

Port of Leith: 21st Century Gateway Port

REQUEST FOR EIA SCOPING OPINION

- FINAL
- September 2012





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Contents

1.	Introduction	2
1.1.	The Applications	2
1.2.	Background	3
1.3.	Development Stages and EIA	3
1.4.	The Consenting Process for the Proposed Development	4
1.5.	Purpose of the Scoping Request	5
1.6.	Scoping Request Structure	5
1.7.	Approach to Stakeholder Consultation	5
2.	Rationale, Policy and Legislative Context	7
2.1.	Introduction	7
2.2.	Policy Context	7
3.	The Environmental Impact Assessment Process	15
3.1.	EIA Regulations	15
3.2.	Obtaining a Scoping Opinion	15
3.3.	The Environmental Impact Assessment Stages	16
3.4.	Outline of Environmental Statement Structure	19
3.5.	Cumulative Assessment	20
4.	The Proposed Development	21
4.1.	Description of the Development Site	21
4.2.	Description of the Proposed Development – Overview	21
4.3.	Construction Environmental Management Plan	22
5.	Potential Environmental Effects	24
5.1.	Introduction	24
5.2.	Hydrogeology, Geology and Soils	24
5.3.	Hydrology and Flooding	28
5.4.	Water and Sediment Quality	30
5.5.	Oceanography	39
5.6.	Marine Ecology	44
5.7.	Terrestrial Ecology	56
5.8.	Ornithology	61
5.9.	Landscape, Townscape, Seascape and Visual Amenity	66
5.10.	Archaeology and Cultural Heritage	71
5.11.	Socio-economics	76
5.12.	Aviation and Telecommunications	79
5.13.	Air Quality	81



5.14. Noise and Vibration	87
5.15. Traffic and Transport	93
5.16. Shipping and Navigation	96
6. Habitat Regulations Appraisal	103
7. Invitation to Comment	108
List of Abbreviations	109
References	111
Figures	115



Document history and status

Revision	Date issued	Reviewed by	Approved by	Date approved	Revision type
Final	03.09.2012	Redacted	Redacted	03.09.2012	Final

Printed:	3 September 2012
Last saved:	3 September 2012 03:27 PM
File name:	Port of Leith Scoping Report Final.doc
Author:	Various
Project manager:	Redacted
Project director:	Redacted
Name of project:	Port of Leith: 21 st Century Port
Name of document:	Request for Scoping Opinion
Document version:	Final
Project number:	JE30615



1. Introduction

1.1. The Applications

Scottish Enterprise, Forth Ports and the City of Edinburgh Council are working together to reconfigure the Port of Leith to enable the port to respond to emerging market opportunities and create long term and sustainable economic development opportunities for Scotland.

There are two key elements to the proposed development:

- 1) new marine infrastructure outwith the port; and
- 2) land-based proposals within the port.

The marine infrastructure is proposed to allow the port to handle vessels larger than those that can currently gain access to it via the existing lock. This will take the form of a river berth on the north western edge of the Port ('the outer berth'), to the east of the existing lock entrance.

The land-based element will comprise development plots, hardstandings and associated infrastructure, quayside upgrading works and the construction of heavy load routes through the port estate. It will also include the creation of new land through the infilling of Edinburgh Dock.

These developments will be required to support port uses, including business, storage and distribution and general industrial uses. To facilitate the construction of parts of the proposed development, the extraction of material from the Middle Bank of the Forth Estuary will also be required.

Scottish Enterprise has commissioned SKM to lead the Environmental Impact Assessment (EIA) of the proposed development, which will be conducted in conjunction with a Development Framework and will include the land-based and marine infrastructure elements.

For these developments to proceed, consent will be required under three consenting regimes. Applications will be made as follows:

- 1) An application will be made for Planning Permission in Principle for the business, storage and distribution and general industrial uses and associated infrastructure;
- 2) An application will be made for a Harbour Revision Order for harbour works, including the outer berth and the Harbour components of the development within the Port, which may include quayside reinforcement, heavy load route and general port improvements works; and
- 3) An application will also be required for appropriate Marine Scotland Licences.



Forth Ports Authority Confirmation Order Act 1969 permits Forth Ports to handle cargo within its harbour authority area. The handling of cargo is not subject to the Town and Country Planning consenting regime. Rights are conferred on Forth Ports' operational land, as the company is a Statutory Undertaker, to undertake development required in connection with the handling of cargo (General Permitted Development (Scotland) Order 2011, Part 13, Class 35 (1) (b) 'the GPDO'). Permitted Development Rights will similarly be conferred on the outer berth area, on the granting of the Harbour Revision Order, as a consequence of Part 11, Class 29 of the GPDO. The application for Planning Permission in Principle will not alter the status of the Port and the rights conferred under the GPDO to undertake port-related works. It is necessary, however, to apply for planning permission for the proposed development subject of this EIA for two reasons. The first is that some parts of the proposed development do not fall within the definition of permitted development conferred by the GPDO (for example the general industrial uses). The second is that the scale of the development proposed means that this EIA is required and as a consequence, the development is not permitted under the terms of Part 2, Section 3 (8) (a) of the GPDO.

The precise division of the application site between the three consenting regimes identified above will be defined and mapped prior to the submission of the applications, following the preparation of the more detailed Development Framework for the site.

1.2. Background

The Port of Leith has the opportunity to become a twenty first Century gateway port with its strategic location serving Scotland's capital city. In order to achieve this goal the access to the Port through the lock entrance, built in the 1960s, will need to be modernised. When built, the lock was of sufficient size to take the majority of the vessels operating in Leith's markets. New activities, economic sectors and ship dimensions have evolved over the last half century, so the port must evolve with these to continue to serve Scotland.

At the request of Ministers, Scottish Enterprise (SE), with support from Highlands and Islands Enterprise (HIE), has led the development of the National Renewables Infrastructure Plan (N-RIP). The aim of the Plan is to maximise the sustainable economic growth potential of a Scottish based offshore renewables industry by ensuring appropriate sites are available in the right locations (Highland and Islands Enterprise and Scottish Enterprise, 2009). Given its location on the Firth of Forth and the large area of development land available, the Port of Leith has been identified as the first preferred site for large scale manufacturing, installation activities and operations and maintenance (Highland and Islands Enterprise and Scottish Enterprise, 2010).

1.3. Development Stages and EIA

An initial study undertaken for Scottish Enterprise and its partners in May 2012 identified a preferred option of constructing a new berth outside the lock gates and an indicative port land use



and layout. This would see the existing lock continuing to service the vessels that can currently gain access, with a new outer berth providing berthing and cargo and passenger handling facilities for the larger vessels. This preferred option also includes the infilling of Edinburgh Dock (4.9 ha) in order to maximise the potential to secure economic growth through the provision of new sites for business, storage and distribution and general industrial uses which are suited to a port environment.

The initial study has provided an outline of the proposed development. A further study is being prepared, undertaking more detailed design to inform a Development Framework.

This report constitutes the start of the EIA process by serving as a request to Transport Scotland as the competent authority to provide a scoping opinion under the Harbour Works (Environmental Impact Assessment) Regulations 1999 (as amended) and the Town and Country Planning (Environmental Impact Assessment (Scotland) Regulations 2011. The EIA will also support applications for marine licences under the Marine (Scotland) Act 2010. The consenting process for the proposed development is described in Section 1.4 below.

1.4. The Consenting Process for the Proposed Development

As development is proposed both on land and in water, it will require applications under three different consenting processes. These are:

- 1) The Harbours Act 1964 (Harbour Revision and Empowerment Orders under Section 14) – determined by Transport Scotland (TS) for the works relating to the outer berth, quayside reinforcements and infilling of Edinburgh dock and improvement of the port;
- 2) Town and Country Planning (Scotland) Act 1997, as amended by the Planning etc (Scotland) Act 2006) – an application for Planning Permission in Principle will be determined by the City of Edinburgh Council (CEC) for business, storage and distribution, general industry and ancillary development; and
- 3) The Marine (Scotland) Act 2010 (Marine Licences) – to be consented by Marine Scotland for marine structures, capital dredging, dredge disposal and aggregate extraction.

An Environmental Statement (ES) will be produced which will cover the EIA and reporting requirements for each of these different processes. Detailed method statements for specific construction activities (for example a piling method statement) will be required by Marine Scotland to support the Marine Licence application, and the ES will include a Construction Environmental Management Plan (CEMP) to support the application.



1.5. Purpose of the Scoping Request

This document is a request under Schedule 3 of the Harbour Works (Environmental Impact Assessment) Regulations 1999 (as amended) for an opinion on the information to be supplied in the ES, and under Regulation 14 of the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011 for a scoping opinion.

Scoping forms the first stage of the EIA process and focuses attention on the key likely environmental impacts of a project and thereby the priority issues to be addressed, as well as identifying those matters which do not need to be assessed in detail. Scoping allows stakeholders and consultees an early opportunity to comment on the proposed structure, methodology and content of the EIA. EIA is, however, an iterative process and the scope of the EIA may change during the project development stage, for example as the result of the findings of technical studies or as a result of information supplied by consultees.

1.6. Scoping Request Structure

This Scoping Report is structured as follows:

- **Section 2** provides the policy and legislative context;
- **Section 3** provides a summary of the EIA process;
- **Section 4** provides a description of the proposed development;
- **Section 5** outlines each of the environmental aspects that would be assessed in the EIA and describes the methodologies to be used in undertaking the EIA. In each section of this chapter reference is also made to environmental baseline and potential environmental effects;
- **Section 6** provides a discussion on Habitats Regulations Appraisal; and
- **Section 7** provides details on how to comment on the scoping report.

1.7. Approach to Stakeholder Consultation

The benefits associated with timely and comprehensive stakeholder consultations are fully recognised by Scottish Enterprise and its partners Forth Ports and City of Edinburgh Council. Consultation is an important component of the EIA process, allowing interested parties and organisations to become involved in the planning and development process of the project. It also ensures that their concerns, ideas and suggestions for the project are considered.

Scottish Enterprise and the wider project team have already undertaken preliminary consultations with a number of organisations during the initial development stage of the project. To date meetings have been held with:

- Scottish Environment Protection Agency (SEPA);



- Historic Scotland;
- Transport Scotland (TS);
- Marine Scotland;
- Scottish Natural Heritage (SNH);
- Royal Society for the Protection of Birds Scotland (RSPB);
- Harbourmaster (Forth and Tay Navigation Service); and
- City of Edinburgh Council (CEC).

Consultees are invited to comment on the possible significant environmental effects of the proposed development, the proposed EIA methodologies and the ES structure, as presented within this Scoping Report. Any additional issues that it is considered could be addressed within the EIA can also be highlighted along with any sources of information which may be of relevance to the EIA team. The procedure for providing such comments can be found in Section 7.

All responses will be duly considered and where appropriate, the scope of the EIA will be amended. The ES will present the outcomes of the scoping and consultation process and explain how comments were addressed.

There will also be opportunities for public participation in the proposals as the development progresses.

2. Rationale, Policy and Legislative Context

2.1. Introduction

The policy chapter of the ES will set out the consenting background and framework for the proposed development. This chapter will also include a description of other relevant material considerations, which will include emerging Development Plan policy, national planning policy, planning policy guidance and the National Renewables Infrastructure Plan.

It is important to note that the ES chapter will not include an assessment of whether the proposed development is in accordance with statutory Development Plan policy and other material considerations. This would inevitably involve a degree of subjective interpretation, which is contrary to advice on ES preparation, including good practice guidance on EIA, which states that discussions of planning policy in an ES should be objective. A separate Planning Statement will be submitted that will address policy matters in detail and which will reach conclusions on the acceptability of the proposed development in planning policy terms. The Planning Statement will not form part of the ES.

2.2. Policy Context

2.2.1. Legislative context

The planning application process relates to land based development to the mean low water mark and sits within a hierarchy of other legislation. Much of the potential land based development will require an application for Planning Permission in Principle but other consents will be required, particularly for the harbour and marine based development.

The legislation applicable to the Harbour and Marine works includes:

- The Harbours Act 1964;
- Forth Ports Authority Order Confirmation Act 1969;
- The Marine (Scotland) Act 2010;
- European Habitats Directive 92/43/EEC updated and consolidated 2007;
- European Birds Directive 2009/147/EC and UK Implementation Regulations ;
- Conservation Natural Habitats, & c.) Regulations 2010 (as amended);
- Water Framework Directive 2000/60/EC;
- Water Environment and Water Services Act 2003; and
- Water Environment (Controlled Activities) (Scotland) Regulations 2005.



In addition to the wider legislative context there is a hierarchy of planning related legislation that will guide the planning application process including:

- The Town and Country Planning (Scotland) Act 1997, as amended by the Planning etc (Scotland) Act 2006 amongst others;
- The Town and Country Planning (General Permitted Development) (Scotland) Order 2011;
- The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011;
- The Harbour Works (Environmental Impact Assessment) Regulations 1999 (as amended); and
- Planning (Listed Buildings & Conservation Areas) (Scotland) Act 1997.

2.2.2. Planning Policy Context

The Development Plan comprises the approved Edinburgh & Lothians Structure Plan 2015 (2004) and the adopted Edinburgh City Local Plan (2010).

The Structure Plan is due to be replaced by the first Strategic Development Plan for South East Scotland (The South East Scotland Plan or SESPlan). The preparation of the SESPlan has reached an advanced stage, having been submitted to Scottish Ministers on 10th August 2012. An examination in public will be held later this year. The Local Plan is at the early stage of review as part of the replacement of Local Plans with Local Development Plans. The Main Issues Report for the Edinburgh LDP was issued for consultation in October 2011.

A summary of relevant policy considerations from the adopted and emerging Plan is provided below to identify the key issues that require to be considered as part of the EIA process.

2.2.3. Development Plan Policy

Key policies are summarised in the tables 1a and 1b below. A summary of relevant policy is provided in order to identify issues that require further consideration. The policies are not assessed in detail at this time but are listed to provide a point of reference for scoping.

**Table 1a Development Plan Policies**

Edinburgh & Lothians Structure Plan Policy Topic	Policy Reference
Renewable Energy	ENV6 - Renewable Energy
Natural Heritage and Conservation	ENV1A - International Natural Heritage Designations
	ENV1B - National Natural Heritage Designations
	ENV1C - International & National Historic and Built Environment Designations
	ENV1E - Features of Local Importance
	ENV4 - Landscape
	ENV5 - The Coast
Transport	TRAN5 - Transport Implications of New Development
Flooding & Drainage	TRAN6 - Freight Movement
	ENV12 - Water Management and Flooding
Design	ENV1g - Design of New Development
Edinburgh City Wide Local Plan Policy Topic	Policy Reference
Renewables	Inf4 - Renewable Energy
	Inf6 - Water & Drainage
Business/Employment	Emp3 - Business & Industry Areas
	BUS3 - Leith Eastern Development Area
Waterfront	Wa1 - Waterfront Areas of Change (Wac 1b)
Natural Heritage/Conservation	Env1 - World Heritage Site
	Env13 - Sites of European Importance
	Env14 - Site of National Importance
	Env2 - Listed Buildings Demolition
	Env3 - Listed Buildings Setting
	Env5 - Conservation Area Demolitions
	Env6 - Conservation Area Development
	Env15 - Sites of Local Importance
	Env16 - Species Protection
	Env11 - Landscape Quality
	Env17 - Flood Protection
	Env18 - Air, Water & Soil Quality
Transport	Tra1 - Location of Major Development
	Tra2 - Planning Agreements
	Tra12 - New Roads
	Tra12 - New Roads
	Tra15 - Port & Ferry Terminals
Design	Des1 - Design Quality and Content
	Des2 - Coordinated Development

2.2.4. Emerging Strategic Policies

In addition there are a number of relevant draft policies contained within the SESPlan, which will replace the Structure Plan once approved, as listed in table 1b below.

Table 1b Emerging Development Plan Policies

SES Plan Policy Topic	Emerging Policy Reference
Spatial Strategy	Policy 1B – Spatial Strategy Development Principles
Transportation	Policy 8 – Transportation
Sustainable Energy	Policy 10 – Sustainable Energy Technologies

2.2.5. Edinburgh Local Development Plan – Main Issues Report October 2011

The Main Issues Report (MIR) seeks views on the future of Leith Docks and proposes two alternatives. ‘The Preferred Option’ – to continue to support mixed use regeneration at Leith Docks, and ‘The Reasonable Alternative’ – to identify the north eastern part of the site for business and industry in order to support the National Renewables Infrastructure Plan. The consultation process asked for comments on which alternative should be preferred for the forthcoming LDP.

2.2.6. National Planning Policy

National planning policies are set within the NPF2, the SPP, Designing Places, Designing Streets and Scottish Government Circulars. A summary of relevant issues in these documents is provided in the following paragraphs.

2.2.7. National Planning Framework for Scotland 2 (NPF2) 2009

NPF2 plays a key role in co-ordinating policies with a spatial dimension and aligning strategic investment priorities. It takes forward the spatial aspects of the Government Economic Strategy, highlighting the importance of place and identifying priorities for investment to enable each part of the country to play to its strengths. It provides the strategic spatial policy context for decisions and actions by the Government and its agencies.

NPF2 identifies the Scottish Government’s commitment to renewable energy technology. Paragraph 145 states,

“The government is committed to establishing Scotland as a leading location for the development of renewable energy technology and an energy exporter over the long term. It is encouraging a mix of renewable energy technologies, with growing contributions from offshore wind, wave, and tidal energy, along with greater use of biomass. The aim of national planning policy is to develop Scotland’s renewable energy potential whilst safeguarding the environment and communities”.



NPF2 also makes reference to the Waterfront Redevelopment of Edinburgh & Leith as one of the largest regeneration projects in Europe (paragraph 187). The proposed redevelopment of this area is now in a period of change in terms of potential land use, but the importance of the location / development opportunity site remains.

