deprivation; and
 - Education levels.

The second part of the study undertakes a detailed assessment of the impact of the proposed development on local (**Dunbar**), sub-national (**East Lothian District**) and national (**Scotland**) employment, as well as assessing the synergetic effects in terms of the indirect and induced employment resulting from the development. The assessment considers effects during both the construction and operational phases of the development and interprets the employment impacts in terms of their effects on economic outputs, as measured by Gross Value Added⁶ (GVA). During the **construction phase**, the increase in local employment as a result of construction activities will be assessed. In terms of **the operational phase**, additional direct revenue is expected to be generated from:

- Offshore wind farm support vessels;
- An increase in the number of fishing vessels; and
- An increase in the number of leisure craft.

In addition, the study will discuss mitigation measures and residual effects.

Consideration will also be given to the wider, less tangible, impacts such as;

- Increased competitiveness;
- Enhancement of socio-economic mix and profile;
- Enhanced quality of life;
- Environmental effects and increased sustainability;
- Improved tourism offer and appeal; and
- Community benefits.

Finally, a summary table will highlight the key impacts, mitigation measures and resulting residual impact, whilst indicating the following significance criteria:

- M, m, s, n (Major, moderate, slight, negligible);
- +ve or -ve (positive or negative);
- D,I,S,C (Direct, Indirect, Secondary, Cumulative); and
- P,T (Permanent, temporary).

⁶ Gross value added is a measure of the economic value of goods and services produced in an area.

5.5 Additional Studies – Traffic, Shipping and Navigation

In relation to traffic the proposed development is primarily aimed at improving a sea based facility although there is the potential to generate a level of traffic movement during the construction and operational phases. However, access to the harbour car park is currently restricted by street design and local topography constrains the increase in the current harbour parking facilities.

The development itself (provision of breakwater and dredging and associated works) is also not considered likely to alter navigation in the area excepting avoidance of new structures. Indeed the development is intended to improve the access and egress at the harbour to the benefit of shipping movements.

The following potential issues will be assessed:

- Potential increase in traffic movements in and around the harbour;
- Potential restriction on access to areas of the harbour during parts of the construction phase; and
- Potential restrictions in vessel movements or mooring particularly during the dredging works, construction of the breakwater is considered to have less potential effect on access to and from the harbour but shall also be considered for completeness.

Whilst transport of construction material to site by boat is being considered in line with the design and construction methods, a proportion of the short-term increase traffic flow is expected from construction traffic.

The road traffic effects to be assessed will include changes in traffic flows, severance, driver delay, pedestrian delay, pedestrian amenity, accidents and safety.

The study will be prepared taking cognisance of the Scottish Government's 'Transport Assessment and Implementation – A Guide' (TAIG). Reference will also be made to the Guidelines for the Environmental Assessment of Road Traffic (Institute of Environmental Management and Assessment (IEMA), 1993) and Scottish Planning Policy, and PAN 75 'Planning for Transport'. Where appropriate, the Institution of Highways and Transportation's (IHT) 'Guidelines for Traffic Impact Assessment' will be referred to.

It is anticipated that the study will comprise both desk and site surveys to determine the following:

- Assessment of options for access to the development from the public highway focusing on existing access points;
- Baseline survey and characterisation of the existing traffic network through desk study and site visit;
- Identification of the proposed characteristics of the proposed access route(s), current vehicle types and flows and any constraints;
- Prediction of likely effects of the development;
- Input into the design process to mitigate effects; and,
- Description of residual effects.

As a point of principle, the evolution of design options shall also consider the avoidance of restrictions to existing harbour users where possible and make every effort to minimise disruption during the construction works.

The above study shall be reported within the ES and shall also provide context for EIA assessments such as the noise assessment.

The recommendations of the traffic, shipping and navigation study shall be incorporated into the Environmental Management Plan (EMP) developed as an output of the EIA process. This EMP will form part of any construction contract.

6. GEOLOGY AND SOILS

6.1 Context

The development proposals will potentially involve the removal or building on top of existing rock outcrops or exposures, and dredging of seabed sediment (and in places potentially underlying rock).

6.2 Baseline Geological Conditions

A site walkover was undertaken on 9 March 2012 which, over and above the published information, informed the baseline definition for the site and surrounds. This walkover included an inspection of the foreshore to the north of the harbour wall facilitated by the local RNLI inshore lifeboat at low tide, the general areas proposed for development and an approximate 500m buffer zone.

6.2.1 Summary of Observations During Site Walkover

The key observations made during the site walkover were:

- Sands (medium sands generally) were observed within Broad Haven and Victoria Harbour at low tide;
- No terrestrial soils or drift deposits were observed in the area of the development;
- Sandstones and agglomerate were observed on the foreshore to the north of the northern Harbour Wall (Plate 6.1 below);
- Agglomerates and vent type deposits were observed on either side of the harbour entrance channel (Plate 6.2 below); and
- Agglomerate deposits were present in the area of 'The Battery' to the north-west of Broad Haven.



Plate 6.1: Sandstone (lower section) and Agglomerate (upper right foreground) to north of harbour wall.



Plate 6.2: Typical geology to the north of the harbour entrance channel.

6.2.2 Designated Sites

There are two relevant designated sites in the vicinity of the proposed development namely the Barns Ness SSSI and the Firth of Forth SSSI. These are described as follows:

Barns Ness

The Barns Ness SSSI lies more than 1km to the east-south-east of the development area. The description of its geological designation is as follows (taken from SNH SSSI site citation from Sitelink on SNH website on 24 April 2012):

'The succession of Lower Carboniferous Limestone, rich in fossils, allows correlation between the Scottish Lower Carboniferous and the Lower Carboniferous of Northumbria, hence is of considerable importance. At Barns Ness an almost complete, though heavily faulted, section through the whole lower limestone group is exposed. The dissected raised beach platform on the foreshore at Broxmouth is of geomorphological interest.'

Firth of Forth

The Firth of Forth SSSI (FoF SSSI) lies immediately to the west of the development area and includes the promontory on which the Castle ruins sit on the south side of the Dunbar Harbour entrance. The FoF SSSI is designated for the following feature types:

- Stratigraphy;
- Igneous petrology;
- Mineralogy;
- Palaeontology; and
- Quaternary geology and geomorphology.

Of the above features only geomorphological features of the SSSI are present local to the development. Their description within the SNH SSSI citation is as follows:

'At Dunbar, the coast is notable for a series of extensive shore platforms, including features that predate the last glaciation. Three of the platforms occur above present sea level, the highest with a crag and tail formation on its surface. These landforms are representative of the suite of erosional features found along the east coast of Scotland and demonstrate former sea-level changes and different phases of marine erosion. Dunbar is one of the best examples in eastern Scotland illustrating the development of multiple shore platforms, as well as highlighting the contribution of older elements to the form of the present coastal landscape.'

Geomorphology

The coastline at Dunbar is also of note for the outstanding complexity of rocky coastal landforms which it exhibits. Of particular interest is a series of rock platforms representing different relative sea levels in the area but the associated cliffs, stacks, skerries and beaches are also of value. The exceptional diversity and intricacy of the landforms is related to the variety of sedimentary and volcanic rock types found here combined with structural weaknesses in these rocks and local variations in exposure and altitude.'

The primary features of interest are therefore understood to be the rock platforms but that the associated cliffs, stacks, skerries and beaches are also of interest.

The location of these 'shore' or 'rock platforms' is described in an extract from the Geological Conservation Review Volume 6: Quaternary of Scotland, Chapter 17: Lothians and Borders, Site: DUNBAR (GCR ID: 182) by J. E. Gordon. This notes that the four platforms are located as follows:

- A. At between 18 and 25m O.D. (therefore not within the development area which is on the coast);
- B. 1km west of Castle rock (1km west of the development);
- C. Further west than B above (therefore further from the development); and
- D. Offshore at -11m O.D. (deeper than the location of the proposed breakwater and expected to be further 'offshore').

6.2.3 Solid Geology

The 1:50,000 scale geological information (from the British Geological Survey (BGS)) indicates the following rock types (and formations) to be present locally:

- Volcanic Vent Deposits - tuff and agglomerate
- Volcanic Basanite and Foiditic Plugs and Vents; and
- (Stratheden Group and Inverclyde Group) Interbedded sandstone and subordinate conglomerate deposits.

During the site walkover agglomerates and sandstone outcrops were confirmed within the area.

6.2.4 Drift Geology

No terrestrial drift deposits are present in either development areas. However the sediment to be dredged within the Victoria Harbour and Broad Haven consists generally of sands (observed at low tide in Broad Haven and in Victoria Harbour). Consideration of these marine deposits and potential effects of dredging are also discussed under Coastal Processes within the Water Environment section.