One of the core aims of NPF2 is to set out the strategic development priorities to support sustainable economic growth (paragraphs 1 & 12).

The NPF also defines core aspects of sustainable development and key components of government policy. Paragraph 25 states *“Tackling climate change and reducing dependence on fossil fuels are two of the major global challenges of our time..... Addressing these challenges demand profound changes in way we produce, distribute and use energy over coming decades.”*

It also provides a summary of the key aims of Scotland’s spatial development to 2030 (at paragraph 44) as:

- *“ to contribute to a wealthier and fairer Scotland by supporting sustainable economic growth and improved competitiveness and connectivity;*
- *to promote a greener Scotland by contributing to the achievement of climate change targets and protecting and enhancing the quality of the natural and built environments;*
- *to help build safer, stronger and healthier communities, by promoting improved opportunities and a better quality of life; and*
- *to contribute to a smarter Scotland by supporting the development of the knowledge economy.”*

The government is also committed to promoting a greener Scotland and key elements of the strategy include making the most of Scotland’s renewable energy potential (outlined in paragraphs 48 and 53) and that the marine and coastal environment is a unique asset that supports a wide range of economic activities including energy production (paragraph 101).

2.2.8. Scottish Planning Policy (SPP)

The SPP is a statement of Scottish Government Policy on land use planning. The overarching purpose of the Scottish Government is stated as being to increase sustainable economic growth. The planning system is directed to proactively support development that will contribute to sustainable economic growth. In doing so, the planning system should enable growth enhancing activities whilst protecting and enhancing the quality of the natural and built environment. Planning authorities are directed to take a positive approach to development that could contribute to economic growth.



2.2.9. Other Relevant National Policies

National Renewables Infrastructure Plan (N-RIP) February 2010 identified a spatial framework related to offshore renewables (wind, wave and tidal), and the infrastructure needed to support such development. The Port of Leith was ranked at the top of the list for potential Integrated Manufacturing sites.

N-RIP Stage 2 Report (July 2010) (N-RIP2) supports the development of a globally competitive offshore renewables industry based in Scotland. The report states that the Delivery Group has identified that *“there is a stock of sites in Scotland that could potentially meet industry needs for a broad range of uses. Decisions to invest will be led by the port owners”* (Page 4 NRIP Stage 2 July 2010– the first of the four key conclusions of the Delivery Group). NRIP 2 also states that *“based on offshore project developer feedback and Scottish Development International’s enquiry stream most interest is being shown in sites in the Forth/Tay cluster and Moray Firth cluster at present. The sites where the interest is strongest should be the focus for initial investment”* (NRIP Stage 2 July 2010 - third key conclusion page 4).

N-RIP 2 states that *“The strategic importance of the development of the sites for economic growth should be recognised in the next review of the National Planning Framework”* (Executive Summary, NRIP Stage 2 Report, page 4).

Scottish Government Electricity Generation Policy Statement (2012). The draft policy statement was published in March 2012 and set out the government’s core policy on electricity generation.

Paragraph 4 of the Executive Summary states that *“The Scottish Government’s policy on electricity generation is that Scotland’s generation mix should deliver:*

- *a secure source of electricity supply;*
- *at an affordable cost to consumers;*
- *which can be largely decarbonised by 2030;*
- *and which achieves the greatest possible economic benefit and competitive advantage for Scotland including opportunities for community ownership and community benefits”.*

The policy statement recognises (paragraph 1) that *“Scotland has massive green energy potential with a quarter of Europe’s tidal and offshore wind potential and a tenth of its wave power. This is reflected in our amended target, of delivering the equivalent of at least 100% of gross electricity consumption from renewables by 2020 – the most ambitious target in the EU”.*

Government targets are built around key principles including economic benefits. Paragraph 13 – Economic Benefit states *“We believe that Scotland can enjoy major economic benefits and*

competitive advantage by successfully developing new low carbon energy resources such as CCS, offshore wind, marine energy, smart grids, offshore grids and interconnection to markets outside Scotland. Over the decade to 2020, renewables alone could provide up to 40,000 jobs and £30bn investment to the Scottish economy and a transformational opportunity for local ownership and benefits”.

Scottish Government 2020 Routemap for Renewable Energy in Scotland (2011). The Scottish Government published the 2020 Routemap for Renewable Energy in Scotland in July 2011 which commits to a new renewable electricity target. The Routemap is an update and extension to the Scottish Renewables Action Plan 2009.

The key ambition and target set out in Section 3.1 of the document states that “*With 25% of Europe’s offshore wind potential, the manufacturing, supply chain, job creation and training opportunities present Scotland with huge scope for sustainable economic growth”.*

It also lists key actions for the government to harness the opportunities for further exploration and development beyond 2020 including “*Scottish Government to maintain the appropriate level of market support for offshore wind, both through the RO and its possible replacement” and “continued focus by Government and development agencies on using NRIF to deliver and attract appropriate infrastructure investment”.*

The Routemap (Section 3.3) recognises that “*Scotland’s wave and tidal energy resource is almost unparalleled, representing a quarter of Europe’s tidal stream and 10% of its wave energy potential.”*

2.2.10. Other Relevant Local Level Policies

Waterfront and Leith Area Development Framework (WLADF) (October 2011) aims to ensure integrated development setting a strategic approach to physical and social development. The document is adopted as supplementary guidance and is a material consideration in the assessment of major planning applications. The initiative aims to integrate the city’s townscape, create successful and sustainable places and realise the full potential of urban land. The ADF process is designed to deliver a coherent strategic direction for broad areas of the city within which individual masterplans can be prepared, describe how individual areas can physically evolve and, importantly, how the Council and its partners can facilitate place-making. The WLADF replaces the previously approved Leith Docks Development Framework 2005.

Edinburgh World Heritage Management Plan sets out how proposals should be assessed for their impact on the Outstanding Universal Values (OVUs) of the World Heritage Site.



2.2.11. Relevant Non-Statutory Advice & Supplementary Planning Guidance

There are also a number of other relevant policies and guidance that are material considerations in the assessment and determination of any planning application which are considered below.

The Protection of Key Views (City of Edinburgh Council Supplementary Planning Guidance June 2008) guideline aims to safeguard public views to those features which define Edinburgh's character.

The Leith Conservation Area Character Appraisal (approved 18th April 2002) emphasises the area's unique and complex architectural character, the concentration of buildings of significant historic and architectural quality, the unifying effect of traditional materials, the multiplicity of land use activities, and the importance of the Water of Leith and Leith Links for their natural heritage, open space and recreational value.

2.2.12. Specific Designations

As well as policies within the adopted development plan and other policy guidance, there are also a number of specific designations within and adjacent to the site that require to be assessed as part of the planning application and EIA process. These will be addressed on a topic basis within the EIA process.

2.2.13. EIA Regulations

EIA Regulations relevant to the proposed development are discussed in Section 3.

3. The Environmental Impact Assessment Process

3.1. EIA Regulations

The Town and Country Planning Environmental Impact Assessment (Scotland) Regulations 2011 (the EIA Regulations) apply to any proposal that is likely to have significant environmental effects and Schedule 1 of the Regulations lists types of development for which an EIA is mandatory. Schedule 2 of the EIA Regulations lists those developments that may require EIA, with applicable thresholds and criteria. The Harbour Works (Environmental Impact Assessment) Regulations 1999 (as amended) applies to proposals for HROs which are likely to have significant environment effects in relation to projects that fall within Annex I or Annex II of the EIA Directive (Council Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment (as amended)). Annex I and Annex II relate to Schedule 1 and Schedule 2 of the EIA Regulations.

It is considered that the outer berth falls under Schedule 1 with the land based development falling under Schedule 2.

3.2. Obtaining a Scoping Opinion

This document is a request under Schedule 3 of The Harbour Works (Environmental Impact Assessment) Regulations 1999 (as amended), 'The Harbour Works EIA Regulations', for an opinion on the information to be supplied in the ES; and a request under Regulation 14 of the Town and Country Planning (Environmental Impact Assessment (Scotland) Regulations 2011 'the EIA Regulations' for a scoping opinion.

There are slight differences in the requirements of the two sets of EIA Regulations and these are presented below.

The Harbour Works (Environmental Impact Assessment) Regulations 1999 (as amended)

Under Schedule 3 of The Harbour Works (EIA) Regulations, Transport Scotland will give an opinion about the information to be provided in an ES where they are consulted about an application for a HRO and where the project to which it relates is deemed to fall under the EIA Directive.



The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011

The procedure for obtaining a scoping opinion is outlined in Part 4 Regulation 14(1) of the EIA Regulations. Regulation 14(2) identifies the information required to accompany the request for a Scoping Opinion as follows:

- 1) A plan sufficient to identify the site which is the subject of the proposed development;
- 2) A brief description of the nature and purpose of the proposed development and of its possible effects on the environment; and
- 3) Such further information or representations as the person making the request may wish to provide or make.

This Scoping Report has been compiled in accordance with both sets of requirements and presents a preliminary assessment of issues considered to be significant, to enable resources to be focused only on the necessary investigations in the EIA process.

The EIA will consider the various stages of the proposed development including:

- Construction: impacts arising from construction activities;
- Operation: impacts arising from land take, the operation of the port and its associated infrastructure; and
- Decommissioning: impacts arising from the removal of some of the buildings within development plots.

This Scoping Report provides the information required by TS, Marine Scotland and CEC and consultees to comment on the proposed methodology and the environmental issues that have been identified.

Transport Scotland will be co-ordinating the response to this request for a scoping opinion for both the marine and land based development proposals, in discussion with City of Edinburgh Council.

3.3. The Environmental Impact Assessment Stages

The EIA process involves a number of stages as follows:

- Screening;
- Scoping;
- Baseline studies;
- Assessment of environmental effects and their significance;
- Identification of mitigation measures; and
- Production of the ES.



As previously discussed, it was determined that an EIA was required and the decision was taken to proceed straight to the scoping stage of EIA.

The key output of the EIA process is the ES which will set out the predicted significant environmental impacts of the proposed development and will propose mitigation measures which will then enable TS, CEC, Marine Scotland and consultees to determine whether the proposed development is acceptable.

Part 3, Schedule 1 of the Harbour EIA Regulations and Schedule 4, Part 1, 3 of the EIA (Scotland) Regulations states that the ES should describe the environmental effects on:

‘population, fauna, flora, soil, water, air, climatic factors, material assets, including architectural and archaeological heritage, landscape and inter-relationship between the above factors.’

These environmental topics will be addressed in the ES under the headings detailed in column two of Table 2.

Table 2 Headings for the Environmental Statement

EIA Regulation	Headings proposed for the Environmental Statement
Population	Noise and vibration Traffic and transport Shipping and navigation Socio-economics Air quality Landscape, townscape, seascape and visual amenity
Fauna	Terrestrial ecology Marine ecology Ornithology
Flora	Terrestrial ecology Marine ecology
Soil	Hydrogeology, geology and soils
Water	Hydrology and flooding Water and sediment quality Oceanography and geomorphology
Air	Air quality
Climatic factors	Air quality Traffic and transport Shipping and navigation Hydrology and flooding
Material assets (architectural and archaeological)	Archaeology and cultural heritage Aviation and telecommunications
Landscape	Landscape, townscape, seascape and visual amenity
Inter-relationship between above factors	Each environmental topic



Each EIA chapter of the ES will include the following information:

- Assessment methodology;
- Reference to consultations;
- Baseline conditions;
- Potential impacts;
- Mitigation;
- Predicted residual effects; and
- Cumulative effects.

The likely significant environmental effects will be predicted using appropriate techniques and methodologies. The methodologies to be used are set out for the relevant topics in Chapter 5.

The following factors will be used to assess the significance of an environmental effect:

- Sensitivity of the receiving environment, which may be categorised in terms of facts such as rarity or vulnerability or protection by law;
- Nature of the impact, in terms of its duration, extent, frequency, likelihood, reversibility and compliance with recognised standards; and
- Magnitude of alteration from the baseline condition, both positive and negative.

Planning Advice Note (PAN) 58 'Environmental Impact Assessment' states^[1] that "*methods for predicting environmental effects and their magnitude are specific to the environmental topic and are a matter for expert consultants*". Therefore, the specific methodologies to be applied for each technical assessment will be agreed with the appropriate consultee and will be described within the relevant chapter of the ES. In addition, it will be made clear whether predicted environmental effects are significant or not in terms of the EIA Regulations.

¹ Planning Advice Note (PAN) 58 'Environmental Impact Assessment', paragraph 50.



3.4. Outline of Environmental Statement Structure

The ES will be structured as follows:

- Volume 1: Non-technical Summary (NTS);
- Volume 2: Environmental Statement – Main Text – this will contain the full text of the EIA with chapter headings as follows:
 - Introduction;
 - Overview of the Consenting Process;
 - Stakeholder Consultations;
 - Planning and Renewable Energy Policy Context and Need for the Project;
 - The Site, its Surroundings and Selection;
 - The Proposed Development;
 - Environmental Impact Assessment Methodology;
 - Hydrogeology, geology and soils;
 - Hydrology and flooding;
 - Water and sediment quality;
 - Oceanography and geomorphology;
 - Marine ecology;
 - Terrestrial ecology;
 - Ornithology;
 - Landscape, townscape, seascape and visual amenity;
 - Archaeology and cultural heritage;
 - Socio-economics;
 - Aviation and telecommunications;
 - Air quality;
 - Noise and vibration;
 - Traffic and transport;
 - Shipping and navigation;
- Volume 3: Figures; and
- Volume 4: Technical Appendices – these will provide supplementary details of the environmental studies conducted during the EIA including relevant data tables.



Other standalone documents and reports that will accompany the ES will include:

- Habitat Regulations Appraisal;
- Transport Assessment;
- Transportation Statement;
- Flood Risk Assessment;
- Pre-Application Consultation Report; and
- Planning Statement.

3.5. Cumulative Assessment

In accordance with the EIA Regulations, the EIA will take into account other planned developments in the area of the proposed site and will consider the cumulative impacts associated with these developments. An initial search shows that the following of note due to scale, proximity, type of development and expected timeframes for construction and completion:

- Forth Replacement Crossing. Transport Scotland is building a multi-modal cable stay bridge to the west of the existing Forth Road Bridge. The new bridge will run within a route corridor from the northern shore of the Forth, just west of the existing road bridge to a point west of South Queensferry. Construction commenced in 2011 and is expected to take 5 ½ years to complete.
- Rosyth International Container Terminal. Babcock Marine Rosyth Ltd has plans to develop the Rosyth International Container Terminal at the former RD57 site to the west of the main basin at Port Babcock Rosyth, Fife. The site covers an area of 124 hectares, on the north bank of the River Forth upstream of the Forth Road and Rail Bridges, approximately 3km west of the Forth Road Bridge. The proposal was considered at public inquiry during 2012.
- Harbour Regeneration Works and Dunbar. Dunbar Harbour Trust is seeking to develop Dunbar Harbour, including work to erect a breakwater at its entrance. Dunbar Harbour is 40 km to the east of Leith on the south-east coast and currently provides berthing for fishing, leisure and small commercial craft and the redevelopment is being promoted for a number of reasons, including: safety; to halt its deterioration; to regenerate the town; to encourage investment through offshore renewable developments; to boost fishing and tourism; to encourage wider economic opportunities; and to safeguard its historical features. It is currently at a pre-planning stage.
- CEC proposals for a new road which will connect the roundabout at the east end of Ocean Drive to Seafield Road, Edinburgh.

4. The Proposed Development

4.1. Description of the Development Site

The Port of Leith is located approximately 3 km north of the centre of Edinburgh. The site location is shown in Figure 1 along with the scoping boundary for the marine and onshore elements of the proposal. Figure 2 shows a more detailed scoping boundary.

4.2. Description of the Proposed Development – Overview

The proposed development comprises:

- Development of an outer berth capable of handling vessels larger than those that can currently enter the port via the locks;
- Dredging of a berth pocket (a dredged depression seaward of the quay structure to allow vessels to remain safely alongside) to support the construction of the berth;
- Enhancement of existing quay facilities to cope with heavy load activities;
- Heavy load route through the port;
- Extraction of aggregate from Middle Bank, within the Firth of Forth;
- Infilling of the remainder of Edinburgh Dock;
- Land based development plots and associated infrastructure; and
- New port entrance, should the road network be aligned as part of other proposals.

4.2.1. Marine Based Development

The outer berth will be approximately 380m in length with a depth of 13m below Ordnance Datum at all states of the tide. The port's internal road network will provide land-based access to the berth.

During the initial study, a concept design was developed based on limited information on ground conditions. Further marine geotechnical ground investigations will be undertaken which will inform the design of the berth and the EIA. In advance of the results of these investigations, however, the concept design has been developed based on using a caisson gravity wall. This approach to design will result in the largest area footprint on which the EIA will be based to allow for a maximum potential impact approach to be taken throughout.

The concept design is likely to include the following activities:

- Construction of a rock bund. This is likely to be rockfill placed by bottom dump barge on to the sea bed without pre-dredging. The face would be protected by rock armour with localised filling from land at the south end where the bund ties into existing breakwater;



- Bulk dredging to approx 13m below Ordnance Datum, slightly deeper under the caisson sites;
- Preparation of the base with rockfill;
- Reinforced concrete caissons built off site and floated into position and then sunk onto the prepared bed; and
- Land reclamation between caisson and bund by pumping marine won sand from the Middle Bank extraction area.

4.2.2. Land Based Development

The land-based development will comprise approximately 99 ha, within which plots suitable for business, storage and distribution or general industrial uses will be identified, with the remainder of the Port of Leith continuing to operate as a port, with a range of uses. Other proposed internal alterations include construction of a heavy load route and infilling the remainder of the water body of Edinburgh Dock.

4.2.3. Middle Bank Extraction Area

It is proposed to extract aggregate from an area within the Firth of Forth (Middle Bank), which lies to the north of Port of Leith and has a recently lapsed extraction licence. It is envisaged that the material won from Middle Bank will be used in the construction of the outer berth and the infilling of Edinburgh Dock. Marine site investigations are scheduled to be undertaken in this area in 2012 to provide further information which will inform the design process.

A Marine Licence will be required for the extraction to be undertaken. A licence was granted to extract aggregate from this area in 1999, which expired on 30th December 2010.

4.3. Construction Environmental Management Plan

In the event that consents are granted for the proposed development, it would be proposed that appropriate construction method statements will be issued to TS, Marine Scotland and CEC for approval prior to the commencement of construction work.

Mitigation and environmental protection measures identified within the ES would be implemented via a detailed Construction Environmental Management Plan (CEMP). This will include construction phase requirements for:

- Ecological (habitats and species) protection measures, including specific measures for the management and control of drilling and piling impacts;
- Pollution prevention (including environmental incident and emergency response);
- Site waste management;



- Drainage;
- Water quality monitoring;
- Excavated materials and reinstatement;
- Transport and haulage of materials to and from site; and
- Management of dust.

5. Potential Environmental Effects

5.1. Introduction

To assist consultees in preparing their scoping response, Sections 5.2 to 5.16 provide an overview of each subject to be covered in the EIA, a brief description of the likely effects, the current baseline situation, the proposed assessment methodology and an indication of the likely mitigation for each of the key EIA topics.

The subject areas considered are as follows:

- Hydrogeology, geology and soils;
- Hydrology and flooding;
- Water and sediment quality;
- Oceanography;
- Marine ecology;
- Terrestrial ecology;
- Ornithology;
- Landscape, townscape, seascape and visual amenity;
- Archaeology and cultural heritage;
- Socio-economics;
- Aviation and telecommunications;
- Air Quality;
- Noise and vibration;
- Traffic and transport; and
- Shipping and navigation.

5.2. Hydrogeology, Geology and Soils

5.2.1. Introduction

The assessment will consider the potential effects of the proposed development on the hydrogeology, geology and soil environments. It does not deal with effects on surface water or ecological receptors, which are covered in Sections 5.6 to 5.8.



5.2.2. Guidance

Relevant guidance documentation includes:

- Various Pollution Prevention Guidelines (PPGs) from SEPA²;
- SEPA groundwater protection policy;
- The Department for Food and rural Affairs (DEFRA) and the EA '*Contaminated Land Exposure Assessment Model*' (CLEA 2002);
- Guidance on Groundwater Regulations 1998 (DEFRA);
- CIRIA. '*Contaminated Land Risk Assessment: A Guide to Good Practice*'.
- EA (CLR 11). *Model Procedures for the Management of Contaminated Land*;
- Guidelines for Environmental Risk Assessment and Management Green Leaves III, DEFRA, November 2011.
- Department for the Environment Transport and the Regions (DETR) Circular 02/2000.
- CIRIA C659 – '*Assessing the risks posed by hazardous ground gases to buildings*'; and
- BRE Special Digest 1:2005 (Concrete in Aggressive Ground).

5.2.3. Proposed EIA Methodology

The assessment will consider baseline geological and hydrogeological conditions across the assessment area. The assessment will be based on a site walkover, a desk based data collection exercise and consultation. Consultation will be sought with SEPA and CEC.

Data will be collected from a wide range of sources, including the following as appropriate:

- Topographical survey mapping;
- SEPA, with respect to water quality and groundwater levels;
- Landmark Information Group;
- Aerial photographs;
- British Geological Survey maps and borehole logs;
- Information from the site owner(s);
- Ordnance Survey historical mapping; and
- Information from the local authority Environmental Health and Planning Departments.

² SEPA website http://www.sepa.org.uk/about_us/publications/guidance/ppgs.aspx



5.2.4. Baseline Description

The assessment area is defined by the land based element of the scoping boundary and is part of the active portion of the Port of Leith, used for a variety of land uses associated with the operation of the port including cargo storage, aggregate processing, coal processing, scrap metal storage, railway sidings and a waste transfer station. The assessment area comprises a level area of land and the site is predominantly covered by hardstanding of varying condition.

The adjacent surface water bodies are the Firth of Forth, and the impounded waters of the Port of Leith (comprising Edinburgh Dock, Albert Dock, Imperial Dock, Prince of Wales Dock and Western Harbour).

The Water of Leith is located south west of the site and flows into the Prince of Wales Dock. The docks are impounded and Forth Ports operate a shipping lock and a system of valves to maintain the water level in the impounded dock within a statutory threshold level, this maintains operational functionality of the port and is an integral part of fluvial flood management.

The site is likely to be underlain by made ground relating to reclamation of the site from the Firth of Forth. The made ground is anticipated to be >5m in thickness beneath the developed parts of the assessment area.

It is anticipated that the made ground will be underlain by Marine Beach Deposits comprising gravelly sand and gravelly clay, which overlie the Lower Carboniferous Gullane Formation. This comprises sandstone with interbedded grey to dark grey mudstone and siltstone. The superficial aquifer map indicates a portion of the centre of the site classified as intergranular flow with moderate productivity. The bedrock is classified as an aquifer with intergranular fracture flow with moderate productivity.

Groundwater flow direction at the site is not known. It is anticipated that due to the close proximity of the Firth of Forth, groundwater beneath the site could be tidally influenced however groundwater movement is likely to be controlled to some extent by the controlled water level within the wider dock area and the potential presence of sheet piles restricting the movement of groundwater.

Potential sources of existing contamination include historical and current land uses.

5.2.5. Potential Impacts

The potential for impacts on soils and groundwater from the proposed development will partly be a function of the nature and volumes of any existing contamination in made ground, natural material



or groundwater. In the absence of mitigation, the potential impacts to soils and groundwater arising from the proposed development include, but are not limited to, the following:

- Construction: occurrences of soil and groundwater contamination;
- Construction: mobilisation of potential contaminants in soils with potential for migration into the groundwater system beneath the site;
- Construction: contamination of soils and groundwater from potential spillages during construction operations;
- Construction: removal of sources of contamination within soils or interception of contaminant migration pathways as a result of construction work;
- Operation: contamination of soils and groundwater from potential spillages and leaks on site including hydrocarbons;
- Operation: migration / leaching of contaminants from soils into the groundwater system as a result of spillages and leaks from site operations;
- Decommissioning: contamination could arise from the decommissioning process from chemicals/ materials stored on site during operation and the exposure of soil and shallow groundwater as the hardstanding is removed; and
- Decommissioning: impacts on groundwater resulting from mobilisation of contaminants in soils from removal of hardstanding and decommissioning of chemical / oil storage facilities.

There is also the potential for impacts on soil and groundwater lead to secondary effects on surface water and ecological receptors.

5.2.6. Mitigation

The design of the mitigation measures will be based on relevant guidance and appropriate advice provided by SEPA and others, such as CIRIA (the Construction Industry Research and Information Association). Mitigation measures will be fed into an Environmental Management Plan for the proposed scheme.

It can be anticipated that the following mitigation measures will need be considered for the protection of soils, surface water and groundwater quality:

- Adoption of best practice pollution prevention and control measures, including:
 - impermeable surfacing and small bunds around potentially polluting activities
 - designated areas for fuel storage and refuelling
 - Environmental Management Method Statements for contractors working on-site



- Appropriate design of foundation installations taking into account the management of soils and soil water and the possibility of encountering shallow groundwater. This will be based on statutory guidance;
- Undertaking characterisation of site contamination and subsequent risk assessment of contamination linkages to inform design and mitigation measures;
- Compliance with guidance with respect to the handling of soils for earthworks activities and formation of foundation excavations;
- Piling works to be undertaken with reference to guidance;
- Construction workers to be made aware of any risks with appropriate risk mitigation measures, personal protective equipment and hygiene facilities being provided; and
- Management of construction traffic to minimise creation of dust.

5.3. Hydrology and Flooding

5.3.1. Introduction

The hydrological assessment will ascertain the potential impacts of the proposed scheme on the surface water environment and fluvial flooding across the development site and surrounding area. It will not deal with hydrogeological issues, water quality or coastal processes, which are covered separately within Sections 5.2, 5.4 and 5.5 respectively.

The information sources that have informed the scoping study are:

- SEPA (RBMP Interactive Mapping, online);
- SEPA (Indicative River and Coastal Flood Map, online);
- Scotland's Environment, online; and
- Ordnance Survey Explorer Mapping – Sheets 66 and 350, 1:50,000 and 1:25,000.

5.3.2. Guidance

There are no defined criteria for assessing the impacts of developments on the surface water environment. Therefore this assessment will be based on the guidance for undertaking impact assessments given in the Institute of Environmental Management and Assessment (IEMA) '*Guidelines for Environmental Impact Assessment*'. SKM Enviro has developed a methodology based on this guidance for assessing impacts that is based on defining the baseline sensitivity and defining criteria for impact magnitude relating to the identified site specific water and soil processes.

Qualitative assessment of fluvial flooding risks will be undertaken in accordance with Scottish Planning Policy (SPP).



5.3.3. Proposed EIA Methodology

The assessment will be based on site visits, a desk-based data collection exercise, interaction with the wider EIA technical disciplines and thorough regulatory consultation. Data will be collected from a wide range of sources including the following as appropriate:

- Topographical mapping;
- Recently conducted academic research in the geographic area, including the Ph.D. research by Victoria Powell at the University of Dundee
- Surface water information from SEPA and Local Authority; and
- Existing and updated fluvial and coastal flood modelling reports.

5.3.4. Baseline Description

Surface water features are as described in Section 5.2.4 above.

Floodplain mapping provided by SEPA shows the north western point of the port to be at risk of tidal inundation from the Firth of Forth, indicating a 0.5% probability (1 in 200 chance) of flooding. The Water of Leith floodplain extends to approximately 200 m to the south and north-west of the site. The indicative floodplain mapping does not take account of any flood defences which may be in place along the estuary.

During extreme fluvial events on the Water of Leith, procedures are in place to release water from the port as quickly as it enters from the Water of Leith in order to manage the risk of flooding. The Port of Leith is not known to have flooded historically.

Previous studies have shown there are no private water supplies or surface water extraction licences held within 2km of the port area. It is also understood that there are three known discharge points relating to the Scottish Water treatment works east of the site. Consultation with SEPA will clarify the existing information.

An initial review of the baseline hydrological conditions on and around the site indicates that sensitive receptors are likely to include:

- Firth of Forth SSSI/SPA, particularly vulnerable to development impacts associated with sediment release;
- Water of Leith sensitive to polluted runoff and sediment release; and
- Water of Leith sensitive to changes in dynamic hydrology, increasing flood risk upstream.



5.3.5. Potential Impacts

The potential environmental impacts associated with the proposed scheme have been initially identified as:

- Potential changes in localised runoff patterns caused by changes in elevation and drainage;
- Potential changes in localised flood storage caused by the infill of Edinburgh Dock;
- Impacts of the development in relation to flooding issues within the surrounding area;
- Potential interactions between ecology and hydrology;

5.3.6. Mitigation

The design of the mitigation measures will be based on relevant guidance and appropriate advice provided by SEPA and others, such as CIRIA. It is expected that many of the mitigation measures will be implemented through the appropriate design of the development and layout modifications following consultation with SEPA and other key stakeholders.

There may be a need for mitigation measures to combat the risks associated with increased flood risk from the infill of Edinburgh Dock. Such measures will focus on the need for detailed fluvial flood modelling, and to consider resultant need for flood protection, health and safety aspects of flood risk and the incorporation of any required flood resilience measures.

5.4. Water and Sediment Quality

5.4.1. Introduction

This section describes the current understanding of sediment and water quality in the immediate study area and the wider Firth of Forth. It also proposes to identify potential impacts arising from the proposed development and suggests mitigation measures which could be explored through the EIA process.

The study area for water and sediment quality is considered to be the marine area contained by the scoping boundary in Figure 1 and a buffer area beyond the immediate study area. The full extent of the buffer area will be informed through an assessment of the physical processes active within the region and / or outputs from hydrodynamic models taking into consideration tidal excursion and the dispersion of sediment plumes. In order to address likely changes to sediment and / or water quality and to put these into context with the wider river basin district, the water and sediment quality of the wider Forth Estuary and Firth of Forth are also described.

5.4.2. Guidance

Water Quality Legislation and Guidance

Legislation pertaining to water quality is discussed below.

- Water Framework Directive (2000/60/EC) (WFD), enacted in Scottish Law through the Water Environment and Water Services (Scotland) Act 2003 (WEWS Act), which requires the production and management of River Basin Management Plans and includes its 'daughter' directive;
 - The Directive on Environmental Quality Standards (Directive 2008/105/EC) (EQSD);
- Consideration will also be given to the following directives, soon to be repealed and currently integrated in the WFD:
 - The Shellfish Waters Directive 2006/113/EC (the Shellfish Waters Directive) transposed into Scottish law by The Surface Waters (Shellfish) (Classification) (Scotland) Regulations 1997 (as amended); and
 - The Dangerous Substances Directive (2006/11/EC).
- Bathing Water Directive (2006/7/EC) enacted in Scotland by the Bathing Waters (Scotland) Regulations 2008;
- Marine Strategy Framework Directive (2008/56/EC), transposed into UK law by the Marine Strategy Regulations 2010;
- Shellfish Hygiene Directive (1991/492/EEC), as transposed into the Food Safety (Fishery Products and Live Shellfish) (Hygiene) Regulations 1998;
- Urban Waste Water Treatment Directive (91/271/EEC), transposed into Scottish law by the Urban Waste Water Treatment (Scotland) Regulations 1994 (as amended);
- Nitrates Directive (91/676/EEC); implemented in Scotland by the Protection of Water Against Agricultural Nitrate Pollution (Scotland) Regulations 1996 (as amended); and
- International Maritime Organisation International Convention for the Prevention of Pollution from Ships 1973 (MARPOL).

The following documents are non-statutory but should be acknowledged as providing supporting information and guidance to ensure best practice is followed.

- Clean Seas Environmental Monitoring Programme (CSEMP);
- Scottish Environment Protection Agency Pollution Prevention Guidelines;
 - Works and maintenance in or near water: PPG5;
 - Working at Construction and Demolition Sites: PPG6;
 - Safe Storage and Disposal of Used Oils: PPG8



- Surface and groundwater related status and objectives set out in the River Basin Management Plan; and
- Power, B., Girling, A., Fisk, P. (2003). Guidelines for managing water quality impacts within UK European marine sites. Version 2, edited by N Hailey, A Burn, J Burt and M Coyle, English Nature. ISBN 85716 747 3.

Sediment Quality Legislation and Guidance

There is no legislation specific to marine sediment quality. Deposits to the seabed are regulated by the consent of marine licences under the Marine (Scotland) Act 2010.

The following tools, guidelines and assessment criteria are non-statutory but should be considered when assessing sediment quality:

- Canadian Interim Sediment Quality Guidelines (ISQG);
- Marine Scotland action levels for the assessment of dredged materials;
- OSPAR Joint Assessment and Monitoring Programme (JAMP) Guidelines for monitoring contaminants in sediments;
- OSPAR Co-ordinated Environmental Monitoring Programme (CEMP) Assessment Manual for contaminants in sediment and biota;
- OSPAR Effects Range Low (ERL);
- OSPAR Background Assessment Concentrations (BACs); and
- US Environmental Protection Agency Effects Range Median (ERM).

In the absence of quantified UK sediment quality standards, sediment contaminant concentrations are generally compared to the Marine Scotland guideline action levels for the assessment of pre-dredged material, and the Canadian Interim Sediment Quality Guidelines (ISQG) for the protection of aquatic life, to give a general indication of the level of contamination (WRC Swindon, 1999; Port of London Authority (PLA), 2012).

5.4.3. Proposed EIA Methodology

Water Quality

Baseline conditions will be established through a desk based data gathering exercise and review. No field studies or water sample analysis are planned.

The baseline will consider the natural variability in background parameters with regard to normal and extreme conditions, e.g. suspended solids, so that any changes resulting from construction or operation can be put into context of the natural variability.



The assessment will be desk based and will consider suspension of sediments, partitioning of contaminants from sediments to water column, increases in turbidity, discharge of site run-off, reduction in dissolved oxygen, release of sediment bound nutrients, increase in priority and priority hazardous substance concentrations and the potential for pollution events / spills.

Sediment Quality

Baseline conditions will be established through a comparison of existing data, with samples collected on site. This sampling will be carried out alongside a wider survey to characterise the marine benthic environment, as described in Section 5.6. The full scope of a survey will be subject to agreement with regulatory authorities and the following information provides an indication of the approach to be adopted.

Sediments for determination of contaminants concentration will be sampled using a stainless steel Shipek or Day grab sampler (intertidal samples would be taken direct from substrate). This device returns an undisturbed sediment sample whilst the stainless steel construction minimises the risk of contamination from sampling equipment. The grab will be well rinsed between samples to ensure no cross contamination occurs between samples.

Determinants for analysis will include the following:

- Metals - Arsenic (As), Cadmium (Cd), Chromium (Cr), Copper (Cu), Mercury (Hg), Nickel (Ni), Lead (Pb), Zinc (Zn), lithium (Li) and Aluminium (Al);
- PCBs (ICES 6 and 25 congeners);
- PAHs – (16 US EPA Priority Pollutants) and Total PAH;
- Total petroleum hydrocarbons (TPH);
- Organo-tins
- Particle size distribution (PSD); and
- Total organic carbon.