6.2.5 Baseline Soil Conditions

The footprint of the proposed development does not contain significant areas of terrestrial soils as it is predominantly rock outcrop and seabed.

6.2.6 Mineral Resource

The BGS Mineral Resource map for East Lothian, Midlothian, West Lothian and Edinburgh (1:100,000 scale), 2008 does not show any known mineral resource within the development area. The closest resource noted is glacio-fluvial sand and gravel deposits to the south-east of Dunbar.

6.2.7 Contaminated Land

Contamination potential is different within the different types of geological deposit and based on experience the likelihood of containing contamination (by deposit) is noted as follows:

- Rock – no contamination observed during walkover or expected;
- Soils and terrestrial sediments – not present therefore no opportunity for contamination to be present; and
- Marine sediments – Potential for contamination associated with harbour activities.

6.3 Key Issues and Scope of Environmental Statement

Having considered the baseline information and from the walkover of the area the requirement for assessment of various aspects of the local geology are provided in the table below.

Table 6.1: Geological summary

Aspect of Geology	Summary of Conditions	Requirement for Assessment and Scope
Designated Sites and Potential Impact	No designated sites present within development footprint. No notified features (wave platforms in particular) in footprint of development. Adjacent stack and beach noted as of associated interest to SSSI wave platforms.	On completion of engineering appraisal and outline design, proposal should be reviewed to consider potential direct or indirect effect on adjacent stack or beaches. Beach impact appraisal should be considered within Coastal Processes section of ES.
Solid geology (rock)	Widely exposed tuff agglomerate and sandstones may be removed or covered.	Not considered a significant issue and not taken forward for detailed appraisal.
Drift geology and soils (terrestrial)	No superficial terrestrial deposits present.	Not considered an issue, and not taken forward for detailed appraisal.
Drift geology (marine)	Proposals involve removal of sediments mainly sands from harbour.	Not considered a significant issue and not taken forward for detailed appraisal.
Mineral Resource	No known mineral resource present or anticipated to be present	Not considered a significant issue and not taken forward for detailed appraisal.
Contamination	Only media with potential for contamination are sediments to be dredged.	Consideration to be given to contamination potential. This will be subject to Marine Licence application and associated sampling at the appropriate time.

6.4 Assessment Methodology

On the basis of the above it is considered that Geology and Soils should simply be described within the ES and should any part of the stack above low water be proposed to be removed consideration of the potential impact on the Firth of Forth SSSI should be made within the ES.

Potential effects on the local beaches should be assessed under the Coastal Processes chapter of the ES.

Contamination will be assessed through sampling and laboratory analysis of sediments from within the harbour in accordance with Marine Scotland guidance. The timing of this is not certain at present, other than it will have to be undertaken prior to the works.

In summary there are no anticipated significant impacts on geology or soils as a result of the development other than small scale change to associated features of the Firth of Forth SSSI, such as stacks and skerries which is not yet certain (beaches will be assessed under Coastal Processes). This will be further considered as detailed design evolves.

7. WATER ENVIRONMENT AND COASTAL PROCESSES

7.1 Context

The proposed development has the potential to impact upon the water environment at the harbour and the surrounding area. Water environment in this context is considered to encompass coastal processes (wave, hydrodynamic and sediment transport), water quality, sediment quality and the risk of coastal flooding. The coastal processes will also include assessment of the potential coastal erosion and protection of the site and surrounds.

The assessment would identify sensitive receptors and issues within the proposed development site by establishing the existing baseline condition and examining the proposed development design and construction method within this context, taking into account of predicted changes based on competent studies undertaken by other parties.

7.2 Baseline Situation

Dunbar harbour layout consists of three distinct parts, *i.e.* Victoria Harbour, Broadhaven and Cromwell Harbour. All of the harbour basins dry out at low water. The entrance is affected by crossing waves during northerly to easterly strong winds. During such conditions the Victoria Harbour North Wall is exposed to wave action and is frequently overtopped at high tide. The harbour basin is also affected by waves passing through the entrance channel and reflecting off the internal structures of the harbour. During storm conditions is common for vessels to have to take refuge in Cromwell Harbour. Further, the harbour is considered unsuitable for leisure moorings during the winter and such vessels are required to be removed from the water as a result.

A comprehensive range of previous investigations in relation to the water environment have been carried out providing extensive information on the baseline condition of the site, which will be used to inform the impact assessment. These investigations and reports include:

- AMBIOS: Wave Conditions at Dunbar Harbour, December 2009-March 2010, May 2010, Report to Dunbar Harbour Commissioners;
- AMBIOS: Dunbar Harbour Development: Sedimentation Conditions for Option 3, May 2010;
- Beckett Rankine Dunbar Harbour Outline Engineering Design, Economic and Options Appraisal (Rev B, December 2010);
- EnviroCentre Dunbar Harbour Wave Modelling (May 2010);
- Beckett Rankine Harbour Survey 04/2009 (updated 5 June 2009);
- AMBIOS: Dunbar Harbour Bathymetric Surface and Subsurface Geology Report 01/2009;
- DHT Harbour Development Discussion Paper Final 05/2008;
- Beckett Rankine Harbour Survey and Recommendations 09/2007;
- HR Wallingford Wave Attenuation and Harbour Options Report 05/2002;
- Royal National Lifeboat Institution (RNLI) Additional Site Investigations report 06/1996; and
- RNLI Report on Rock Dredging 08/1995.

7.2.1 Designation

The site and surrounds has the following associated protected areas:

- Dunbar (Belhaven) – EC Bathing Water;
- Dunbar (East) – EC Bathing Water; and
- Seacliff – EC Bathing Water.

Water quality

There is a Scottish Water storm water discharge into the Harbour, which we understand regularly overflows sewage and therefore influences the background water quality.

The Scottish Environmental Protection Agency (SEPA) River Basin Management Interactive Maps⁷ provided the following baseline information:

- The site is classified within the coastal water bodies (North Berwick to Barns Ness);
- Overall water quality status: Good;
- Overall ecological status: Good; and
- Overall chemical status: Pass.

7.2.2 Hydrology and Drainage

Apart from the coastal setting of the site, there are no other watercourses or water bodies within the site and its immediate surrounding area. Localised impacts on land drainage and storm water outfalls are considered in the detailed design of the project, but are considered unlikely to result in an environmental impact and therefore outwith the scope of the EIA.

7.2.3 Flood risk

The site is at risk of flooding from the sea indicated by the SEPA Indicative River and Coastal Flood Map (Scotland) 200-year flood outline⁸. As there are no other watercourses or water bodies on site, the flood risk is predominantly coastal.

7.2.4 Coastal Processes

There is a significant amount of baseline information within the AMBIOS Dunbar Harbour Bathymetric Surface and Subsurface Geology Report 01/2009. This provides the majority of seabed character data anticipated to be required in the coastal processes assessment including:

- Bathymetry;
- Side scan sonar and sub-bottom profiling data;
- Sediment sampling and particle size analysis data;
- Rockhead levels;
- Sediment thickness mapping; and
- Sediment character distribution (absent sediments, medium sands and fine sands generally).

Initial interpretation of the seabed features suggests that the dominant mechanism for sediment (sand) transport is storm activity and that tidal currents are not of sufficient velocity to generally transport sands around the harbour and its approaches.

⁷ SEPA RBMP Interactive map <http://gis.sepa.org.uk/rbmp/>

In addition to the data available from the above report the two AMBIOS reports of 2010 provide appraisal of the potential wave and sedimentation effects of the proposed breakwater. There is therefore already a good understanding of the wave climate within the harbour particularly under storm conditions. With regard to sedimentation effects the following points summarised from the AMBIOS 2010 report on sediment circulation are of note:

- The wave energy outside the harbour will decrease and while sand will potentially accumulate behind the breakwater the change is unlikely to cause shallowing at the harbour mouth that would require dredging;
- The joint impact of the lessened wave energy at the harbour mouth (described above) and the proposed deepening of the harbour entrance (decreasing tidal velocities) will reduce the potential for sand to be carried into the harbour. Thus sediment accretion rates in the harbour should decrease; and
- under NE wave conditions, sand in motion will be even more effectively set into suspension in the wave reflection (turbulent) zone north of the breakwater, and with longshore currents will be carried westwards around the end of the breakwater, then tending to diffuse east again behind the breakwater ie its onshore passage will not be interrupted.