The chemical status of samples will be determined through comparison with the EQS for priority and priority hazardous substances and other pollutants listed in Annex I of the EQSD. The contaminants sampling and analyses would be used to identify areas of high contamination in relation to assessment criteria and background concentrations. Where elevated concentrations exist, further investigation may be warranted.



5.4.4. Baseline Description

Water Quality

Existing water quality data is sparse and further data mining and analysis, as well as potential field surveys for sediment quality and benthic ecology during the baseline EIA phase (see below for further information) will supplement and enhance the existing understanding. A specific water quality survey is not proposed to inform the ES.

As part of their responsibilities under the above legislation, SEPA is required to carry out water quality sampling against guideline limits. The water quality monitoring regimes carried out in the vicinity of the study area are discussed below and summarised in Table 3. SEPA monitoring data will be obtained and analysed during the EIA process and will be fully described in the ES.

Coastal Water Classification

The Water Framework Directive (WFD) (2000/60/EC) seeks to improve or maintain the ecological and physico-chemical quality of all water bodies including coastal waters. Through the WFD and the enacting legislation WEWS Act 2003, River Basin Management Plans have been developed to better protect and improve the aquatic environment. River Basin Management Plans include coastal waters and Leith Docks falls under the coastal classification cell Kinghorn to Leith Docks, which in 2008 were classified as of 'moderate' ecological status and overall chemical status of 'pass'³. The neighbouring cell, Leith Docks to Port Seton was classified as 'moderate' ecological potential with an overall chemical status of 'pass'⁴. At the larger scale, the Firth of Forth Inner – Offshore area was classified as 'good' in 2008 with an overall chemical status of 'pass'⁵.

Shellfish Waters

The Fife Ness to Elie shellfish waters is the closest designated site under the Shellfish Waters Directive (European Community Shellfish Waters Directive 2006/113/EEC) in the vicinity of the proposed development at approximately 31 km northeast of Leith and has not historically experienced increases to suspended sediments that have caused the site to fail to meet these standards (SEPA, 2010) but have consistently failed to meet the guideline levels of faecal coliforms since the site was designated in 1998. The site passed guideline standards for all other contaminants in all years apart from in 2007, 2008 and 2010 when arsenic was detected slightly above the guideline levels (but well within mandatory levels). It is thought that the source of

³ <http://apps.sepa.org.uk/rbmp/pdf/200041.pdf>

⁴ <http://apps.sepa.org.uk/rbmp/pdf/200034.pdf>

⁵ <http://apps.sepa.org.uk/rbmp/pdf/200047.pdf>



arsenic is from rocks at Burntisland, approximately 30 km southwest of Elie, as there are no point sources in the area (SEPA, 2011a).

There are three areas classed as shellfish harvesting areas, by the Food Standards Agency (FSA), in the region of the Fife Ness to Elie shellfish waters. These are Pittenweem and Anstruther in the southern end of the shellfish waters, and Largo Bay, approximately 5 km east of the shellfish waters. Surf clams *Spisula solida* and razors *Ensis arcuatus* are harvested from these areas.

Bathing Waters

Under the revised Bathing Waters Directive (2006/7/EC), enacted in Scotland under the Bathing Waters (Scotland) Regulations 2008, inland lochs and rivers and coastal areas can be designated as bathing waters if they meet required standards. There are two bathing waters located in the vicinity of the proposed development; Portobello (west) and Portobello (central).

SEPA monitors Scotland's designated bathing waters throughout the bathing water season from 1 June to 15 September. The most recent classifications record Portobello (west) to be of 'good' status and Portobello (central) to be of 'excellent' status (SEPA, 2011b).

Under the revised Bathing Waters Directive, colour and turbidity are no longer included as indicators of quality and only microbial factors are measured. It is not considered likely that microbial contaminants will be released during the construction and as such it is proposed that impacts on bathing waters are scoped out of the EIA.

Other Water Quality Monitoring

Under the Clean Seas Environmental Monitoring Programme (CSEMP), monitoring agencies such as SEPA collect and analyse a common set of parameters. This network of sample sites enables a national water quality map to be created. In the Firth of Forth, SEPA samples mussels and dog whelks for heavy metals and contaminants and also takes sediment samples. This data was not available for this scoping report but will be requested for the EIA phase.

Table 3 details the extent of existing data.

Table 3 Summary of available water quality data

Survey type / data collection programme	Survey location	Existing data and holder
Bathing waters	Portobello (west)	Counts of: <ul style="list-style-type: none"> Faecal coliforms Faecal streptococci Total coliforms Held by SEPA.
Bathing waters	Portobello (central)	
Coastal water monitoring	Gunnat Ledge	Data from 1993 - present have been collected on: <ul style="list-style-type: none"> Continuous salinity; Temperature; and Chlorophyll data. Held by SEPA.
Historical pollution records		Held by the Maritime and Coastguard Agency and Forth Ports.
CSEMP biota and sediment sampling regime	Sites in the Firth of Forth	Held by SEPA.
Forth Road crossing	Wider Firth of Forth	Public domain – Transport Scotland (see Transport Scotland, 2007).
Middle Bank monitoring programme	Middle Bank dredging area	Water column turbidity and suspended solids

In summary, it is proposed that designated Bathing Waters are scoped out of further assessment and that designated Shellfish Waters and Coastal Waters under the WFD are taken forward to the impact assessment phase.

Sediment Quality

As described above, a buffer area beyond the immediate area of search is recommended in order to place the baseline conditions of the study area into the wider context.

Heavy Metals

In the absence of existing data on the presence of heavy metals and other sediment contamination sediment samples will be taken on the proposed development site and wider study area.

Publically available data held by the International Council for the Exploration of the Sea (ICES) include contaminant data gathered from points approximately 10.3 km (Site 1) and 10.6 km (Site 2) northeast of the Port of Leith. Sampling of metal concentrations from the <63 micron sediment fraction was undertaken in 2006 and 2010 respectively (ICES, 2012).

Other Contaminants



In the absence of comparable sediment data for other contaminants, such as PCB, PAHs and hydrocarbons, it is proposed that sediment sampling for these contaminants is also undertaken in the development area and wider study area.

The known existing data sources are detailed in Table 4.

Table 4 Known data sources for sediments

Survey type / data collection programme	Survey location	Existing data and holder
Marine benthic sediment survey	Leith Docks	Data were collected in 2004 and are likely to be out dated.
Sediment quality	10-11 km northeast of Leith docks	Metal contamination in the <63 micron sediment fraction, held by ICES.
CSEMP biota and sediment sampling regime	Sites in the Firth of Forth	Held by SEPA.
Wider Firth of Forth sediment quality: <ul style="list-style-type: none"> • Sediment granulometry; • Sediment contaminants; • Polycyclic aromatic hydrocarbons; and Polychlorinated Biphenyls. 	Central Firth of Forth area to the east and west of the existing bridges.	Firth of Forth Replacement Crossing – Public Domain – Transport Scotland.
Best Practicable Environmental Option (BPEO) for dredge disposal 2007	Firth of Forth	Forth Ports

5.4.5. Potential Impacts

Potential impacts to water quality are likely to arise during construction.

Potential impacts to sediment quality are likely to include the potential for the release of historic contamination in sediments during dredging (both locally to the pier extension and as a result of dredging at Middle Bank) or site preparation activities with these then being distributed to other areas, potentially contaminating other areas with toxic metals, oils and contaminants present in the sediments being disturbed.

The impacts that are proposed to be scoped out from further consideration in the EIA due to there being no anticipated significant effects are the impacts to the status of designated Bathing Waters, as they are solely assessed on the concentration of bacterial colonies. There is a potential secondary pathway between increases in suspended sediment/turbidity and a reduction in the exposure of faecal indicators to ultra-violet light and therefore a reduction in bacterial die-off as light penetration of the water is reduced (Fujioka *et al.*, 1981). However, this secondary impact is not anticipated to be significant and has been scoped out.

Table 5 describes potential direct impacts and the corresponding indirect impacts on both water and sediment quality.

Table 5 Summary of anticipated direct and indirect impacts

Proposed activity	Potential direct impact	Potential indirect impact	Preliminary appraisal of impacts
Machinery on site with the potential risk of accidental chemical spillages or hydro-carbon leak.	Increase in measurable hydrocarbons/contaminants, decrease in water and sediment quality.	Indirect impact on biological receptors (e.g., fish and shellfish/benthic communities.	Likely low volumes and high dilution.
Dredging activities in the outer berth area leading to release of fine sediment into water column with potential release of contaminants	Temporary increase in suspended sediments.	Indirect impact on biological receptors (e.g., fish and shellfish/benthic communities.	High dilution and rapid flushing rate.
Dredging activities in the outer berth area leading to release of fine sediment into water column with potential release of contaminants	Increase in measurable toxins, decrease in water quality and/or sediment quality further afield.	Indirect impact on biological receptors	Unknown at this stage. Sediment chemical analysis will be undertaken as part of the EIA.
Dredging operations at Middle Bank leading to the release of fine sediments into the water column with a potential release of contaminants.	Increase in measurable toxins, decrease in water quality and/or sediment quality further afield.	Indirect impact on biological receptors	Potential for contaminants in the offshore site.
Infilling of Edinburgh Dock area leading to potential release of fine sediments into the water column (if no contamination of infill material).	Increase in suspended sediments.	Indirect impact on biological receptors	High dilution and rapid flushing rate.
Rainfall or flood event washes contaminants and/or sediments into water column from terrestrial area.	Increase in suspended sediments. Increase in measurable toxins, decrease in water and sediment quality.	Decrease in dissolved oxygen. Indirect impact on biological receptors (e.g., fish and shellfish/benthic communities.	High dilution and rapid flushing rate.
De-watering leading to surface runoff.	Increase in suspended sediments; Increase in measurable toxins, decrease in water and sediment quality.	Decrease in dissolved oxygen. Indirect impact on biological receptors (e.g., fish and shellfish/benthic communities.	High dilution and rapid flushing rate.



5.4.6. Mitigation

There are a number of best practice measures that will help mitigate the potential impacts identified above. These are subject to consideration in the development process, but could typically include the following:

- To minimise impacts associated with accidental spillage of contaminated materials a construction and environmental management plan will be developed prior to commencement of construction activities. This, and adherence to relevant regulatory requirements for pollution prevention and chemical management to prevent water and sediment contamination, will reduce the probability of any accidental contamination and potential impacts on the benthic and fish and shellfish ecology in the area; and
- Where access to the intertidal environment is required for construction works disturbance should be minimised where possible through use of appropriate anchoring techniques for vessels. Other approaches, such as use of geotextile membranes, can be explored to mitigation direct disturbance potential impacts on intertidal environments.

5.5. Oceanography

5.5.1. Introduction

This section deals with oceanography and outlines the data required to quantify any potential effects due to the proposed development on coastal processes. These processes include tides, waves & sediment transport.

This section does not deal with Water and Sediment Quality and Marine Ecology directly; these are covered in Section 5.4 and Section 5.6. However, the results of the coastal process study will quantify potential changes, such as suspended sediments during the construction phase and any longer term changes to flow regime, which may impact on water quality and marine ecology. The application of this data will be dealt with in the appropriate sections of this document.

5.5.2. Guidance

The model simulations will be undertaken for the existing port layout and then rerun for the port with the proposed development in place. Any changes in the coastal process regime will be identified and quantified by the use of difference plots (proposed minus existing) so that the extent and nature of the impact can be clearly identified. The modelling extent will include the area extending from Stirling to the mouth of the Firth of Forth.

The coastal process models, i.e. waves, tides, sediment transport etc. will be set up and calibrated for the existing port layout to provide a baseline for comparison with the proposed scheme. The models will be used to refine the layout of any proposed dredging and land fill to minimise the



impact on the coastal processes and water quality of the area and to reduce any maintenance dredging requirements for the proposed scheme.

5.5.3. Proposed EIA Methodology

The computational modelling will be undertaken using RPS' in house suite of MIKE coastal process modelling software developed by the Danish Hydraulic Institute. The data required for the modelling will be drawn from a number of sources both relating to previous studies and site investigation measurements proposed as part of the proposed scheme.

Relevant data on bathymetry, current flows, sediment grading etc. from existing data and reports and also the results of proposed investigations will be analysed and prepared for use in the model studies.

Water Level & Tidal Current Data

The boundary conditions for the tidal modelling will be provided from output from the RPS North Sea model. The time series of tidal elevation along the boundaries of the North Sea model are generated using a global tidal model designed by a team at the Danish National Survey and Cadastre Department (KMS). The KMS global tidal model is based on the prediction of tidal elevations using up to 19 semidiurnal and diurnal tidal constants (as opposed to UKHO which uses 4-6 constants). The calibration of the model in terms of tidal level will be checked against a number of tide gauge stations and predicted tidal elevations.

As part of site investigations, current monitoring will take place using ACDP's in the vicinity of Leith's Approach. Additional data will be collected on current speed and water level in the main navigation channel. This data will be collected during both spring and neap tidal cycles and will allow the calibration of the hydrodynamic model under the full range of tidal conditions.

Offshore Wave and Wind Data

RPS holds a database of more than 12 years of 3 hourly wave and offshore wind data for the waters around the UK based on the ECMWF European Water wave model. This data will be analysed to provide a profile of the wave climate offshore of the site. Specific conditions, such as extreme events will be transformed to the site to assess the exposure and potential change in exposure due to the proposed development. In addition more 'typical' conditions will be identified in order to inform the modelling of the longer-term sediment transport regime.

Bathymetry and Topographic Data

The bathymetry and topographic data for the models will be updated using the results of hydrographic surveys to be undertaken. Bathymetric surveys will stretch offshore to the Middle



Bank in the vicinity of the Port and extend 1.5km to the east and west within the inter-tidal zone. Digital chart data will be used for model bathymetry in sections of the models outside the area of the specific surveys.

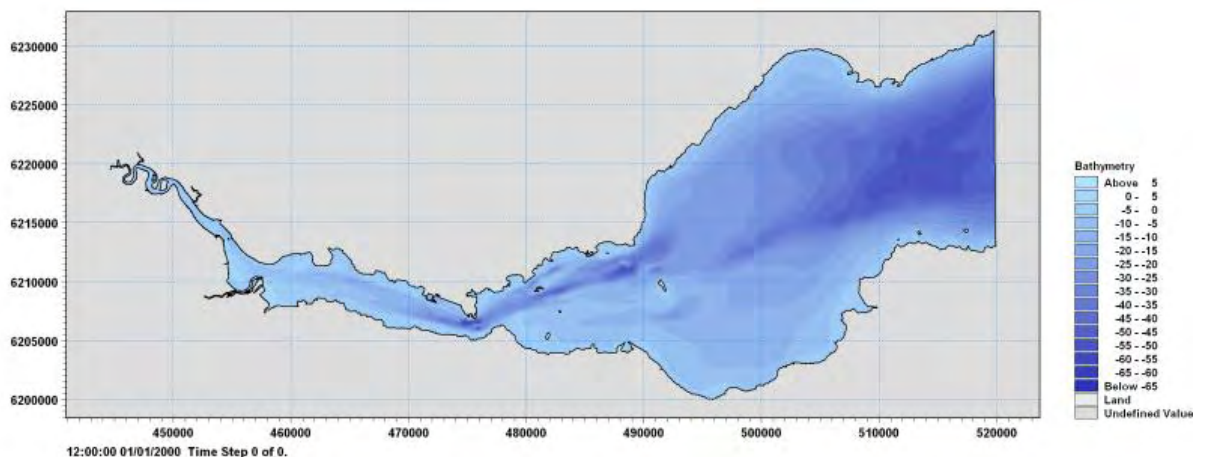
Sediment Data

Sediment data from the surveys and analysis undertaken for previous studies and in relation to this EIA will be used in the sediment transport modelling for the study. Additionally sediment samples will be collected as part of the marine ground investigations.

Modelling of the Coastal Processes

The modelling of the coastal processes will be undertaken using RPS coupled tide, wave and sediment transport Mike21 flexible mesh model of the Firth of Forth. This model extends from the mouth of the Firth of Forth up to Stirling as shown in Figure 3.

Figure 3 Flexible mesh model of the Firth of Forth



The model of the Firth of Forth is driven from the RPS model for the whole of the North Sea. This base model is a flexible mesh model. This model will be used to drive a series of boundary conditions, in the form of tidal levels and flows for the detailed Firth of Forth model. The detailed model of the Firth of Forth has a graded grid spacing and areas of fine cells will be added to the model in the area around Leith, which will be in the order of 5-10m in resolution. This will ensure that the models will have sufficient detail for the modelling of the coastal processes and any dredging and land reclamation activity associated with the proposed scheme.

Flow regime modelling

The flow models will be run for a full 29 day lunar tidal cycle so that the hydrodynamics will be available for the dredge plume and dispersion plume modelling. The models will be verified by



comparison of tidal height across the model domain with tide gauge network data and by comparison with recording current meter readings available around various locations within the Firth of Forth.

The bathymetry in the finest area of the model will be modified to take account of the proposed port developments and the tidal flow models re-run for the same 29 day lunar month as was previously simulated for the existing conditions. This will enable a comparison to be made of the flow conditions both before and after the proposed development and provide data for the modelling of the sediment processes. Changes may be made to the design to limit effects on the tidal regime should this be deemed necessary / appropriate and the model re-run similarly.

Wave climate modelling

Waves generated with the Firth of Forth and the North Sea can approach the Port of Leith and have an influence on the sediment transport regime around Leith and its approaches. Thus wave simulations will be included in the study as changes in the wave climate around the port may affect the movement of sediment in the vicinity.

The wave transformation will be undertaken using the Mike21 SW model for a range of storm intensities and directions so that the impact of waves on the movement of material can be assessed. As with the flow modelling, wave modelling will be undertaken with the bathymetry both prior to and following the proposed scheme and if necessary changes may be made to the detail of the design to reduce the impact on the wave climate. In addition to the wave climate the wave model output will include the radiation stresses so that wave driven currents can be included in the littoral current sediment transport simulations.