7.3 Key Issues and Scope of Environmental Statement

The key water environment issues or potential environmental impacts associated with the proposed development have initially been identified as follows:

- Potential changes to local wave climate;
- Potential changes on the hydrodynamic flow patterns and sediment transport (erosion and accretion of sediment);
- Potential changes to water chemistry and quality associated with potentially contaminated sediments being mobilised from the seabed which could potentially migrate and disperse;
- Potential impacts on the water quality through suspended sediments associated mainly to construction of the breakwater and dredging activities;
- Potential changes to coastal flood risk; and
- Potential changes in interactions between ecology and the water environment.

The potential impact of the changes to local wave climate attributed to the proposed breakwater is considered positive. There could be a beneficial effect of the breakwater on coastal erosion.

Since there are no watercourses or water bodies at the site and surround, further detailed assessment of the terrestrial hydrology is not considered relevant with the ES. The limited existing drainage outfalls to the harbour are unlikely to be impacted by the proposed works but will be considered in the design process.

The potential change to coastal flood risk as a result of the proposed breakwater is considered to be minimal and the proposed development is unlikely to alter existing flood risk of the properties adjacent to the site given the nature of coastal flooding. It is therefore considered further detailed assessment of the coastal flood risk is not necessary with the ES.

⁸ SEPA (2006) Indicative River & Coastal Flood Map (Scotland)

7.4 Assessment Methodology

The assessment will be undertaken in accordance with the latest European and National legislation, guidance and best practice, and there will be full collaboration between engineers and ecologists in order to complete the EIA process.

The components of the study are as follows:

- Desk based review of the previous reports, design of the proposed development in relation to the local water environment;
- Consultation with key stakeholders to obtain available information for the site area and surrounds to ensure their concerns are addressed within the study;
- Collection of marine sediment samples for laboratory testing (metal, organic and particle size analysis);
- Evaluation of baseline condition;
- Identification of sensitive receptors;
- Assessment of development impacts and appropriate mitigation measures relevant to the proposed construction and operation on the local regime; and
- Assessment of residual impacts.

8. MARINE ECOLOGY

8.1 Context

The overall aim of the study is to assess two preferred engineering options for the regeneration of Dunbar Harbour, and in particular, Victoria Harbour. This study follows on from a range of exploratory and feasibility studies already carried out for the harbour regeneration proposals. This section provides a discussion of marine ecology baseline conditions and also potential issues associated with the development of these options for marine ecology. The information contained in this section will provide an understanding of key issues associated with the proposed works on marine ecology and also provide a platform for detailed assessment in the subsequent full EIA phase.

At this stage, baseline information has been gathered from a literature review only. However, it is expected that marine ecological surveys will be completed in the subsequent full EIA phase and these will be reported upon in the Environmental Statement. The scope of such surveys will be agreed with key stakeholders as part of the scoping process.

8.2 Baseline Situation

8.2.1 Protected Sites

As shown in Appendix 3 the area immediately to the west of Dunbar Harbour is subject to national and international designations, including:

- Firth of Forth Site for Special Scientific Interest (SSSI);
- Firth of Forth Special Protection Area (SPA); and
- Firth of Forth Ramsar Site.

Although some distance away (approx. 20 miles) the Berwickshire and North Northumberland Coast Special Area of Conservation (SAC) will also be considered in this assessment.

Dunbar Harbour and the area where works are proposed are out with these designated areas however, due to the proximity of these sites consideration is given to the potential influence of the project on the key features of interest within these national and international designations.

The Firth of Forth SSSI is an extensive coastal area (7423.19 ha) located on the east coast of Scotland and was designated in 2000. The SSSI is a statutory designation made by Scottish Natural Heritage under the Nature Conservation (Scotland) Act 2004. The SSSI is of importance for a variety of geological and geomorphological features, coastal and terrestrial habitats, vascular plants, invertebrates, breeding, passage and wintering birds. Within this SSSI, Dunbar is of note for its geological and geomorphological interest and these interest features are discussed separately in Section 6. With respect to the marine environment, mudflats are the most notable feature of the SSSI as these provide invertebrates that support a large population of birds, which are a key feature of the SSSI. The Firth of Forth supports abundant wildfowl and waders and is particularly important for its wintering bird species and is the second most important estuarine area for wintering birds in Scotland. Most of the wildfowl and waders in the Firth of Forth are found at internationally or nationally important levels and form key features of the SPA and Ramsar sites (see below). The invertebrate-rich mudflats and sandflats are used for feeding

at low tide whilst higher ground, including saltmarsh, is used for high tide roosts and feeding sites. However, as discussed below, intertidal mudflats and sandflats are largely absent immediately adjacent to Dunbar Harbour, although a small pocket of sandy beach is present in a small bay immediately to the west of the Victoria Harbour entrance. In the Study Area, these habitats largely occur to the west of the harbour beyond the rocky foreshore at Belhaven Bay.

The Firth of Forth SPA is designated under the Birds Directive 2009/147/EC. The site includes extensive invertebrate-rich intertidal flats and rocky shores, areas of saltmarsh, lagoons and sand dune. The key bird features of the SPA are discussed separately in Section 9. However, again of note for the marine ecology discussion is the importance of intertidal mudflats and sandflats. The Ramsar site is a wetland of international importance, designated under the Ramsar Convention. This site is also of note for its bird interest as discussed in Section 9.

8.2.2 Marine Habitats

8.2.2.1 Intertidal

The intertidal zone immediately to the east and west of Dunbar Harbour is dominated by rocky foreshore. The biotopes include, littoral rock with fucoids, mussels and barnacles (JNCC marine biotope classifications MytB, Him, Ala.Ldig, BPat, FVesB, Ldig.Ldig) (MESH webGIS, 2012). These habitats are relatively common and not classified as being important habitats. Specifically the *Mytilus edulis* biotopes are not intertidal mussel beds and are therefore not included in the UKBAP habitat list. As discussed above, the small bay immediately to the west of Dunbar Harbour also includes a patch of sandy beach, but this habitat is rare on this rocky shore frontage. To the west of Dunbar Harbour at Belhaven Bay, the nature of intertidal habitat changes to polychaete/bivalve-dominated muddy sand shore (EUNIS Classification Code A2.24) (MESH webGIS, 2012). As discussed above, these sand and mud flat habitats support birds and are an important ecological feature for this function.

8.2.2.2 Subtidal

The nearshore infralittoral zone is dominated by *Laminaria hyperborea* (cuvie) forest and foliose red seaweeds on moderately exposed rock (EUNIS Classification Code A3.2141) (MESH webGIS, 2012). This habitat is quite widespread in the UK and is not considered rare (MarLIN, 2012). It will, however, provide a nursery area for some marine species and will likely support a relatively diverse number of species and has an important role for local ecosystem health. In the circalittoral zone, the habitats comprise brittlestars on faunal and algal encrusted exposed to moderately wave-exposed rock (EUNIS Classification Code A4.2144 and A4.214) (MESH webGIS, 2012). Shallow muddy sand subtidal habitats are dominated with species such as *Echinocardium cordatum* and *Ensis* spp. (EUNIS Classification Code A5.241) (MESH webGIS, 2012). Further offshore in deeper zones, the habitat comprise of muddy mixed sediments with *Mysella bidentata* and *Thyasira* spp. (EUNIS Classification Code A5.443) (MESH webGIS, 2012). None of the habitats noted in the subtidal zone are considered rare or important in the UK.

8.2.3 Species

8.2.3.1 Cetaceans

All cetaceans within UK waters are protected under both national and international legislation. Cetaceans are protected through Section 9 of the Wildlife and Countryside Act 1981 (as amended). This

act prohibits the deliberate killing, injuring or disturbance of any cetacean species. They are also protected under Article 12 of the EC Habitats Directive (92/43/EEC) and listed on the Bonn and Bern convention Appendices. In addition, the UK is a signatory to the Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas (ASCOBANS) and has applied its provisions in all UK waters. All cetaceans are also designated UKBAP (Biodiversity Action Plan) species

Information on the presence of cetaceans in the Study Area has mainly been obtained from a review of an Atlas of Cetacean distribution compiled by JNCC (Reid et al, 2003). This atlas has been informed by the European Seabirds at Sea database, Sea Watch data and SCANS database. From this data, the main cetacean species that may be present in the wider waters off the Dunbar coast include minke whale *Balaenoptera acutorostrata*, common bottlenose dolphin *Tursiops truncatus*, white-beaked dolphin *Lagenorhynchus albirostris*, Atlantic white-side dolphin *Lagenorhynchus acutus* and harbour porpoise *Phocoena phocoena*. Of these species the minke whale, white-beaked dolphin and harbour porpoise are likely to be most commonly sighted off the Dunbar coastline. Data from the UK Cetacean Strandings Investigation Programme would support this as these are the only species that have been recorded in proximity to Dunbar Harbour from this source (see <http://data.nbn.org.uk/>) although this does not preclude the presence of other species in the area. There is no evidence to suggest that the waters off Dunbar are of specific importance for cetaceans. Given the protected status of cetaceans appropriate mitigation will be developed where necessary as part of the EIA

8.2.3.2 Pinnipeds

Grey seals (*Halichoerus grypus*) and Harbour seals (*Phoca vitulina*) have been recorded along the Dunbar coastline. This coastline has relatively low abundance compared with other areas of Scotland (SCOS, 2011); however, all seals in Scotland are protected by the Marine (Scotland) Act 2010 and are Annex II species of the EU Habitats Directive (1992/43/EEC). The Marine (Scotland) Act 2010 (Section 6) prohibits the taking of seals except under licence. Approximately 38% of the world's grey seals breed in the UK and 88% of these breed at colonies in Scotland with the main concentrations in the Outer Hebrides and in Orkney. However, breeding is also known to occur along the east coast of Scotland from the Firth of Forth southwards, particularly within the Isles of May Special Area of Conservation (SAC) (11 miles north west of Dunbar and the Berwickshire and North Northumberland Coast SAC, the northern boundary of which lies approximately 20 miles south east from Dunbar. The Grey seals typically breed on remote uninhabited islands or coasts and in small numbers in caves. In Scotland, pupping occurs mainly in autumn and winter (SCOS, 2011) with later pupping occurring on the east coast. Approximately 30% of European harbour seals are found in the UK; this proportion has declined from approximately 40% in 2002 (SCOS, 2011). Significant declines in harbour seal populations have been noted in Scotland (SCOS, 2011). Harbour seals come ashore in sheltered waters, typically on sandbanks and in estuaries, but also in rocky areas. They give birth to their pups in June and July and moult in August (SCOS, 2011).

8.2.3.3 Otters

A national survey of otter (*Lutra lutra*) distribution in Scotland undertaken between 2003 and 2004 identified otter presence in East Lothian (Strachan, 2007). The River Tyne, located to the west of Dunbar provides habitat for otter and they have been recorded in the river. It is not known whether otter are present on the coast and how they extend along the coast. Otters in the coastal zone would require a

source of fresh water with which to clean their fur in order to retain its insulating properties. Dunbar Harbour is located 3.8 km from the mouth of the river, which is in potential range for otters. Potential otter presence will be considered in more detail for the subsequent EIA Report with consultation with Scottish Natural Heritage. The otter is classified as Near Threatened (NT) on the IUCN Red List. Listed under CITES Appendix I and III, Appendix II of the Bern Convention and Annex II of the EC Habitats Directive. They are protected in Scotland by Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). Otter are also a designated UKBAP (Biodiversity Action Plan) species.

8.2.3.4 Fish

It is expected that a broad assemblage of fish and shellfish species will be similar to that found throughout much of the North Sea region, in similar environmental conditions. A number of fish species are known to spawn in the waters off the Dunbar coast, including herring, lemon sole, lobster, blue whiting, cod, ling, plaice, top shark, angelfish, sandeel and spurdog. The kelp forests of the area are likely to act as a haven for a number of fish species. The River Tyne to the west of Dunbar Harbour is principally a brown trout river, but has improving runs of migratory species, particularly sea trout and salmon. Consultation will be undertaken with local fishermen to identify the species present in the Dunbar area during the subsequent full EIA phase.

8.3 Key Issues and Scope of the Environmental Statement

A range of further studies are proposed to improve the understanding of baseline conditions during the full EIA Phase. The results of this work will be reported upon in the Environmental Statement. These studies will be agreed with regulatory bodies as part of the scoping process and may include:

- A marine subtidal survey to provide a finer scale understanding of seabed habitats, particularly in those areas that could be affected by the scheme (related to footprint impacts, water quality impacts and potential smothering). Geophysical studies were carried out in 2009 by AMBIOS Environmental Consultants Ltd at Dunbar Harbour and its approaches. These studies have identified the physical composition of the seabed within and immediately adjacent to Dunbar Harbour. This information will help to refine the coarse habitat description provided in this Scoping Report. Irrespective of the undertaking of a marine subtidal survey, the subsequent EIA phase will include a review of geophysical surveys completed to help refine local subtidal biotope descriptions;
- A Phase 1 Habitat survey will be undertaken for the full EIA phase. The survey will be conducted in accordance with the methods described in the Handbook for Marine Intertidal Phase 1 Mapping (Wyn *et al.*, 2000) and those in the Marine Habitat Classification for Britain and Ireland, (O'Connor *et al.*, (2004)). This survey will help to refine the information collected from the literature review. The area of survey will be confirmed in liaison with regulatory bodies prior to survey;
- Consultation will be undertaken with Scottish Natural Heritage to understand the importance of the Dunbar coastline for breeding seals and potential timing issues associated with these activities;

- Consultation will be undertaken with Scottish Natural Heritage with respect to the presence of otter in the Study Area;
- Consultation will be undertaken with local fishermen to determine fish species present and locally important areas that may act as a nursery or fishing ground; and
- A sediment chemistry survey will be undertaken in areas that will be disturbed to determine the potential for the redistribution of contaminants. This information will be used within the EIA to support the application for a Marine License. The geophysical survey at the site (AMBIOS, 2009) has determined that the subtidal sediments of the Study Area are predominantly sandy and therefore they are unlikely to be bound with high levels of contaminants. In addition, the harbour is exposed, which should allow for good flushing. However, given that dredging is proposed and the presence of important bird feeding grounds to the west of the harbour and sensitive marine ecology (e.g. marine mammals) are in the area it is deemed necessary to undertake a snapshot survey of sediment chemistry to confirm that there are no issues in this regard.

The Environmental Statement will discuss all impacts at pre-mitigation and residual impacts following the adoption of mitigation during construction and operation. All mitigation and monitoring measures will be provided under each impact discussion and compiled in an Environmental Management Plan.

The development of the scheme will lead to impacts during operation and construction. The key impacts on marine ecology would include:

Construction Impacts

- Habitat loss and disturbance resulting from placement of structures on the seabed (footprint loss), release of suspended sediments affecting light penetration and health of marine flora, smothering of habitats with dredging arisings in the subtidal or intertidal zones;
- Species disturbance from ambient noise, underwater sound and vibration generation as well as vessel collision with marine mammals;
- Discharge of contaminants from working areas and vessels that may be required to support works/supply materials and potential redistribution of pollutants that may be held within dredged sediment; and
- Introduction of alien and invasive species if marine vessels are used to support the works.

Operation Impacts

- Altered hydrodynamics due to the development of a new breakwater structure, which may lead to localised changes in seabed levels and sediment supply to intertidal areas; and
- Habitat and species loss and disturbance resulting from long term maintenance dredging. Impacts would be similar to construction impacts, but a smaller size and severity of impacts would be expected.

As discussed above, there a number of important species located in the study area and impacts on these species will be of note with respect to the proposed scheme. Of particular note is the potential for

disturbance to marine mammals and potential for pollution events to occur with wider ecosystem. In addition, the intertidal sandflats and mudflats on the East Lothian coastline provides support to internationally important bird populations and potential impacts on these habitats will need to be assessed. At this stage, it is expected that these impacts can be adequately addressed through the adoption of appropriate design and mitigation, which will be presented in detail within the Environmental Statement.

8.4 Assessment Methodology

The assessment of marine ecology impacts will follow best practice guidelines, including, but not limited to:

- Guidelines for Ecological Impact Assessment (IEEM, 2006);
- Guidelines for Environmental Impact Assessment (Institute of Environmental Management and Assessment, 2004); and
- Scottish Government Circular 3/2011.

9. TERRESTRIAL ECOLOGY

9.1 Context

Introduction

The proposed Dunbar Harbour infrastructure improvements are likely to comprise capital dredging and hard engineering works and these may impact upon the ecological systems of the area, affecting the terrestrial habitats and the associated species including birds.

Ecological Legislation and Policy

The key legislation and policy that will be relevant to the Ecological Impact Assessment (EIA) includes the following:

- Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna (The Habitats Directive);
- The Conservation (Natural Habitats etc.) Regulations 1994 (as amended in Scotland) (The Habitats Regulations);
- The Wildlife and Countryside Act 1981 (as amended) (WCA);
- The Nature Conservation (Scotland) Act 2004 (NCA);
- The Wildlife and Natural Environment (Scotland) Act 2011 (WANE);
- The UK Biodiversity Action Plan (BAP);
- East Lothian Biodiversity Action Plan (ELBAP);
- The Scottish Biodiversity Strategy;
- Scottish Planning Policy (SPP); and,
- Planning Advice Note (PAN) 60: Planning for Natural Heritage.