Sediment transport modelling

The existing sediment transport regime will be modelled using the Mike21 FM ST/MT modules and the results compared with record of maintenance dredging undertaken for the Port of Leith. The proposed port development schemes will be included within the model bathymetry and the model re-run to assess the impact on the sediment transport regime.

Water quality modelling and dredging

There are marine outfalls and intakes adjoining the proposed port development area. The impact of the proposed works on the dispersion and water quality of the port and adjoining areas will be simulated as part of the modelling exercise to ensure that the proposed development does not significantly impact the quality of the marine waters in this part of the Firth of Forth.

The impact of any dredging activities on the level of suspended sediment and on deposition of material from the dredging plume will be simulated using a dredging module in the Mike 21 FM



MT model. The simulations will be run for a full 29 day lunar tidal cycle so that the deposition results can be correctly assessed under the full range of tidal conditions. The simulations will also be related to the intended dredging regime and any imposed restrictions – e.g. two runs per day as prescribed by the distance to the dumping location.

The results of the impact modelling can be used if necessary to specify the types of dredger or dredging programme to be used for the project and to devise monitoring programmes required to ensure compliance with any environmental requirements and to minimise the impact of the dredging works.

Marine Scotland, SEPA and SNH will be contacted during the course of the EIA in relation to coastal processes.

5.5.4. Baseline Description

The sediment transport regime in the area is thought to be relatively slow-moving with material largely in equilibrium. The presence of the existing breakwater has accreted sand over the period since construction but the relatively limited maintenance dredging of the approach channel indicates that there is not a large flux of material in a westerly direction across the port entrance. Admiralty charts and aerial photography confirm these transport mechanisms and indicate that the area north west of Martello Rocks is approaching capacity and the transported flux is likely to increase in the near future. The maintenance dredging has occurred across the potential transport pathway to a depth of 6.7m CD for a prolonged period of time and the breakwater extension falls within this area, therefore any reduction in transport would be of material which would have normally accumulated and been dredged from the approach channel; resulting in no net loss of material to the west of the Port.

In the longer term the presence of an extended breakwater is likely to continue the accretion of material, much as the existing breakwater has, with the outcome being to increase the extent of the Leith Sands. This accretion would potentially reduce the amount of material which would pass the channel, as the current capacity is almost reached; in turn this may reduce the need for maintenance dredging. However this hypothesis will be investigated during the course of the modelling.

5.5.5. Potential Impacts

Potential impacts would fall into two categories; those long term changes on tidal patterns due to the development and short term effects which occur during the course of construction.

The construction phase is most likely to impact on the sediment loading within the water column due to capital dredging. This may occur when the approaches to any new quay are constructed and may additionally occur at any locations which are used as a source of infill for reclamation areas.



The sediment transport modelling using measured sediment characteristics and gradings will determine the likely duration that suspended sediment levels may remain elevated and the location/extent of the material when it settles out of the water column.

Following the construction of the new outer berth there may potentially be changes in the sediment transport within the area. The sediment transport processes include both waves and tidal currents as driving forces both of which will be examined over the model domain and not just in the vicinity so that the wider area is considered.

5.5.6. Mitigation

Should the capital dredging during construction show increases in suspended sediment levels greater than that deemed acceptable, then the dredging technique and schedule may be altered to mitigate this. For example the spill fraction may be reduced by choosing specific dredging methods or carrying out dredging activities during certain parts of the tidal phase to control the plume excursion.

The longer term changes due to the construction of the new outer berth are likely to have a limited impact on the sediment transport regime; however should modelling subsequently show this not to be the case then mitigation measures will be considered.

This may include changes to the design, should this be deemed necessary, or recommendations for a particular dredger type or dredging methodology. Where necessary, monitoring programmes may also be incorporated as mitigation, to confirm compliance with any environmental requirements and to minimise the impact of the dredging works.

5.6. Marine Ecology

5.6.1. Introduction

This section outlines the marine ecology in the proposed development area and surrounding region, providing information on both the existing environmental conditions and how the proposed development may affect this environment. Also outlined is the approach to assessing the impacts on the marine ecological environment in the proposed ES.

Marine ecology is taken to encompass subtidal and intertidal marine benthic ecology, fish and shellfish ecology and marine mammal ecology.



5.6.2. Guidance

Data Sources

Data sources include academic and regulatory agency publications, websites of the statutory nature conservation bodies and publications and data from non-governmental organisations and international bodies, including the following sources:

- The Joint Nature Conservation Committee (JNCC) (e.g., the Mapping European Seabed Habitats (MESH) project);
- SNH;
- Marine Scotland;
- UK Biodiversity Action Plan (UKBAP);
- World Conservation Union (IUCN);
- Marine Life Information Network (MarLIN); and
- National Biodiversity Network (NBN, see NBN, 2012).

Additional information has been sourced from environmental monitoring and assessment reports for developments proposed in and around the Leith Docks area (e.g., as outlined in SKM, 2009; Jacobs Arup, 2009; Forth Properties Ltd, 2007).

Information sources include:

- Reports from the Sea Mammal Research Unit (SMRU information through the Special Committee on Seals (SCOS) (e.g., SMRU, 2011);
- Information from the SeaWatch Foundation (SWF);
- SNH and JNCC research reports on marine mammal species distribution in the region (e.g., Thompson *et al.*, 2011; Reid *et al.*, 2003);
- The Strategic Environmental Assessment (SEA) 5, for offshore energy licensing, covering the Scottish coastline (Department for Energy and Climate Change (DECC), 2004);
- The Scoping Report for the proposed Neart na Gaoithe offshore wind farm (Mainstream Renewable Power, 2009);
- Outline Planning Application for Leith Docks: Environmental Statement (Forth Port Properties Ltd, 2007); and
- Forth Replacement Crossing Design Manual for Roads and Bridges (DMRB) Stage 3 Environmental Statement (Jacobs Arup, 2009).

Legislation

Marine habitats and species are subject to a number of specific legislative measures.

At an international level several marine habitats and species are listed under the European Commission (EC) Habitats Directive (Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora, or the 'Habitats Directive'). The Habitats Directive lists within its Annexes a variety of habitats and species that have importance and/or rarity at a European level. The Habitats Directive is implemented in Scotland at a national level through the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) (the 'Habitats Regulations'), the Nature Conservation (Scotland) Act 2004 and the Wildlife and Countryside Act (WCA) 1981 (as amended).

The Habitats Regulations allow for the designation of Special Areas of Conservation (SACs), which act to protect ecologically vulnerable and/or valuable habitats and species (these, along with Special Protection Areas (SPAs) for areas of importance for birds, as outlined in Section 5.5: Ornithology, make up the 'Natura 2000' network of protected areas). There are SACs with marine species as qualifying features in the region surrounding Leith Docks. These are outlined in Section 5.6.4 below.

Species of nature conservation interest not benefitting from protection within the Natura 2000 network but listed within Annex IV of the Habitats Directive receive a different level of protection; these are known as European Protected Species (EPS).

The Habitats Regulations also implement further protection for EPS whose natural range includes the UK by making it an offence to kill, injure, harm or disturb species listed in Schedule 2 or Schedule 4 of the Regulations (this includes all cetacean species). The Habitats Regulations also make provision for certain activities, which might otherwise constitute an offence, to be carried out by way of a licensing system. Protected species licences are issued by SNH or Marine Scotland for specified activities (listed in the Habitats Regulations) under strict legal conditions and tests.

There are additional agreements and measures that list species and habitats of nature conservation importance. These are:

- UK Biodiversity Action Plan (UKBAP) 1994, which lists species and habitats of importance at a UK scale (a non-statutory listing);
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (as amended), an international agreement listing endangered species. The UK has ratified this agreement and it is implemented through the Habitats Regulations;



- Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention), which is implemented through the Habitats Directive (and Habitats Regulations);
- Convention on the Conservation of Migratory Species of Wild Animals (CMS or Bonn Convention), also implemented through the Habitats Regulations;
- Agreement on the Conservation of Small Cetaceans in the Baltic and North Seas (ASCOBANS) – amended in 2008 to the Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas, which lists a number of species in Scottish waters, also implemented through national legislation; and
- Convention for the Protection of the Marine Environment of the Northeast Atlantic (OSPAR Convention) which lists species of nature conservation importance and allows for creation of OSPAR Marine Protected Areas (MPAs) which, in Scotland, are also designated within the Natura 2000 network.

Guidance Documents

There are also a number of guidance documents available that provide information on the approach to considering impacts on marine habitats and species, including the following documents and sources:

- Institute for Ecology and Environmental Management (IEEM) Guidelines for Ecological Impact Assessment in Britain and Ireland (Marine and Coastal) (IEEM, 2010), which outline an approach to assessing impacts under EIA on ecological receptors;
- SNH Guidance on Habitats Regulation Appraisal (Tyldesley and Associates, 2010), which outlines steps to undertake for HRA under the Habitats Directive;
- The Conservation (Natural Habitats, &c.) Amendment (Scotland) Regulations 2007 Explanatory guidance for species related activities;
- The protection of European Protected Species (EPS) from injury and disturbance. Guidance for the marine area in England Wales and UK offshore marine area (JNCC, 2010a) (in the absence of documented Scottish Guidance); and
- Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise (JNCC, 2010b).



5.6.3. Proposed EIA Methodology

Subtidal and Intertidal Benthic Ecology

An in-depth review of existing information on the benthic environment (including infauna and epifauna, and macroalgae), will be carried out, using sources of information as outlined above.

It is proposed that site-specific benthic characterisation surveys are carried out to support the proposed development. These will include grab sampling for sediment fauna and particle size distribution, day grab sampling for seabed sediment contaminants, a beam trawl to assess mobile epibenthic assemblages, intertidal coring and biotope mapping. The subtidal benthic ecology survey will typically be undertaken over one day on board a small vessel, and conducted following regulatory guidance. This is proposed to be complemented by an intertidal survey, comprising a walkover survey to classify and map the habitats and species (biotopes) within predicted influences of the development. The benthic survey array would be designed to complement the existing data sets for the survey area. The sampling array would be proposed to be within the footprint of the proposed outer berth and any likely sediment influences. Any final survey design and scope will be agreed pre-survey with the regulatory authorities, including MS-LOT and SNH.

The results of the physical process modelling (e.g., hydrology, oceanography) will be applied to the assessment of impacts on intertidal and subtidal benthic species and habitats. This includes models of sediment transport and, where possible, any quantification of the extent and volume of suspended sediment. Any changes to the hydrodynamics of the region as a result of the proposed development will also be taken into account.

The assessment of impacts on intertidal and subtidal benthic habitats and species will follow, where possible, published guidance as outlined above and published and peer-reviewed scientific literature.

Fish and Shellfish Ecology

A desk based review will be undertaken of characteristic fish species found in and around Leith Docks, including spawning and nursery areas, and migratory routes. This will include consideration of species of commercial and conservation importance, including migratory species that are key species in the Firth of Forth region and qualifying features of the nearby and potentially connected River Teith SAC.

If deemed necessary, modelling will be undertaken to ascertain the potential propagation of underwater noise from proposed piling operations and its potential impact on species with high sensitivity to underwater noise and/or those of high conservation value, such as diadromous qualifying features of the River Teith SAC, as outlined above. This will be undertaken on a



scenario basis, with mapping to determine areas of influence on key fish species. The scope of underwater noise modelling, if required, would be agreed with SNH and other required regulatory authorities.

The assessment of impacts will be undertaken using published guidance and industry standards. Information will also be used from the benthic characterisation exercise and physical processes modelling to predict impacts relating to changes in sediment movement.

Marine Mammal Ecology

A review of existing information on marine mammals will be carried out to identify other relevant sources of information in addition to those outlined above, such as publications relating to the proposed offshore wind farms in the Forth and Tay area, which may present survey-based information and data on marine mammal distribution in the region.

The assessment of impacts on marine mammals will follow guidance as outlined above, and additional guidance on specific consideration of impacts on marine mammals, where appropriate (e.g. JNCC, 2010a).

If deemed necessary, modelling will be undertaken to ascertain the potential propagation of underwater noise from proposed piling operations. If required, this will be undertaken for specific construction scenarios, and the results of it used to model potential physiological and behavioural impacts on key marine mammal species, particularly those of conservation importance identified in the baseline environment. The scope of underwater noise modelling, if required, would be agreed with SNH and other required regulatory authorities.

5.6.4. Baseline Description

Subtidal and Intertidal Benthic Ecology

This section provides a summary of historical data in the region. More recent data will be obtained during the proposed site-specific surveys and desk based assessment to inform the ES.

The Port of Leith falls within the area defined as the Firth of Forth, and is more seaward of the area considered as the Forth estuary (Bennett and McLeod, 1998). Bennett and McLeod summarised much of the research undertaken to characterise the Firth, including work undertaken by the disbanded Forth Purification Board (FRPB). An investigation was also carried out of the mid and lower Firth of Forth by Elliot and Kingston (1987).

Much of the area surrounding the Port of Leith has been characterised as muddy sand and soft sediments with some coarser material (Elliot and Kingston, 1987). The JNCC led MESH project (MESH, 2012) predicts sublittoral mixed sediments for much of the subtidal area south of the Firth



around Granton and Leith. These sediments are reported to be dominated by infaunal species such as polychaetes (Bennett and McLeod, 1998).

There have been several recent studies providing further detailed characterisation of the Firth of Forth, with several related to historic industrial outfalls (e.g. as outlined in Jacobs Arup, 2009). More recently, characterisation studies have been carried out to inform development in the area, including those for the Forth Replacement Crossing and specifically in the Leith, for the Leith Docks Framework for Development (Jacobs Arup, 2009; Forth Properties Ltd, 2007 respectively).

The subtidal environment within, and in areas surrounding, the port generally comprise relatively shallow water (less than 5 m below Mean High Water Springs (MHWS)) over sandy, muddy and silty soft sediments (Forth Properties Ltd, 2007).

Middle Bank, an area to the north of the Docks has been subject to extraction of aggregate in the past and previous monitoring reports provide an indication of representative habitats in the region (Baxter *et al.*, 2008; ERM, 2008). The main habitats in the Middle Bank area comprise infralittoral muds, circalittoral muds and circalittoral muddy sands with occasional epibenthic assemblages comprising hydrozoa and bryozoa, and some larger mobile fauna including crabs (ERM, 2008). The same surveys identified infaunal assemblages dominated by annelid worms (53%) with molluscs, arthropods making up the majority (39%) of the remainder of taxa identified.

The intertidal environment of the southern Firth of Forth is characterised by a range of sediment types, resulting in faunal assemblages of generally higher diversity on rocky seabeds and lower diversity in littoral sediments (Bennett and McLeod, 1998).

Intertidal habitats along the outer edge of the harbour are relatively exposed, and there are sediments ranging from sandy beach (East Sands of Leith) to rocky outcrops (Forth Properties Ltd, 2007).

Studies undertaken for Forth Properties Ltd (2007) and by SKM (2011) indicate the intertidal benthic environment on the areas immediately surrounding Leith Docks are defined by man-made hard substrate, such as breakwaters. The man-made substrates were recorded as exhibiting a distinctive zonation pattern of species, relative to the aspect of the slope. The southerly sides showed a lowered diversity than northerly sides of breakwaters, and were dominated by barnacles above patchy fucoids with scattered periwinkles, limpets and mussels.

Benthic species in the vicinity of the Leith Docks area include those found on the range of benthic habitats, including the bivalve *Abra alba* and common mussel *Mytilus edulis*, as well as other limpets and periwinkles found here and further up the estuary during the Forth Replacement Crossing EIA studies (Jacobs Arup, 2009; Forth Properties Ltd, 2007).



Sites and Species of Nature Conservation Importance

The Port of Leith site itself does not overlap with any sites designated for their nature conservation importance for benthic habitats. There is a Natura 2000 site within the Docks area, the Imperial Dock Lock SPA, designated for its common tern colony (see Section 5.8: Ornithology).

The nearest SAC designated for its benthic habitat interest is the Isle of May SAC, which is designated for its reef habitat and located approximately 43 km from the port. However, SNH has indicated there is no connectivity between the proposed development and this feature (SNH, 2012).

Closer to the docks area is the Firth of Forth Site of Special Scientific Interest (SSSI), the boundaries of which align with the Firth of Forth SPA (and reach MLWS) (see section 5.8: Ornithology). This is designated for a wide range of coastal habitats including saltmarshes and saline lagoons as well as several bird species. Initial research for this scoping report indicates that there are no known specific records of benthic species of conservation importance occurring in, or in the immediate vicinity of, the dock area.

Fish and Shellfish Ecology

The Firth of Forth supports a diverse range of fish species across the range of benthic habitats described above. The Firth encompasses several areas noted as spawning and nursery grounds for species including herring *Clupea harengus*, sprat *Sprattus sprattus*, lemon sole *Microstomus kitt*, and plaice *Pleuronectes platessa* (Ellis *et al.*, 2012; Coull *et al.*, 1998). However, numerous other species are known to be present in the wider Firth of Forth and central North Sea region including mackerel *Scomber scombrus*, whiting *Merlangius merlangus*, blue whiting *Micromesistius poutassou*, Ling *Molva molva* and cod *Gadus morhua* (Ellis *et al.*, 2012; Coull *et al.*, 1998).