With cognisance of the legislative and policy background, the following sections outline the existing situation and approach considered appropriate to achieve a reliable assessment of potential impacts and identification of suitable mitigation.

9.2 Baseline Situation

Desk Study

To inform the Scoping document a desk study was completed. The desk study involved a search for any statutory and non-statutory designated sites, notable habitats and species within a 5km radius from the site using the following sources:

- East Lothian Local Plan⁹ (for non-statutory designated sites and relevant Council policy);
- Scottish Natural Heritage (SNH) SiteLink¹⁰ (for statutory designated sites);
- NBN Gateway¹¹ (for records of protected flora and fauna); and
- UK BAP¹² and ELBAP¹³ (for locally important species and habitats).

⁹ http://www.eastlothian.gov.uk/site/scripts/download_info.php?downloadID=317 (accessed 24/04/12)

¹⁰ <http://gateway.snh.gov.uk/sitelink/searchmap.jsp> (accessed 24/04/12)

¹¹ <http://data.nbn.org.uk/> (accessed 24/04/12)

¹² <http://jncc.defra.gov.uk/default.aspx?page=5155> (accessed 24/04/12)

¹³ http://www.eastlothian.gov.uk/site/scripts/download_info.php?fileID=1321 (accessed 24/04/2012)

Designated Sites

Dunbar harbour is not included within any statutory or non-statutory sites designated for conservation value.

The harbour is immediately adjacent to the Firth of Forth RAMSAR site, Special Protection Area (SPA) and Site of Special Scientific Interest (SSSI). The south west harbour entrance wall forms the most easterly boundary of these International and national sites, which are designated for the conservation value of the habitats present and their associated species.

A summary of the designated sites and their qualifying features relating to terrestrial ecology and birds is provided below:

RAMSAR

- Supports aggregations of non-breeding and passage birds of international importance (including, sandwich tern, Slavonian grebe, knot, bat-tailed godwit, pink-footed geese).

SPA

- Supports wintering populations of Annex 1 species of European importance (including, red-throated diver, Slavonian grebe, bar-tailed godwit, golden plover);
- Supports wintering populations of international and European importance of migratory species (including pink-footed geese, shelduck and redshank); and
- Supports wintering populations of European importance of waterfowl.

SSSI

- Designated for its variety of geological and geomorphological features, coastal and terrestrial habitats, vascular plants, invertebrates, breeding, passage and wintering birds.

Habitats

There are a range of coastal habitats bordering the harbour including, small sandy bays and rocky shorelines, skerries, stacks and cliffs, which have been shaped overtime by the weather and wave action. At low tides platforms of sandstone and volcanic intrusions of dolerite and basanite are exposed, and these contain rock pools.

Terrestrial Fauna

Records of common and soprano pipistrelle bats (which are a European Protected Species (EPS)) are present within 2km of the harbour. It is feasible that the remains of Dunbar Castle, which is positioned on the south side of the harbour, may provide roosting opportunity for bats.

Ornithology

Wintering Bird Surveys (following British Trust for Ornithology's Low Count and Core count methods) have been undertaken since November 2011. Surveys are on-going and will incorporate a breeding bird survey in spring/early summer 2012. The survey area extends from Wallace's Head, at the west of Dunbar harbour, to the Groyne at East Beach, to the east of the harbour. To date the main species recorded include cormorant, oystercatcher, redshank and herring gull.

It is known that Dunbar harbour supports a large colony of breeding kittiwake up to 600 pairs. Counts of this species will be undertaken during the breeding bird survey.

Consultation

It is suggested the following organisations are approached during the consultation phase of the EclA:

- Scottish Natural Heritage (SNH);
- Scottish Environment Protection Agency (SEPA);
- Royal Society for the Protection of Birds (RSPB);
- British Trust for Ornithology (BTO);
- Scottish Seabird Centre (SBC); and
- The Wildlife Information Centre (TWIC) for Edinburgh and the Lothians.

9.3 Key Issues and Scope of Environmental Statement

The potential ecological impacts of the proposed improvements to Dunbar Harbour extension shall be identified for each stage of the development, thereafter an EclA shall be carried out using quantitative and qualitative approaches.

The following potential key issues have been identified:

- The main ornithological interest at the site is breeding kittiwake and the potential for disturbance if construction works are undertaken during the breeding season.

The current understanding of the site and its ecological sensitivities allow us to predict that the EclA will be based on the following broad themes:

- Direct habitat loss;
- Loss of foraging, roosting and breeding opportunities;
- Physical disturbance;
- Noise and vibration disturbance; and
- Coastal processes and hydrological impacts on ecology (to be assessed in consultation with the water environment team).

Further ecological survey in the form of a Phase 1 Habitat Survey (coastal) will be undertaken to inform the EclA and the overall ES.

9.4 Assessment Methodology

The methodology used to prepare the EclA will be based on the Institute of Ecology and Environmental Management (IEEM) Guidelines for Ecological Impact Assessment in Britain and Ireland – Coastal and Marine¹⁴.

It is feasible that ecological mitigation to reduce construction and operational impacts of the scheme may be required. Generic mitigation is provided below as a guide to the types of actions that the proposed development may need to employ in order to meet current wildlife legislation.

¹⁴ <http://www.ieem.net/docs/Final%20EcIA%20Marine%2001%20Dec%202010.pdf> (accessed 24/04/2012)

- The implementation of SEPA Pollution Prevention Guidelines (PPG's) as part of pollution control; and,
- Light pollution prevention measures (e.g. directing light onto the site only and preventing overspill onto the sea).

The EclA shall be reported as a topic chapter within the ES.

9.5 Habitats Regulation Assessment

To comply with the Habitats Directive (Article 6.2) it is the obligation of Member States (and therefore competent authorities) to ensure that appropriate steps are taken to avoid:

- Deterioration of the qualifying features of an SPA/RAMSAR site;
- Deterioration of the habitats that support those species; and

Significant disturbance of species designated under the Directive.

It is anticipated that Marine Scotland would be the Competent Authority in relation to the consideration of proposals potentially affecting the qualifying interests of the Firth of Forth SPA/RAMSAR site.

The proposed works will occur immediately adjacent to the SPA/RAMSAR site boundary where wintering and/or migrating species of seabirds and waterfowl are present. Consideration is to be sought on whether a Habitats Regulations Appraisal (HRA) will need to be completed as part of the proposed improvement works at Dunbar Harbour.

10. NOISE AND VIBRATION

10.1 Context

The noise and vibration assessment would consider the potential for noise and vibration from the construction of the proposed development to impact local sensitive receptors. The potential for underwater noise impacts on marine mammals will be evaluated in the marine ecology chapter using information obtained as part of the noise study. The assessment would consider the significance of any noise impacts compared with the measured baseline noise levels generated by current noise sources. Any significant impacts to sensitive receptors would be identified and mitigation measures proposed as necessary. Where mitigation measures are proposed, residual impacts would be identified.

10.2 Baseline Situation

In order to characterise the baseline noise levels monitoring at four locations around the perimeter of the site during the weekday, weekday evening and weekend day periods to be carried out. Monitoring duration would be one hour during the day time periods and 20 minutes during the night time period at each location. All measurements would be undertaken in accordance with the guidance contained in British Standard BS 7445-1 2003, 'Description and Measurement of Environmental Noise' taking into account the relevant assessment standards.

10.3 Key Issues and Scope of Environmental Statement

Dunbar harbour is located within the town of Dunbar and is overlooked by a number of residential houses and flats. Once construction work to remediate the harbour has been completed it is considered that noise levels will return to around current levels and vibration will cease. Road traffic associated with the operation of the proposed development is not considered to be a significant issue as the potential to increase the harbour car park is limited due to the harbour topography. The key issues are therefore identified as noise and vibration generated during the construction phase and the impact this may have on sensitive receptors in the immediate harbour and local area. The potential for underwater noise to impact on marine mammals and other species will be assessed in the marine ecology chapter.

10.4 Assessment Methodology

The noise and vibration impact assessment would be undertaken in accordance with the following guidance documents:

- Planning Advice Note PAN 1/2011 and associated Technical Guidance Note; and
- BS5228-1:2009 – Code of practice for noise and vibration control on construction and open sites – Part 1: Noise and Part 2: Vibration.

Once the baseline data has been collected and detailed engineering design confirmed we will use the PAN 1 guidance document to reach agreement on our assessment criteria with Marine Scotland and East Lothian Environmental Health Department. This will help to ensure that the noise assessment meets with the requirements of each of the organisations.