The area of the proposed development is also characterised by particular migratory fish species with varying life history and migratory strategies. Anadromous fishes are those that spend the majority of their lives at sea, but specifically move upstream to freshwater to breed and spawn. Anadromous species in the Firth area may spawn or have nursery areas in the lower estuary (e.g., Allis shad *Alosa alosa* and Twaite shad *Alosa fallax*) or in the rivers e.g., Atlantic salmon *Salmo salar* and sea trout *Salmo trutta*. The European eel *Anguilla anguilla* is a catadromous fish as it moves from freshwater to the sea to spawn. This species passes through the Firth of Forth on its way to spawning grounds in the sea. Diadromous fishes are those that move between sea and freshwater (or vice versa) for breeding/spawning purposes. Although no diadromous species have nursery or breeding areas directly within the Firth of Forth they are known to travel through the area (Malcolm *et al.*, 2010).

Despite data on migratory fish distribution in the area and the wider region remaining limited, several non-diadromous species are expected to use the estuary, including : flounder *Pleuronectes*



flesus; plaice *P. platessa*; lesser sandeel *Ammodytes tobianus*; whiting *M. merlangus*; common goby *Pomatoschistus microps*; lesser spotted dogfish *Scyliorhinus canicula* (e.g., Forth Properties Ltd, 2007). Information collected at the Longannet power station further upstream indicates a number of species migrating through the estuary including a range of species commonly found in the wider Firth of Forth including European smelt *Osmerus eperlanus*, river lamprey *Lampetra fluviatilis*, European eel *A. anguilla*, Atlantic salmon *S. salar* and sea trout *S. trutta* (as reported in SKM, 2011).

A range of shellfish species are found in the vicinity of the Leith Docks area. Brown shrimp *Crangon crangon* have been recorded throughout the Forth estuary, while the pink shrimp *Pandalus montagui* occurred in the lower reaches of the estuary (Jayamanne, 1995). Razor shells *Ensis* spp. have also been recorded in the inshore areas of the Firth of Forth where the seabed is clean sand (Robson, 1997). Other shellfish found in southeast Scotland include: European lobster *Homarus gammarus*; edible/brown crab *Cancer pagurus*; velvet swimming crab *N. puber*; king scallop *P. maximus*; Norway lobster *N. norvegicus*; and squid *L. forbesi* (Beard and McGregor, 2004; Robson, 1997).

Surveys undertaken to monitor the benthic environment at Middle Bank in 2008 identified a number of shrimp species including brown shrimp *Crangon crangon*, Pink shrimp *Pandalus montagui*, as well as swimming crab *Liocarcinus depurator* and gobies *Pomatoschistus* spp. (ERM, 2008).

Sites and Species of Nature Conservation Importance

There is a SAC in the region, the River Teith SAC, located approximately 49 km west-northwest of Leith, which is considered by SNH to have potential connectivity with the proposed development for certain migratory fish qualifying features (SNH, 2012).

SNH has advised that the potential development may have connectivity with Atlantic salmon *S. salar*, sea lamprey *Petromyzon marinus* and river lamprey *L. fluviatilis*

Additionally, although not of conservation importance itself, the sprat *S. sprattus* stock in the region is a key prey species for common tern *Sterna hirundo* and is considered to support the Imperial Dock Lock common tern population (Jennings *et al.*, 2012).

A number of migratory species are also of conservation importance and are noted on legislative measures and international agreements, including:

- Atlantic salmon *S. salar* is listed in the Habitats Regulations, the Bern Convention, it is an OSPAR species and is on the Scottish Biodiversity list (a non-statutory measure);
- Sea trout *S. trutta* is a UKBAP species;

- River lamprey *L. fluviatilis* is listed on the Bern Convention and Habitats Regulations and is on the Scottish biodiversity list;
- Sea lamprey *P. marinus* is listed in the Bern Convention, Habitats Regulation and by OSPAR, and is on the Scottish biodiversity list; and
- European smelt *O. eperlanus* is an IUCN (World Conservation Union) listed threatened species.

Marine Mammal Ecology

Marine mammals are known to frequent the wider Firth of Forth area and there are a number of conservation areas in the region that support populations of marine mammals, particularly pinnipeds. SNH (2012) advises that in particular, common (harbour) seal *Phoca vitulina* and grey seal *Halichoerus grypus*, as well as bottlenose dolphin *Tursiops truncatus*, may have connectivity with the development at Leith Docks.

Surveys undertaken between 2004 and 2007 for the Leith Docks Framework for Development indicated haul out sites for both common and grey seals on the rocky outcrops to the east of the eastern breakwater at the Docks, with some sightings of the species within the docks themselves (Forth Properties Ltd, 2007). Both species were frequently recorded in the region by Jacobs Arup (2009).

Jacobs Arup (2009) recorded year round occurrences of harbour porpoise *Phocoena phocoena* towards the Forth estuary during surveys undertaken for the Forth Replacement Crossing. The bottlenose dolphin is known to be present in the Firth of Forth area (SNH, 2012; Thompson *et al.*, 2011; Reid *et al.*, 2003).

Other cetacean species that have been reported as being present in outer Firth include the white-beaked dolphin *Lagenorhynchus albirostris* and minke whale *Balaenoptera acutorostrata* (Jacobs Arup, 2009; Reid *et al.*, 2003). Other cetacean species such as long-finned pilot whale *Globicephala melas*, killer whale *Orcinus orca*, short-beaked common dolphin *Delphinus delphis* and Atlantic white-sided dolphin *Lagenorhynchus acutus* are regarded as occasional visitors to the Firth of Forth (Jacobs Arup, 2009).

Sites and Species of Nature Conservation Importance

There are a number of SACs in the Firth of Forth and wider region that have marine mammal species as qualifying features.

SNH (2012) has advised that the following areas of nature conservation importance require consideration:

- Isle of May SAC (grey seal);

- Firth of Tay & Eden Estuary SAC (harbour seal);
- Berwickshire and North Northumberland Coast SAC (grey seal); and
- Moray Firth SAC (bottlenose dolphin).

Additionally, all marine mammals are afforded protection, due to their nature conservation importance in Scottish waters, under the Habitats Regulations (cetaceans under Annex IV; grey seal, harbour seal, bottlenose dolphin and harbour porpoise under Annex II) and additional specific regulations for seals (grey seal and harbour seal under Annex V). Most species are also listed on international conventions including the Bern, Bonn and CITES conventions. A list of the UK and international protection afforded to marine mammals is provided in Table 6 below.

Table 6 Protecting legislation for marine mammal species

Legislation	Species/group
Conservation of Seals Act 1970	Grey and harbour seal.
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) 1973	All cetaceans.
Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) 1979	All cetaceans, grey and harbour seal.
Convention on the Conservation of Migratory Species of Wild Animals (CMS or Bonn Convention) 1979	All cetaceans.
Wildlife and Countryside Act (WCA) 1981 (as amended)	All cetaceans.
European Council Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (Habitats Directive – Council Directive 92/43/EEC) 1992	All cetaceans, grey and harbour seal.
Agreement on the Conservation of Small Cetaceans in the Baltic and North Seas (ASCOBANS) 1994 – amended in 2008 to the Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas.	All small cetaceans regularly occurring in the Baltic, North East Atlantic, Irish and North Seas.
OSPAR Convention (Convention for the Protection of the marine Environment of the North-East Atlantic) 1998	Bowhead whale <i>Balaena mysticetus</i> , northern right whale <i>Eubalaena glacialis</i> , blue whale <i>Balaenoptera musculus</i> , and harbour porpoise <i>Phocoena phocoena</i> .
Conservation (Natural Habitats &c.) Regulations 1994 (as amended)	All cetaceans, grey and harbour seal.
Offshore Marine Conservation (Natural Habitats &c.) Regulations 2007 (as amended)	All cetaceans, grey and harbour seal.
UK Biodiversity Action Plan (UKBAP) 1994	All cetaceans



5.6.5. Potential Impacts

The following potential effects could arise from the proposed development, resulting in a number of broad impacts on marine ecological receptors.

Subtidal and Intertidal Benthic Ecology

Potential impacts on benthic ecology species and habitats from construction activities could include:

- Direct disturbance and removal of benthic fauna (subtidal and intertidal) as a result of dredging activities and placement of new infrastructure in construction and operation leading to reduced species diversity, abundance and biomass;
- Increased turbidity and smothering effects of sediment deposition on benthic and epibenthic resources as a result of dredging activities and infilling of dock areas and change to the hydrological regime during operational periods;
- Mobilisation of contaminated marine sediments during construction, which could have a toxicological effect on intertidal infaunal and epifaunal communities;
- Development operations increasing the risk of potential accidental spillage of materials that could have an adverse impact on the benthic ecological environment;
- Disturbance and removal of benthic fauna at Middle Bank as a result of dredging activities, leading to reduced species diversity, abundance and biomass; and
- Increased turbidity and smothering effects of sediment deposition on benthic and epibenthic resources as a result of dredging activities and possible associated screening of dredging material at Middle Bank.

Of these impacts, key are those related to direct seabed removal, impacts of an altered sediment regime and increased suspended sediment and their potential effects with the suspension of possibly contaminated sediments.

Fish and Shellfish Ecology

Although the surrounding region is not of particular importance to any particular fish or shellfish species, extractive and dredging activities that impact the benthic environment and changes to the turbidity or sedimentary conditions could have a potential knock-on effect on several fish and shellfish species and populations. Additionally, construction could also impact certain fish species, particularly migratory species that are of conservation importance, as advised by SNH (2012). Impacts are not predicted to be of major significance as the area is not considered to be of specific importance to any fish species in relation to the wider regional environment. Best practice measures and mitigation would minimise the potential for significant impacts.



Marine Mammal Ecology

Although the Leith Docks area is not of particular importance for marine mammal species, the following impacts could occur on marine mammals in the wider region, including those that are qualifying features for SACs and could have connectivity with the project (information taken from SNH, 2012):

- Generation and propagation of underwater noise from piling operations which could have physiological and/or behavioural response on a range of marine mammal species (Richardson *et al.*, 1995);
- Changes to physical processes (e.g., increased suspended sediment, changes to hydrological regime) during operational phase potentially impacting on key marine mammal species' prey and therefore affecting marine mammal species;
- Reduced water quality (including increased suspended solids, reduced dissolved oxygen and release of contaminants) from installation operations including piling, deposition of materials and dredging; and
- Disturbance (noise and visual) from people, machinery and increased ship traffic (including potential vessel strike and vessel thruster injury) during operational periods.

5.6.6. Mitigation

There are a number of measures that may mitigate the potential impacts identified above which will be subject to consideration as the development progresses.

5.7. Terrestrial Ecology

5.7.1. Introduction

This section deals with terrestrial ecology. It does not deal with ornithology or marine ecology which are covered in Sections 5.6 and 5.8 respectively.

5.7.2. Guidance

The assessment will take account of the requirements of, and advice given in:

- Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the Habitats Directive) as transposed into Scottish law by The Conservation (Natural Habitats, &c) Regulations 1994 (as amended in Scotland) (The Habitats Regulations);
- Wildlife and Countryside Act 1981 (as amended);
- The Nature Conservation (Scotland) Act 2004;
- The Protection of Badgers Act 1992;



- The Consolidated Scottish Planning Policy (SPP) (February 2010) – Landscape and Natural Heritage;
- PAN 60: Planning for Natural Heritage (Scottish Govt, 2000), which provides advice on how development and the planning system can improve the natural environment;
- Institute of Ecology and Environmental Management (IEEM) '*Guidelines for Ecological Impact Assessment in the UK*'⁶;
- City of Edinburgh Local Biodiversity Action Plan (LBAP);
- The UK Biodiversity Action Plan (UKBAP); and
- The Scottish Biodiversity List.

Other relevant published and unpublished sources will also be consulted as appropriate.

5.7.3. Proposed EIA Methodology

A preliminary desk study was undertaken to inform the production of this scoping report (see Section 5.7.4). This will be updated to identify details of non-statutory and locally designated nature conservation sites and records of notable habitats and species, including legally protected and controlled species from the site and surrounding area up to 2km.

An extended Phase 1 Habitat Survey was undertaken in June 2012 in accordance with standard methodology⁷, the results of which are summarised briefly in Section 5.7.4 and will be reported in full within the ES. This identified the need for the following additional surveys to be undertaken to inform the EIA:

- Bats – an inspection of buildings on site and two nocturnal bat transect surveys will be undertaken in August and September 2012. The survey methodology will be based on that outlined in current best practice guidance⁸. Further emergence and return surveys will be undertaken, if required, following the completion of the initial building assessment.
- A survey of potentially suitable habitats for otter will be undertaken with reference to the standard methodology⁹.

The impact assessment methodology used in the EIA will follow the IEEM Guidelines for Ecological Impact Assessment in the UK, incorporating other best practice guidance as appropriate. In accordance with the IEEM guidelines the assessment of impacts will focus on those terrestrial

⁶ Institute of Ecology and Environmental Management. 2006. *Guidelines for Ecological Impact Assessment in the United Kingdom* (version 7 July 2006). <http://www.ieem.org.uk/ecia/index.html> [last accessed 27/07/12]

⁷ Joint Nature Conservation Committee. 2010. Handbook for Phase 1 Habitat Survey. Revised Re-print. JNCC, Peterborough.

⁸ Bat Conservation Trust. 2012. Bat surveys: Good Practice Guidelines. 2nd Edition

⁹ Chanin, P. 2003. Monitoring the Otter *Lutra lutra*. Conserving Natura 2000 Rivers Monitoring Series No. 10. English Nature: Peterborough.



ecological receptors of at least district (City of Edinburgh) value and/or subject to some form of legal protection.

The following list illustrates those consultees / data providers that will be contacted as part of the terrestrial ecology assessment during the course of the EIA:

- SNH;
- SEPA;
- Scottish Wildlife Trust;
- The Wildlife Information Centre for Lothian and the Borders;
- Scottish Badgers; and
- Lothians Bat Group.

5.7.4. Baseline Description

Existing information which has been reviewed during the preparation of this scoping report includes:

- National Biodiversity Network Database;
- Scottish Natural Heritage Website (SNHi); and
- Leith Renewable Energy Plant Environmental Statement (2011).

The latter includes the results of a desk study and extended Phase 1 habitat and bat surveys covering much of the Port of Leith.

Table 7 identifies statutory designated nature conservation sites, including Special Protection Areas (SPA), Ramsar Sites and Sites of Special Scientific Interest (SSSI) within 10km of the site. Sites designated primarily for their ornithological interest or for marine habitats and species are considered in more detail in Sections 5.8 and 5.6 respectively.

Table 7 Nature conservation designations

Site name and designation	Distance and direction from proposed development site	Summary description / reason for designation
International Designated Sites		
Firth of Forth SPA and Ramsar Wetland	Overlaps with site boundary	See Section 5.6
Imperial Dock Lock, Leith SPA	Overlaps with site boundary	See Section 5.6
Forth Islands SPA	4.7km NW	See Section 5.6
Nationally Designated Sites		



Site name and designation	Distance and direction from proposed development site	Summary description / reason for designation
Firth of Forth SSSI	Overlaps with site boundary	Habitats: <ul style="list-style-type: none"> ■ Transition grassland ■ Lowland neutral grassland ■ Maritime cliff ■ Sand dunes Species: <ul style="list-style-type: none"> ■ Northern brown argus ■ Beetle assemblage ■ Vascular plant assemblage See also Section 5.6 and 5.8
Arthur's Seat volcano SSSI	3.3km S	Habitats: <ul style="list-style-type: none"> ■ Acid Grassland ■ Calcareous grassland Species: <ul style="list-style-type: none"> ■ Vascular plants Geology: <ul style="list-style-type: none"> ■ Igneous petrology
Duddingston Loch SSSI	5.1km SE	Habitats: <ul style="list-style-type: none"> ■ Transition open fen ■ Eutrophic loch Geology: <ul style="list-style-type: none"> ■ Carboniferous – Permian Igneous
Inchmickery SSSI	4.7km NW	See Section 5.6
Agassiz Rock SSSI	6.7km S	Geology: <ul style="list-style-type: none"> ■ Classic location associated with development of glacial theory
Wester Craiglockhart Hill SSSI	8.4km S	Habitats: <ul style="list-style-type: none"> ■ Acid grassland ■ Calcareous grassland

The site is an active port and is characterised by artificial and disturbed habitats (eg. dust, noise, lighting) including hard standing, buildings, ephemeral/short perennial, tall ruderal and pioneer grassland communities. The majority of the land/sea boundary has been formed by rubble (bricks, concrete etc), although small areas of beach are present to the north and east (see Section 5.8 for more details on inter-tidal habitats).

No rare or notable plant species were recorded on the proposed development site during the Phase 1 habitat survey, although there are historic records for notable plant species including corn buttercup (*Ranunculus arvensis*) and bog-rosemary (*Andromeda polifolia*).

With regards to terrestrial fauna, the habitats on the site are considered to have only a limited potential to support a diverse/important invertebrate community. Existing data reviewed do not



contain any records for amphibians, reptiles, badgers or water voles within 2km and potentially suitable habitat for such species within the site is limited or non-existent.

During the site walkover three buildings were identified as providing potentially suitable bat roosting habitat, but with a low risk that bats would be present. The site was assessed to be of low quality for foraging bats. Previous surveys undertaken on the site found no bats roosting within the site and very low levels of bat activity were recorded.

Otter has been recorded within a 2km radius of the proposed development site and there was also a suspected sighting of otter in the Western Harbour in October 2004, although it is considered unlikely that otter would be able to enter the proposed development site (from the water) due to the vertical-sides of the dock walls.

5.7.5. Potential Impacts

The following impacts could potentially affect terrestrial ecological receptors and will therefore be considered in the EIA:

- Permanent habitat loss – e.g. through the construction of land-based elements of the proposed development;
- Temporary habitat loss – e.g. through ground disturbance during construction
- Fragmentation of habitats – e.g. through development taking place between areas of habitat;
- Species mortalities and injuries – e.g. through collisions with construction or operational vehicles or direct contact with construction works;
- Disturbance to fauna – e.g. noise, lighting and disturbance from vehicles, plant and people during construction and operation. It should be noted however that the site is currently an active port subject to high existing levels of disturbance; and
- Pollution – e.g. from spillages during construction and operation.