With regard to marine noise and vibration there will be an interdisciplinary approach to marine acoustics which will be reported in the ecology section of the ES and will be addressed through the application of mitigation, monitoring and management methods to minimal impact on marine life. The desk based assessment will consider the type of construction work being carried out, the nature of the sediment or rock base, the depth of water and the sensitivity of the marine environment. This will also form part of the Environmental Management Plan.

11. LANDSCAPE AND VISUAL IMPACT ASSESSMENT

11.1 Context

This section of the EIA will address issues related to Landscape Character and Visual Amenity in terms of potential impacts on key landscape components, features and visual receptors. It will consider the extent to which the introduction of the proposed harbour improvements (a breakwater to protect boats upon entrance and associated dredging) would influence the perception of the landscape character and visual amenity within the study area and link to the Archaeology and Cultural Heritage chapter to assess the potential impacts on setting, in particular of the Scheduled Ancient Monuments (SAM's).

It is intended that the assessment of impacts upon Landscape and Visual Amenity will be carried out and presented as two separate but related topics, as two discrete sections within one chapter.

The overall study area to be adopted would extend for 5 km from the perimeter of the development location, this being the area within which it is anticipated any significant landscape and visual impacts would be likely to arise. This study area would be used for both the landscape and visual assessments and allows for the evaluation of the relationship between the proposed improvements and the wider landscape and visual resources of the study area, in terms of potential detriment or improvement to the landscape character and visual amenity.

11.2 Baseline Situation

Landscape Designations

Landscapes can be ascribed an international, national, regional or local designation that recognises the importance of the landscape for its outstanding scenic interest or attractiveness. All areas within the overall study area so designated will be assessed. There are no international landscape designations found within the 5 km study area.

Although there are no National Scenic Areas (NSAs) found within the 5km study area, it is noted that the proposed harbour extension site lies adjacent to the easternmost extension of the John Muir Country Park. It is also not far from the westernmost extent of the Berwickshire Coast Area of Great Landscape Value (AGLV). The EIA will assess the impacts of the Dunbar Harbour extension on the special qualities of these areas.

The Inventory of Gardens and Designed Landscapes (GDL), schedules sites, frequently, but not exclusively, created as a setting to historic buildings. There are four GDL's located within 5 km of the proposal:

- Belhaven House GDL; 1.5km SW;
- Biel GDL; 5km SW;
- Broxmouth Park GDL; 1km NNE; and
- Tynninghame GDL; 4.5km W.

Also, this study will input into the assessment of SAM's such as Dunbar Castle, Fort and Battery.

Landscape & Seascape Character

SNH, in conjunction with partner councils, has undertaken a detailed review and classification of the various regional landscape areas and types in Scotland and produced a series of reports known as Landscape Character Assessments.

Dunbar Harbour extension is located within Coastal Margins Landscape Character Type (LCT). There is a small area along the southern boundary of the study area, which is covered by Upland Fringes LCT.

A brief desk-top review of the potential impacts on landscape/ seascape character has been undertaken, and the following receptors have been identified as necessary for assessment in order to ascertain whether there may be landscape impacts arising from the proposed development:

- Coastal Margins and Upland Fringes Landscape Character Types (direct and indirect);
- The seascape character of the area; (direct and indirect);
- Tynninghame, Belhaven House, Broxmouth Park and Biel Gardens Designed Landscapes (indirect); and
- John Muir Country Park and Berwickshire Coast AGLV (indirect).

These impacts may be adverse or beneficial.

Visual Amenity

A brief desk-top review of the potential impacts on visual amenity has been undertaken and of the following receptors have been identified as requiring assessment in order to ascertain whether there may be visual impacts arising from the proposed development:

- John Muir Country Park;
- Potential simultaneous and successive views of the improvements from the John Muir Way long distance footpath, National Cycle Route 76 and A1 road;
- Nearby receptors in the town of Dunbar; and
- Local coastal area.

These impacts may be adverse or beneficial.

A site appraisal of potential impacts upon visual amenity will be carried out involving the completion of standardised recording forms and annotation of 1:25,000 and 1:50,000 Ordnance Survey plans, supported by a photographic record of views from key receptor locations and using photomontages to assist in the assessment and to illustrate the proposals when seen from several key viewpoints. At present it is considered that up to three photomontage images may be required to evaluate the potential visual impact, although this will be agreed with Marine Scotland and their consultees (SNH and ELC)

11.3 Key Issues and Scope of Environmental Statement

Landscape and Visual

Re-development of the harbour would introduce a new large element, namely the new breakwater, which may be visible from out with the site, as detailed in the following tables.

Table 1.1: Potential Construction Effects - Landscape Character and Visual Impact

Construction Effects	Impact	Potential Effects on Receptors
<ul style="list-style-type: none"> ▪ Mobile and floating plant operations; ▪ installation operations; ▪ Land and sea-based; ▪ Construction traffic; and ▪ Construction Compounds 	<ul style="list-style-type: none"> ▪ Presence of cranes and lorries, vessels and machinery, in landscape/seascape and views; ▪ Visible disturbance of local harbour townscape; and ▪ Presence of construction works/ compounds in landscape and views. 	<ul style="list-style-type: none"> ▪ Temporary effect on landscape/seascape character; and ▪ Temporary effect on visual amenity.

Table 1.2: Potential Ongoing (Operational) Effects - Landscape Character and Visual Impact

On-going Effects	Impact	Potential Effects on Receptors
<ul style="list-style-type: none"> ▪ Presence of harbour extension in landscape/seascape and views. 	<ul style="list-style-type: none"> ▪ Possible significant effects. 	<ul style="list-style-type: none"> ▪ Effect on landscape/seascape character; and ▪ Effect on visual amenity.

11.4 Assessment Methodology

The landscape and visual assessment would be prepared with reference to the Guidelines for Landscape and Visual Impact Assessment (GLVIA). Reference would also be made to relevant guidelines on landscape and visual assessment issued by SNH and the Scottish Government.

Landscape/ Seascape

The following potential issues would require assessment:

- The direct impact of the introduction of the proposed harbour improvements (a breakwater to protect boats upon entrance and associated dredging) on the current character, quality and value of the landscape/ seascape character of the immediate area;
- The implications for the landscape/ seascape character of the wider area arising from the introduction of potentially visible features; and
- The implications of the proposed development in relation to the specific landscape character and qualities of the nearby designated landscapes.

Effects arising from the process of decommissioning would be scoped out since they are of a similar nature to construction issues, but of a smaller scale and shorter duration.

The assessment would involve four stages:

- Establishment of the baseline conditions relating to landscape character, quality, value and sensitivity to change of the existing landscape;
- Evaluation of the potential impacts anticipated to result from the introduction of the development into the baseline context;
- Assessment of the effects of the anticipated impacts based on magnitude and sensitivity to change. The assessment would take into account mitigation measures related to site selection and site planning; and
- Description of the anticipated effects and their significance.

Visual Amenity

The following paragraphs outline the method to be adopted for the visual impact assessment.

The GLVIA guidelines suggest that the visual impacts are assessed from a clear understanding of the development proposed and any related landscape mitigation measures. It calls for an understanding of the visual form of the existing landscape, its quality and sensitivity to change taking into account the nature of the development. It further calls for an evaluation of the sensitivity of potential visual receptors (viewers) and of the magnitude of change likely to result from the implementation and use of the development.

The assessment will involve three key stages:

- Determination of the main areas where impacts will occur as a result of the location and orientation of the receptor, and establishment of the baseline conditions relating to the visual context of the study area and the location and sensitivity of potential visual receptors;
- Evaluation of the potential impacts anticipated to result from the introduction of the development into the baseline context; and
- Assessment of the effects of the anticipated impacts based on magnitude and sensitivity to change taking into account mitigation, in this case resulting from measures related to site selection.

Effects Evaluation

A Zone of Theoretical Visibility map (ZTV) will be prepared using “Key Terraforma” software, based on contours at 10m intervals derived from 1:50,000 Ordnance Survey Land-Form Panorama tiles, extending over 5 km from the development periphery. This will be used to initially establish potential receptor groupings within the study area.

Appreciation of Existing Views

This will involve an initial desk based review of OS mapping to establish the wider context within which views initially appear to be set followed by site surveys to establish the form and nature of specific views and the role of the proposed development area in such views.

Site survey notes will be recorded using a standardised checklist that includes the following factors:

- Receptor type and number (dwelling/footpath/open space/school etc.);
- Existing view (composition and quality);
- Distance of view;
- Viewpoint position (e.g. elevated view looking down on the development or focussed view 'framing' the development);
- Angle of view (oblique/face-on/rear); and
- Extent of view.

The evaluation will involve the following tasks:

- Analysis of the sensitivity of receptors to the anticipated change in their view; and
- Identification of the anticipated magnitude of change in existing views.

Cumulative Assessment

We do not anticipate that a cumulative assessment would be required.

Figures

It is anticipated that supporting figures would include: landscape designations; landscape character areas; landscape character photos; ZTV; and visual impact plan(s).

12. ARCHAEOLOGY AND CULTURAL HERITAGE

12.1 Context

The proposed harbour improvements at Dunbar Harbour may have both direct and indirect impacts upon the physical fabric of cultural heritage assets. The assessment will therefore establish the archaeological potential of the proposed application area; identify cultural heritage assets that may be subject to impacts, both within the limits of the dredging application area and beyond; assess the predicted impacts; and propose mitigation.

Legislation and Policy

An outline of legislation, policy and guidance relevant to the marine historic environment will be found in the environmental statement. This will include reference to a variety of legislation and guidance, including:

- Ancient Monuments and Archaeological Areas Act 1979;
- The Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997;
- Historic Environment (Amendment) (Scotland) Act 2011;
- Scottish Planning Policy;
- Planning Advice Note 2/2011;
- Scottish Historic Environment Policy 2011; and,
- Relevant codes of practice and guidance for developers in both coastal and historic towns.

12.2 Baseline Situation

The Scoping Study has collated data from a range of sources, principally Pastmap, to provide an overview of the archaeological considerations that should be addressed in the Dunbar Harbour Regeneration EIA. The study area is the site and a 100m radius from the sites boundaries.

Submerged Prehistoric Sites

There are no known records of submerged prehistoric sites or deposits of palaeoenvironmental interest within the Study Area or the immediately adjoining coastal area. Given the depositional environment and history of the area this is unsurprising.

Examination of the extant borehole data, together with the depositional setting of the Victoria Harbour and the likely coastal conditions that existed before the construction of the Victoria Harbour, it is highly unlikely that submerged prehistoric sites are to be found within the area of the proposed development.

Wreck Sites

There is a single probable undesignated wreck site of a 19th century lugger within the Study Area. There are a further two vessel casualty records in the National Monument Records of Scotland (NMRS) and four casualty records in the East Lothian Historic Environment Record (HER). Casualty records may not be entirely accurate in terms of location, and do not take account of the salvage of vessels. It can be assumed that not all wrecks are known.

There are no wrecks protected by legal designations within the Victoria Harbour or the immediate coastal area.

The potential presence of the remains of shipwrecks in the Study Area and their possible historical significance should be noted. Given that the Victoria Harbour is a working harbour the condition of wrecks may be poor. There may, however, be surviving spreads of artefacts and debris associated with shipwrecks. The potential impact of the proposed dredging will need to be assessed.

Terrestrial Archaeological Sites

Terrestrial archaeological sites are unlikely to be directly affected by the work being undertaken on the Victoria Harbour. There are two main exceptions to this – Victoria Harbour itself and Dunbar Castle. The castle is a Scheduled Ancient Monument (Index Number 766). The castle is of national importance and has a high degree of legal protection. The adjoining Dunbar Castle Park (to the south of the castle) is scheduled separately (Index Number 5960).

Victoria Harbour itself is recorded in the NMRS. It is a 19th harbour, with a two-leaf bascule bridge over the channel to the old harbour.

Assuming that the development work is constrained to the Victoria Harbour and the sea defences to the north of the harbour it is highly unlikely that unknown terrestrial archaeological sites will be impacted by the development.

Standing Buildings

Much of Dunbar, including the entire Study Area, is part of the Dunbar Conservation Area. There are no Category A listed buildings in the Study Area. There are a number of Category B listed buildings in proximity to the harbour including the Battery, a late 18th century coastal artillery fortification (HB Number 24851), Spott's Granary (HB Number 24840) and Yellowcraig, an 18th century tenement building (HB Number 24859). There are a number of other listed buildings, including 6 Category B buildings on Victoria Street that fall within the Study Area.

Assuming that the development work is constrained to the harbour and the sea defences to the north of the harbour it is highly unlikely that standing buildings with previously unidentified historical merit will be impacted by the development.

12.3 Key Issues and Scope of Environmental Statement

The castle wall remains are known to be unstable. Rock cutting or blasting in the vicinity may cause damage to the remaining upstanding wall. Although the sheltered afforded by the construction of the proposed new breakwater may help to reduce the impacts of wave action on the wall. This will be a key issue for consultation with Historic Scotland to confirm their view on the significance of this issue.

The potential impact on the setting of Dunbar Castle, Dunbar Castle Park, the individual 'B' category listed buildings name above and the Dunbar Conservation Area will be covered by the assessment.

The potential impacts to the fabric of the Victorian Harbour from the proposed development will need to be considered in the environmental statement.

The known and potential wrecks will need to be considered in the environmental statement.

12.4 Assessment Methodology

The EIA will comprise a desk-based assessment of the archaeological baseline within the Study Area and an impact assessment.

The aim of the Archaeological Desk-based Assessment (ADBA) will be to identify known heritage assets that may be affected by the proposed development. The baseline data gathered during the ADBA will inform the EIA and will be carried out in accordance with the Institute for Archaeologists' Standard and Guidance for Desk-based Assessment (IfA, 2008).

The ADBA will consider existing data where available. A range of publicly accessible sources of primary and synthesised information will be consulted. This will include, as appropriate and/or available:

- The Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS) database (CANMORE) National Monuments Record;
- The UK Hydrographic Office Wreck Index;
- East Lothian Historic Environment Record (HER);
- Cultural heritage sites, monuments and landscape features with statutory designations held by Historic Scotland;
- National legislation and local planning documents;
- Site visit & photographic record;
- Relevant cartographic sources;
- Relevant secondary sources.

Known sites that fall within the Study Area will be presented within the project gazetteer. Where necessary or pertinent, other sites may be referred to in the baseline text to provide context.

Incorporating the information in the baseline environment report, the environmental impact assessment will consider the importance of the heritage resource with reference to Scottish Planning Policy; Scottish Historic Environment Policy; PAN 2/2011 – Archaeology and Planning and Managing Change in the Historic Environment Guidance: Setting (Historic Scotland).

Severity of impacts will be judged taking into account their direct effect, their indirect effect on setting, and whether they are temporary or permanent. The cumulative effect of separate impacts will also be considered. Significance will be derived from a consideration of the importance of the resource/archaeological potential and the degree of the impact upon it.

13. OTHER CONSIDERATIONS

13.1 Cumulative Impacts and Residual Impacts

The ES would contain a short section summarising the potential for cumulative impacts to arise through the interaction of the key topic areas, such as ecology and water environment. This will also consider the potential additive effects between the proposed works and relevant construction projects already under construction or that have received planning consent.

This section will also set out the residual impacts likely to remain following the implementation of appropriate mitigation or control measures.