Such impacts could affect the following terrestrial valued ecological receptors:

- Firth of Forth SSSI;
- Terrestrial habitats within the site (and related plant species);
- Bats; and
- Otter.

Impacts that are proposed to be scoped out from further consideration in the EIA due to there being no anticipated significant effects include:



- Impacts on other SSSIs including Arthur's Seat, Duddingston Loch, Inchmickery, Agassiz Rock and Wester Craiglockhart Hill due to the lack of terrestrial ecological interest features and/or the distance from the site;
- Impacts on species other than those listed above.

5.7.6. Mitigation

Mitigation measures will be developed as required during the course of the EIA, drawing on appropriate best practice guidance.

5.8. Ornithology

This section deals with ornithology. It does not deal with marine or terrestrial ecology which are covered in Sections 5.6 and 5.7 respectively. It has been informed by an initial review of relevant existing information and pre-consultation meetings with SNH and RSPB Scotland.

5.8.1. Guidance

The assessment will take account of the requirements of, and advice given in:

- Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the Habitats Directive) as transposed into Scottish law by The Conservation (Natural Habitats, &c) Regulations 1994 (as amended in Scotland) (The Habitats Regulations);
- Wildlife and Countryside Act 1981 (as amended);
- The Nature Conservation (Scotland) Act 2004;
- The Consolidated Scottish Planning Policy (SPP) (February 2010) – Landscape and Natural Heritage;
- PAN 60: Planning for Natural Heritage (Scottish Govt, 2000), which provides advice on how development and the planning system can improve the natural environment;
- Institute of Ecology and Environmental Management (IEEM) '*Guidelines for Ecological Impact Assessment in the UK*'¹⁰;
- Natura sites and the Habitats Regulations: How to consider proposals affecting SACs and SPAs in Scotland. The essential quick guide (Scottish Natural Heritage, 2010);
- City of Edinburgh Local Biodiversity Action Plan (LBAP);
- The UK Biodiversity Action Plan (UKBAP); and

¹⁰ Institute of Ecology and Environmental Management. 2006. *Guidelines for Ecological Impact Assessment in the United Kingdom* (version 7 July 2006). <http://www.ieem.org.uk/ecia/index.html> [last accessed 27/07/12]



- The Scottish Biodiversity List.

Other relevant published and unpublished sources will also be consulted as appropriate.

5.8.2. Proposed EIA Methodology

The following sources of existing data are understood to have been collected and, where available, will be reviewed as part of the EIA:

- Breeding bird survey data collected to inform the Leith Renewable Energy Plant EIA¹¹;
- Winter walkover surveys undertaken in 2009/2010 to inform the Leith Renewable Energy Plant EIA¹²;
- Wintering bird surveys undertaken in 2004/2005 to inform the EIA for the outline planning application for Leith Docks¹³;
- Wetland Bird Survey (WeBS) data for the Firth of Forth and information within Lothian Bird Reports;
- Regular monitoring data for the common tern colony at Imperial Dock Lock, collected by Lothian Ringing Group;
- Various studies relating to the common tern colony at Imperial Dock Lock as part of a PhD undertaken by Gemma Jennings of the University of Glasgow;
- Data collected as part of the ornithology addendum to the EIA for the proposed Middle Bank Extraction Area ;
- Data collected by JNCC on seabird distribution and abundance within the Firth of Forth to inform the planned designation of marine SPAs; and
- Data collected for the Forth Islands SPA by the Forth Seabird Group.

In addition, monthly 'through the tide' surveys of wildfowl and waders, covering the port and adjacent inter-tidal habitat, have been or will be undertaken by ECOS Countryside Services LLP specifically to inform this EIA, as follows:

- October 2010 and March 2011 inclusive;
- December 2011 and May 2012 inclusive; and
- August to October 2012 inclusive.

¹¹ LittleGreen Environmental Consultants. 2010. *Port of Leith Breeding Bird Survey*. Report for SKM Enviro on behalf of Forth Energy.

¹² Atmos Consulting. 2010. *Leith, Edinburgh Wintering Birds Report*. Report for Forth Energy.

¹³ Ove Arup & Partners. 2007. *Outline Planning Application for Leith Docks Environmental Statement*. Report to Forth Properties Ltd.



The impact assessment methodology used in the EIA will follow the IEEM Guidelines for Ecological Impact Assessment in the UK, incorporating other best practice guidance as appropriate. In accordance with the IEEM guidelines the assessment of impacts will focus on sites and species of sufficient value that impacts upon them could be significant in legal / policy terms.

The following list illustrates those consultees / data providers that will be contacted as part of the terrestrial ecology assessment during the course of the EIA:

- SNH;
- SEPA;
- RSPB
- Scottish Wildlife Trust;
- The Wildlife Information Centre for Lothian and the Borders;
- Lothian Ringing Group; and
- Forth Seabird Group.

5.8.3. Baseline Description

Table 8 below identifies statutory designated nature conservation sites for which birds are a reason for designation, including Special Protection Areas (SPA), Ramsar Sites and Sites of Special Scientific Interest (SSSI), within 10km of the site. Sites designated for non-ornithological reasons are considered in Section 5.6 (marine ecology) and Section 5.7 (terrestrial ecology).

Table 8 Nature conservation designations within 10km for which birds are a reason for designation

Site name and designation	Distance and direction from proposed development site	Summary description / reason for designation
International Designated Sites		
Firth of Forth SPA and Ramsar Wetland	Overlaps with site boundary	<p>Qualifying Species include wintering:</p> <ul style="list-style-type: none"> ■ Pink-footed goose ■ Shelduck ■ Red-throated diver ■ Slavonian grebe ■ Oystercatcher ■ Golden plover ■ Redshank ■ Bar-tailed godwit ■ Turnstone <p>And passage:</p> <ul style="list-style-type: none"> ■ Sandwich tern <p>Also qualifies by regularly supporting an assemblage of over 20,000 waterfowl.</p>

Site name and designation	Distance and direction from proposed development site	Summary description / reason for designation
Imperial Dock Lock, Leith SPA	Adjacent to site boundary	Breeding common tern
Forth Islands SPA	4.7km NW	Qualifying Species include breeding: <ul style="list-style-type: none"> ■ Gannet ■ Shag ■ Arctic tern ■ Roseate tern ■ Common tern ■ Sandwich tern ■ Lesser black-backed gull ■ Puffin Also qualifies by regularly supporting an assemblage of over 20,000 breeding seabirds.
Nationally Designated Sites		
Firth of Forth SSSI	Overlaps with site boundary	Breeding populations of eider, ringed plover and shelduck Non-breeding populations of velvet scoter, red-breasted merganser, redshank, red-throated diver, ringed plover, scaup, shelduck, Slavonian grebe, turnstone, bar-tailed godwit, common scoter, cormorant, curlew, dunlin, eider, golden plover, goldeneye, great crested grebe, grey plover, knot, long-tailed duck, oystercatcher and pink-footed goose
Inchmickery SSSI	4.7km NW	Breeding Arctic tern, Common tern, Sandwich tern and Roseate tern.

Non-breeding surveys carried out over the winter 2010-11 identified a total of 21 waterfowl species and a peak count (all waterfowl) of 454 birds within or adjacent to the port. The only species recorded in numbers greater than 25 were eider, goldeneye, oystercatcher, knot, curlew and redshank. Oystercatcher was the most numerous species recorded (peak count 300), with the greatest numbers recorded roosting on the East Breakwater.

Breeding surveys carried out in 2010 recorded very few breeding species within the port, with the most notable species being common tern (818 pairs in 2010) and little ringed plover (2 pairs). Peregrine was also recorded but is not known to breed within the port area. It should be noted that parts of the port site are not accessible for safety reasons and the 2010 breeding survey did not cover the whole of the port site. It is however considered unlikely that significant breeding populations of other species exist outside the area surveyed.

5.8.4. Potential Impacts

The following impacts could potentially affect ornithological receptors and will therefore be considered in the EIA:



- Permanent habitat loss – a small area of rock armour within the Firth of Forth SPA (along the East Breakwater) is likely to be lost as part of the development although similar, more extensive habitat would be created through the construction of the proposed outer berth. Areas of terrestrial habitat and the current Edinburgh Dock are also likely to be lost as part of the development.
- Temporary habitat loss – small areas of open water and terrestrial habitat are likely to be temporarily lost during construction.
- Habitat change – habitats used by birds could be subject to change due to changes in currents or sedimentation patterns and the extraction of marine sediments.
- Disturbance – disturbance to breeding and non-breeding birds could take place during construction and operation of the development, although it should be noted that the site is currently an active port subject to high existing levels of disturbance. Sources of disturbance are likely to include noise, lighting, presence of people and plant/machinery and vehicular / shipping traffic, both onshore and offshore.
- Pollution – pollution of habitats used by birds could take place during construction and operation.
- Barrier effect – the development could create a barrier to regular flight lines used by birds.
- Over-shadowing – the development could cause over-shadowing of habitats used by wading birds with the result that such habitats are no longer used.
- Species mortalities and injuries or damage to nests – this is most likely during construction.

Such impacts will be considered specifically in relation to the following receptors:

- Qualifying species for the Firth of Forth SPA, Ramsar and SSSI, including all species qualifying under the waterfowl assemblage criterion;
- Qualifying species for the Imperial Dock Lock, Leith SPA, i.e. common tern;
- Qualifying species for the Forth Islands SPA, including all species qualifying under the breeding seabird assemblage criterion;
- Breeding little ringed plover; and
- Nesting birds, in relation to the protection afforded to them under the Wildlife & Countryside Act 1981 (as amended).

Impacts on receptors other than those listed above are proposed to be scoped out from further consideration in the EIA due to there being no anticipated significant effects.

5.8.5. Mitigation

Mitigation measures will be developed as required during the course of the EIA, drawing on appropriate best practice guidance.

5.9. Landscape, Townscape, Seascape and Visual Amenity

5.9.1. Introduction

Landscape, townscape and seascape effects are potential changes in the landscape / townscape / seascape, its character and quality, and differ from visual effects which relate to the appearance of these changes and the resulting effect on visual amenity.

The Landscape, Townscape, Seascape and Visual Impact Assessment (LTSVIA) concentrates on the key landscape and visual issues identified during pre scoping consultation with SNH. The key issues identified were:

- Effects on landscape / townscape / seascape resource;
- Effects on perception of the landscape / townscape / seascape; and
- Effects on visual amenity.

The LTSVIA does not deal with effects on cultural heritage features, with the exception of effects on Historic Scotland's Inventory of Gardens and Designed Landscapes in Scotland. Effects on Cultural Heritage are covered in Section 5.10.

5.9.2. Guidance

The LTSVIA methodology will be based in accordance with best practice outlined in the following published documents:

- Landscape Character Assessment: Guidance for England and Scotland (The Countryside Agency and SNH, 2002);
- Guidelines for Landscape and Visual Assessment (Landscape Institute and Institute of Environmental Assessment 1995 and 2nd Edition 2002);
- Guide to Best Practice in Seascape Assessment – Countryside Council for Wales, Brady Shipman Martin and University College of Dublin (2001);
- The Lothians Landscape Character Assessment, ASH consulting Group, SNH (1998);
- Fife Landscape Character Assessment, David Tyldesley and Associates, SNH (1999);
- Edinburgh, The Standards for Urban Design – Edinburgh City Council, Aug 2003;
- The Old and New Towns of Edinburgh, World Heritage Sites Management Plan July 2005;
- Conservation Area Appraisals –Throughout the City of Edinburgh and Leith;
- Colvin and Moggridge Skyline Report –protection of key views –reports to committee Oct 2007 and Feb 2008
- Guideline for the Protection of Key Views – City of Edinburgh Council June 2008; and
- Relevant national and local planning policy and guidelines.

5.9.3. Proposed EIA Methodology

The general approach to the LTSVIA includes the following key tasks which will be described in detail within the assessment:

- Desk study and preliminary site survey;
- Confirmation of scope and methodology with The City of Edinburgh Council, SNH and Fife Council;
- Baseline assessment of landscape, townscape, seascape and visual resources (consisting of desk study, field survey and reporting);
- Assessment of residual landscape, townscape, seascape and visual effects; and
- Assessment of cumulative landscape, townscape, seascape and visual effects.

It is proposed that the assessment would use a tiered study area: extending up to 30km to consider effects on the wider landscape and also with regard to cumulative effects; within 10km to examine effects on the wider City of Edinburgh and adjacent conurbation; and focussing on a core study area of c.1km beyond the site boundary to assess townscape effects in detail. This study area will define the extent of the assessment of effects on landscape, townscape, seascape and visual receptors.

The significance of any identified landscape, townscape and seascape or visual effect will be assessed as major, moderate, minor or no effect. These categories have been determined by consideration of viewpoint or landscape/townscape/seascape sensitivity and predicted magnitude of change, with the following matrix used as a guide to correlating sensitivity and magnitude to determine significance of effects.

Table 9 Significance of effects on the landscape / townscape / seascape resource and visual receptors

SENSITIVITY	MAGNITUDE OF CHANGE / EFFECT			
	Substantial	Moderate	Slight	Negligible
HIGH	Major	Major / Moderate	Moderate	Moderate / Minor
MEDIUM	Major / Moderate	Moderate	Moderate / Minor	Minor
LOW	Moderate	Moderate / Minor	Minor	Minor / None
NEGLIGIBLE	Moderate / Minor	Minor	Minor / None	Minor / None

Where a landscape / townscape / seascape or visual effect has been classified as major or major/moderate, this is considered to be a significant effect. It should be noted that significant effects need not be adverse and may be either negative or positive and also may be reversible.



The matrix is not used as a prescriptive tool, and the methodology and analysis of potential effects at any particular location must make allowance for the exercise of professional judgement. Thus, in some instances, a particular parameter may be considered as having a determining effect on the analysis.

5.9.4. Baseline Description

Landscape / Townscape / Seascape Assessment

The baseline landscape / townscape / seascape conditions will be established, and the sensitivity of the landscape / townscape / seascape of the site and surrounding study area to change will be examined with respect to the development of the proposed scheme. The baseline will be informed and developed by reference to existing studies such as the SNH Landscape Character Assessments and where available seascape character assessments within the greater Firth of Forth. The core study area baseline will draw upon historic mapping sources where appropriate.

The baseline landscape/townscape/seascape assessment will be supported with illustrations showing townscape / seascape character areas and relevant townscape / landscape designations within the tiered study areas. A further figure will be included to identify the boundary of townscape/seascape character areas within 1km of the outermost of the proposed development, superimposed onto a 1:10,000 map base.

Landscape Planning Considerations / Landscape Designations

The LTSVIA will take into consideration the effects of the proposed development on any relevant local townscape/landscape designations within the study area in accordance with the policies of the relevant Local Development plans, as well as adopted and current local plans and structure plans. Careful consideration will be given to the assessment of townscape / seascape and visual impact on these designated landscapes.

The assessment will also consider effects on the following designations:

- World Heritage Sites;
- Sites on Historic Scotland's Inventory of Gardens and Designed Landscapes in Scotland;
- National trails and long distance routes; and
- Listed buildings within the site and Conservation Areas within a 1km radius of the site boundary.



Visual Assessment

Visual effects will be assessed using Zone of Theoretical Visibility (ZTV) studies and a viewpoint analysis. The visual assessment will be based on:

- The analysis of a ZTV extending 30km from the centre of the proposed developments; and
- Views from agreed viewpoints representing sensitive receptors within the study area at a range of distances and directions from the proposed developments.

The assessment will involve a desk study, field observations, the preparation of computer generated ZTVs and wireframes / photomontages for the viewpoint assessment, as well as analysis of this data.

ZTV mapping will be presented as part of the LTSVIA, indicating the theoretical visibility of the proposed scheme. The visibility of the proposed development from identified receptors will be described.

An assessment of visual effects will be undertaken from the surrounding settlement edge including: the Edinburgh conurbation to the south, extending to Cramond to the west and Dalkeith and Musselburgh to the east. In addition, more distant visibility will be considered from the wider Edinburgh conurbation including from: Loanhead, Bonnyrigg, Dalkeith and Lasswade to south of the city; to the north, across the Firth of Forth to the settlements of Burntisland, Pettycur, Kinghorn and Aberdour; and further east, and on the coast, the settlements of Prestonpans and Cockenzie.

The visual assessment will also take into account potential views from the local and national road network with views from the A720 City By-Pass, the A68 to the south, the A1 in the east and the A921 along the Fife Coast. The assessment will also assess changes to visibility from the Fife Coastal Path which enjoys expansive views across the Firth of Forth.

Viewpoints

The viewpoint assessment will be carried out to determine the effect of the proposed scheme on specific receptors and viewpoints in the study area. Twenty-seven potential viewpoints for inclusion in the assessment have been identified following production of the preliminary ZTV, analysis of Ordnance Survey maps consideration of previous viewpoints selected for the previous Leith Biomass proposal and initial fieldwork.

Representative views from designated locations, public rights of way, recreational routes, settlements, tourist destinations, popular viewpoints and transport routes have been included in the viewpoint list.

The following table sets out the viewpoints that are proposed to be included in the townscape / seascape and visual assessment and are also shown in Figures 4A and 4B.