13.2 Environmental Management Plan

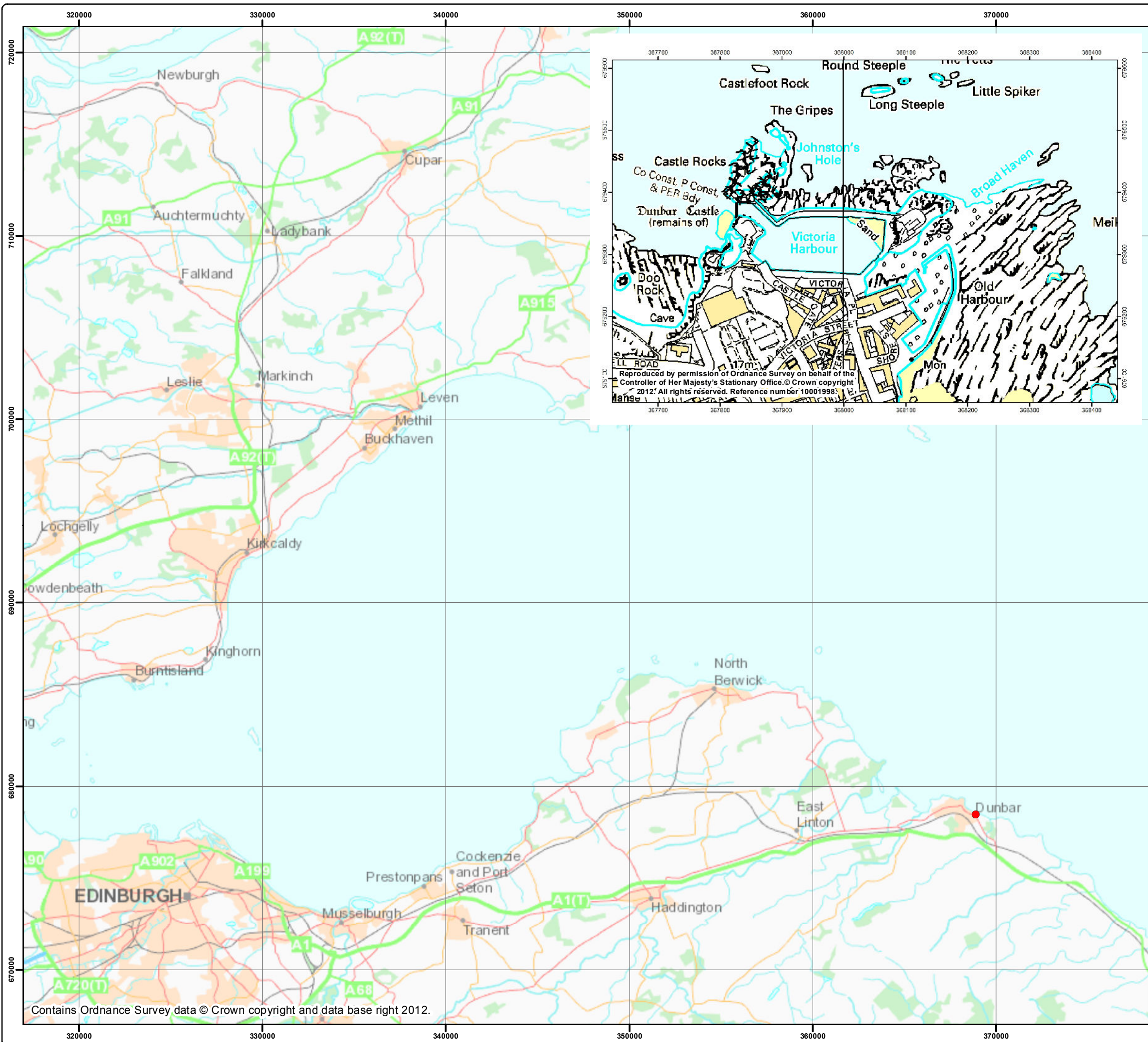
An Environmental Management Plan (EMP) will be developed to help meet the Marine License consent conditions and deliver the mitigation/monitoring proposed in the Environmental Statement.

The EMP will be developed in conjunction with the lead contractor and will establish roles and responsibilities within the team, with a lead Environmental Manager, who will be responsible for compliance with the law and permit conditions, ensuring that all agreed measures, are appropriately implemented.

APPENDICES

APPENDIX 1

Dunbar Harbour Location Plan



Legend

- Site Location

Do not scale this map

Client
Dunbar Harbour Developments Ltd

Project
Dunbar Harbour Regeneration

Title
Site Location Plan

Status
FINAL

Drawing No.	Revision
162076j-001	

Scale	Date
1:200,000	30 April 2012

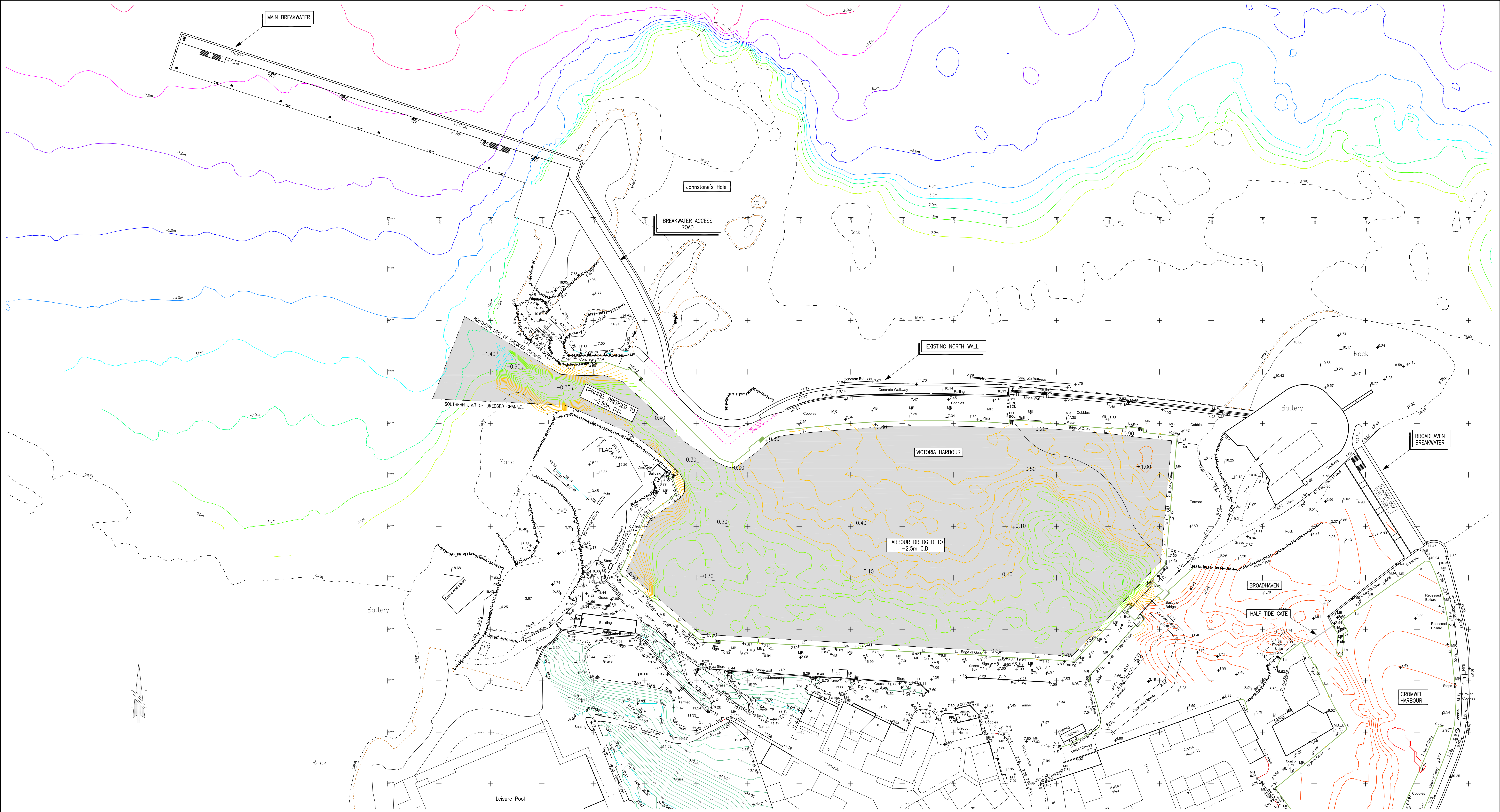
Drawn	Checked	Approved
MN	HB	PG



Craighall Business Park, Eagle Street, Glasgow, G4 9XA
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APPENDIX 2

Proposed Engineering Design Drawing



REINFORCED CONCRETE CAISSON BREAKWATER

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NOTES
1 ALL LEVELS ARE RELATIVE TO CHART DATUM.
CHART DATUM FOR DUNBAR IS -2.80m ODN.

A	15.6.12	Dredge levels and extent, Main breakwater access road, Main breakwater and Broadhaven Breakwater revised.		G.B	PRM
REV	DATE	REVISION DESCRIPTION		DRN	VER
THIS DRAWING IS COPYRIGHT © DO NOT SCALE FROM THIS DRAWING					
<div><div><div>Arch Henderson</div><div>1919</div></div><div>142 St. Vincent Street, Glasgow G2 5LA Tel: 0141 227 3000 - Fax: 0141 246 6542 www.archhenderson.co.uk - email: glagow@archhenderson.co.uk</div></div>			<div>Civil Engineers Structural Engineers Architects CDM Co-ordinators Geotechnical services Environmental services</div>		
Offices in: Aberdeen, Dundee, Glasgow, London, Lisbon (Portugal), Stormoss and Trondheim					
PROJECT : DUNBAR HARBOUR DEVELOPMENTS LIMITED DUNBAR HARBOUR REGENERATION					
TITLE : PROPOSED HARBOUR					
DRAWN : G.B.		DATE : 22.3.12	VERIFIED : G.B.	APPROVED : G.B.	
SCALE : (A3) 1:500		DRAWING STATUS : COMMENT			
DRAWING No : 115076/100		REV : A			A

APPENDIX 3

National and International Nature Designations