Table 10 Proposed viewpoints

Number	Location	Grid Reference	Distance
1	Marine Esplanade, Leith	327217, 676843	On site boundary
2	Bath Road at entrance to the Port of Leith	327720, 676516	Within site boundary
3	Junction of Ocean Drive and Ocean Way, Leith	327378, 677651	0.07km
4	Constitution Street	327244, 676414	0.23km
5	Salamander Place	327544, 676106	0.31km
6	Ocean Drive, Leith	327217, 676843	0.33km
7	Customs Wharf Leith	327060, 676566	0.38km
8	Leith Links, Summerfield Gardens	327781, 675841	0.41km
9	Royal Yacht Britannia	326803, 676843	0.72km
10	Leith Links, East Hermitage Place	327295, 675746	0.74km
11	Western Harbour Drive	325732, 677508	0.79km
12	Seaford Road	329374, 675416	0.87km
13	Junction Bridge, Great Junction Street	326554, 676397	0.9km
14	Lindsay Road, Entrance to Western Harbour	325758, 677039	1.03km
15	Trinity Crescent, Trinity	324887, 677006	1.8km
16	A602 Ferry Road	324897, 676046	2.6km
17	Granton Harbour	323789, 677381	2.66km
18	Arthur's Seat, Holyrood Park	327541, 672943	3.04km
19	Calton Hill	325275, 674248	3.18km
20	Edinburgh Castle, Esplanade	325152, 673518	3.83km
21	Fisherrow Links, Musselburgh	333971, 673183	5.98km
22	Blackford Hill	325439, 670644	6.04km
23	Kinghorn Pier, Fife	326608, 686116	7.41km
24	Inchcolm Island	318981, 682533	8.19km
25	Aberdour, Fife	319340, 685054	9.38km
26	Allemuir Hill (Pentland Hills)	322625, 666230	11.3km
27	A68 near Dalkeith	337375, 667236	12.27km

It is important to note that the viewpoints selected are indicative at this stage. All the viewpoint locations will be verified and micro-sited on the ground and finalised after consultation with CEC and SNH.

For a sample of the proposed viewpoints, the existing and predicted view of the proposed development will be described and illustrated using photomontage visualisations. The photomontage viewpoints will be chosen and agreed in consultation with CEC and SNH. At this stage we propose the preparation of photomontages for 15 of the proposed viewpoints.



The photomontages will be prepared with the aim of realistically visualising certain relatively close distance views of the proposed scheme. A camera equivalent to a 35mm camera with a 50mm lens will be the chosen format for shooting the viewpoint panoramas, which is endorsed by the Landscape Institute as the most suitable focal length for photomontage production.

5.9.5. Potential Impacts

The LTSVIA will include an assessment of the following potential effects:

- Potential effects of the construction stage – a description of the effects arising from the construction of the various built elements within the port area and the outer berth area (both onshore and offshore);
- Assessment of potential residual landscape, townscape and seascape effects arising from the operation of the reconfigured Port of Leith – a detailed assessment of the residual effects arising from the proposed development on the landscape / townscape / seascape resource and perception of the landscape / townscape / seascape character and designated areas within the study area;
- Assessment of effects on visual amenity – an assessment of residual effects on visual amenity arising from the operation of the reconfigured Port of Leith including an assessment from 30 viewpoints identified at the scoping stage; and
- Assessment of cumulative effects on the perception of the landscape / townscape / seascape resource and visual amenity – an assessment of the potential effects arising from the operation of the reconfigured Port of Leith in conjunction with other cumulative developments.

5.9.6. Mitigation

Generation of the final project layout and design, including all ancillary features, will be an iterative process and. landscape / townscape / seascape and visual impacts will be considered through the design process.

The final analysis will assess the residual landscape / townscape / seascape and visual effects once any such mitigation measures have been incorporated within the proposed development.

5.10. Archaeology and Cultural Heritage

5.10.1. Introduction

This section will identify all onshore and marine cultural heritage assets and establish the archaeological potential of the study area. Significant direct and indirect effects from the construction and operation of the proposed development on sites of cultural heritage interest will be considered.



5.10.2. Guidance

The assessment will be carried out with reference to the following policy and guidance:

- Scottish Planning Policy (2010);
- Scottish Historic Environment Policy (Historic Scotland 2008);
- ‘*Assessment of Impact on the Setting of the Historic Environment Resource*’ (Historic Scotland 2009);
- ‘*Managing Change in the Historic Environment*’ – Guidance Notes (2010);
- Standard and Guidance Archaeological Desk-Based Assessment (Institute for Archaeologists 2008);
- JNAPC Archaeological Code of Practice for Seabed Developers; and
- Relevant national and local planning policy and guidelines.

5.10.3. Proposed EIA Methodology

For the purposes of this assessment, cultural heritage assets have been defined as all relict man-made assets predating the earliest Ordnance Survey mapping in this area and selected sites of more recent date. This includes all Scheduled Monuments, Designated Wrecks, Listed Buildings, Conservation Areas, Inventory Battlefields and Inventory Historic Gardens and Designed Landscapes. Further assets, such as those of special military, maritime or industrial interest, will also be considered where appropriate. Sediments with palaeo-environmental potential are also considered to be of cultural heritage interest. Indirect impacts to historic assets on the seabed which may be caused by alteration to tidal currents and sedimentary regimes, and by changes to the chemical balance of water and seabed sediments will be considered. Indirect impacts on the setting of the historic dimension of the landscape will be dealt with in the Landscape and Visual chapter.

The study area for the assessment will take in two concentric areas:

- The Inner Study Area corresponds to the limit of the proposed application area. Within this area all cultural heritage features are considered for construction and operational impacts; including direct impacts and impacts on setting; and
- The Outer Study Area extends 1 km from the boundary of the Inner Study Area. Within this area all nationally important cultural heritage features are considered for operational impacts; including direct impacts and impacts on setting. All cultural heritage features within this area will be considered to inform the potential for previously unrecorded cultural heritage features within the Inner Study Area.

The proposed extraction area at Middle Bank will be assessed for maritime cultural heritage remains and for archaeological potential including palaeoenvironmental deposits. A 1 km buffer



zone will also be assessed in order to identify sites of cultural heritage interest in proximity to the Middle Bank extraction area that might be affected activities during the construction and operation by excavation, anchoring of installation/ maintenance vessels, or the impacts of jack-up or sheer legs.

The following data sources will be used:

- National Monuments Record of Scotland (NMRS);
- Vertical aerial photographs held by the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS);
- Edinburgh City Council's Sites and Monuments Record (SMR);
- Historic Scotland Schedule of Ancient Monuments, Designated Wrecks and List of Listed Buildings;
- Maps held by National Library of Scotland;
- UKHO records for maritime losses;
- Admiralty Charts; and
- Other readily accessible published sources.

A walkover survey of the onshore area of the proposed development will be undertaken. This will check the results of the documentary research and will record any previously unrecorded sites and their current condition. Cultural heritage assets with potential for significant impacts on their setting will also be visited to establish baseline conditions.

The ES Chapter will also include the results of the archaeological assessment of any geophysical and geotechnical survey data collected as part of the site investigations.

The ES Chapter will clearly set out the nature and location of all relevant archaeological sites and provide an assessment of the significance of any impacts. Recommendations will be made for the mitigation of any effects.

Consultation with Historic Scotland and CEC Archaeology Service has been initiated in advance of scoping and will continue through the course of the EIA.

5.10.4. Baseline Description

There are three scheduled monuments within the proposed development area. These are the Martello Tower (SM 2418), Hydraulic crane & cabin (SM3528) and the Victoria Bridge (SM3709)

**Table 11 Scheduled monuments within the application area**

SM No.	Name	NGR
2418	Martello Tower	326885, 677757
3528	Custom House, hydraulic crane & cabin	327227, 676963
3709	Victoria Bridge	327099, 676826

Within 1km of the proposed development area there are four Scheduled Monuments. These include Dock Place, Swing Bridge (SM3849), a dry dock (SM 5683), the artillery mounds (SM1195) on Leith Links and the remains of the Citadel Arch (SM2993).

There are 10 listed buildings located within the application area (including the scheduled Martello Tower). These are all category B listed buildings and are related to the workings of the dock (Table 12).

Table 12 Listed buildings within the application area

SM No.	Name	NGR
27590	Leith Docks, Albert Dock with Swing Bridge	327377, 676861
27595	Leith Docks, Alexandra Dry Dock	327148, 676863
27601	Leith Docks, Alexandra Dry Dock Hydraulic Station	327111, 676851
27606	Leith Docks, Edinburgh Dock and Swing Bridge	327559, 676765
27611	Leith Docks, Edinburgh Dry Dock	327768, 676627
27615	Leith Docks, Edinburgh Dry Dock Pumping House	327720, 676639
27619	Leith Docks, Imperial Dock Grain Elevator	327585, 676902
27625	Leith Docks, Martello Tower	326885, 677757
27629	Leith Docks, Prince of Wales Dry Dock	327168, 676891
27634	Leith Docks, Prince of Wales Dry Dock, Hydraulic Station	327168, 676891

Within the surrounding 1km of the proposed development there are a further 19 Category A Listed Buildings, 176 Category B Listed Buildings and 94 Category C(S) Listed Buildings.

The Leith Conservation Area (Table 13) is partly located within the application area while the conservation areas of Newhaven and Madeira are located within the 1km study area.

Table 13 Conservation Areas within the application area

Name	Centre Point NGR
Leith	327057, 676181

There are no Inventory gardens and designed landscapes or inventory battlefields within 1km of the development area.



There are a large number of undesignated cultural heritage assets within the proposed development area and within the immediately surrounding area. These largely relate to the recent maritime heritage of the area and include shipwrecks, docks and wharfs, and associated dock furniture.

As the site is located in the Port of Leith on the south shore of the Firth of Forth, it is probable that it lies on Holocene alluvium. The presence of alluvium raises a number of archaeological issues peculiar to this environment including the potential for archaeological deposits and structures well-below modern ground level, waterlogged sediments and the potential for significant palaeo-environmental data. This potential is greatly reduced in the areas of the docks which have been subject to routine dredging over a prolonged period of time.

5.10.5. Potential Impacts

It will be necessary to demolish the Category B Listed Building the Imperial Dock Grain Elevator (LB27619) to enable the proposed development. An application for Listed Building Consent will be required.

It will also be necessary to infill the Category B Listed Building Edinburgh Dock (HB 27606) to enable the proposed development.

The Category B Listed Building the swing bridge between the Albert and Edinburgh docks (HB27606) may be utilised as part of the access route to the proposed development.

The remaining listed buildings and scheduled monuments within the application area are outwith the construction footprint of the development and will not be subject to direct impacts.

Where current buildings are present or hard standing areas exist on site it is predicted that the previous construction would have reduced the likelihood of archaeological remains, if present, within these areas (unless the buildings themselves are of cultural heritage importance). It is also possible that palaeo-environmental remains and waterlogged deposits may survive at depth below the current ground surface.

The NMRS holds records for a large number of losses in the vicinity of the Leith Docks, most of which date to the 19th and 20th century. It should be noted that the majority of the shipwrecks recorded within the study area are 'Dead' wrecks, where repeated survey has failed to identify any remains and the location assigned to the loss is described as arbitrary, tentative or suggested. However it is possible that cultural heritage assets or associated debris may be located within the application boundary – it is also highlighted that unrecorded remains pre-dating these periods may also be present.



In addition to direct physical impacts there is also the potential for the development to have an impact on the setting of cultural heritage features which are present within the surrounding area.

Indirect impacts to historic assets on the seabed which may be caused by alteration to tidal currents and sedimentary regimes, and by changes to the chemical balance of water and seabed sediments will be considered.

5.10.6. Mitigation

If listed building consent for the demolition of the Imperial Dock Grain Elevator (LB27619) is granted, an appropriate programme of archaeological works will be carried out in advance of its demolition. These works will be agreed in advance with Edinburgh City Council's Archaeologist and are likely to comprise a programme of historic building recording.

If Edinburgh Dock (HB 27606) is infilled, an appropriate programme of archaeological works will be carried out in advance of its infill. These works will be agreed in advance with Edinburgh City Council's Archaeologist and are likely to also comprise a programme of historic building recording.

The preferred mitigation of any potential impact on sensitive sub-surface deposits is avoidance. In the event that disturbance is unavoidable, a programme of archaeological works will be developed (with the approval of Historic Scotland and CEC Archaeologist) to excavate and record affected features before construction work commences.

In order to mitigate the risk of damage to any previously unrecorded offshore cultural heritage remains, an archaeological Written Scheme of Investigation (WSI) and protocols for unexpected archaeological discoveries (PAD) will be prepared for the approval of Historic Scotland to mitigate construction impacts in the event of any unexpected discoveries of archaeological remains during intrusive works associated with the project.

5.11. Socio-economics

5.11.1. Introduction

The socio-economic assessment will focus primarily on the social and economic impacts and effects that are likely to occur as a result of the construction and operation of the proposed development. The study area will extend to cover the immediate area of Leith and the wider area in general, both at an Edinburgh conurbation and Scotland-wide level in order to assess the likely effects that may result within the local community.

Socio-economic effects can impact on individuals and communities as a whole, which are both directly and indirectly affected by development in the local area. This can also apply to individuals



and communities who are not in the immediate local area, but are, nevertheless, affected by the project as a result of associated economic activity.

5.11.2. Guidance

The methodology used for the socio-economic impact assessment element follows guidance in Her Majesty's Treasury's '*Green Book for Economic Appraisal and Evaluation*'¹⁴, and also good practice guidance for economic assessment used by both the Scottish Government and Scottish Enterprise¹⁵. It is also similar to that which has been employed in a number of other major development projects throughout Scotland, where the effects of infrastructure development on local economies have been assessed, and this approach has been robustly tested and accepted as valid throughout the development process and at public inquiry.

5.11.3. Proposed EIA Methodology

The following list illustrates those consultees that will be contacted during the course of the EIA:

- CEC – Economic Development and other departments;
- VisitScotland;
- Scottish Renewables
- UK Major Ports Group; and
- Cruise Scotland.

5.11.4. Baseline Description

The local area within the immediate proximity of the proposals comprises the Port of Leith, an operational commercial port and industrial area, which serves both commercial traffic and cruise tourism. The operational port comprises a series of berths, wharves and docks, industrial type buildings, operational apparatus and related infrastructure, office buildings, and hard-standing used for storage, stock-piling and transhipment of commercial bulk cargo. The commercial port is surrounded by mixed use development comprising retail, leisure and commercial office development primarily around Western Harbour, with Ocean Terminal, the neighbouring Scottish Government's Victoria Quay office complex, and Ocean Point office building; but also to the south and east of the port, and extensive residential development is also interspersed with this retail, leisure, and commercial accommodation.

¹⁴ 'The Green Book Appraisal and Evaluation in Central Government', HM Treasury (2003) http://www.hm-treasury.gov.uk/d/green_book_complete.pdf

¹⁵ <http://www.scottish-enterprise.com/~media/SE/Resources/Documents/ABC/additionality-and-economic-impact-assessment-guidance.ashx>



The wider area for socio-economic assessment purposes comprises the economy of the City of Edinburgh and its hinterland, which has the potential to experience a range of impacts and effects as a result of the proposals, whether through job generation, other related labour market effects, various forms of economic and business activity, and expenditure in the wider area's goods and services as a result of the proposed development of the port.

5.11.5. Potential Impacts

The proposed project has the potential to impact upon local communities and the local economy both positively and, to a lesser extent, adversely. The socio-economic chapter will consider potential impacts in terms of the proposed development's planning, construction, and operation.

The assessment of these impacts will involve the collation of a range of baseline socio-economic data in relation to the location of the proposed development, the wider surrounding area and the development itself. The assessment will then consider the relative significance of each of the potential impacts and where an adverse impact is identified proposed mitigation will be recommended.

The nature of the impacts, which might result from the proposed development, would comprise the following:

- Gross jobs;
- Net additional jobs – accounting for dead-weight, displacement, leakage, etc;
- Multiplier and supply chain effects at both a local and regional level;
- Temporary construction jobs;
- Output – Gross Value Added (GVA); and
- Other qualitative benefits.

From initial assessment, it is likely that employment impacts and the economic benefits from the development will potentially be significant, for both the construction phase and also for the long term operational period, which is expected to generate significant numbers of well-paid permanent job opportunities in a number of activities related to the key target economic sectors of the offshore and marine energy industries. Further, the offshore and marine energy related development is likely to be compatible with the continuing and growing cruise tourism activities, which make use of the port as a key gateway to Scotland's capital city. In addition indirect and induced employment opportunities are also anticipated to be created as a result of the project.

Thus, indicative figures on employment drawn from the Port of Leith Stage 1 Scoping Study suggest that substantial employment could result from the proposed development which would be considered in the assessment.



In addition, a major project of this nature could potentially have an impact on tourist or visitor attractions and facilities in the surrounding area.

5.11.6. Mitigation

Mitigation measures will aim to minimise and, where possible avoid, adverse impacts caused by the proposed development. Positive impacts will also be maximised where such opportunities exist. As with impact identification, mitigation measures will be split into those relating to construction and operational phases, depending on the nature of the impacts identified.

During the construction period potential mitigation may comprise aiming to maximise the benefit to the local community, through procurement of goods and services from the local or regional economy where possible and commercially sound, compiling a list of local companies interested in working on the project and a list of individuals with their skills from the locality, making these lists available to major contractors, setting up appropriate training courses, and also working with the local community to ensure there are no barriers placed in the way of their participation in construction opportunities.

In terms of the permanent operation of the proposed development, potential mitigation could involve local employment and training or skills initiatives, to provide the maximum opportunity for the local community to benefit from the development, to gain valuable technical and transferrable skills, and contribute towards reductions in social deprivation, youth and long-term unemployment, and low incomes in the surrounding area.

5.12. Aviation and Telecommunications

Any large structure, such as a large warehouse, can cause interference with communication systems such as telecommunication systems, television and radar by reflecting and scattering electromagnetic signals, depending on its location, the materials and dimensions of the structure(s). This can cause blocking or distorting of the signal, or reflected signals may be superimposed on the original signal (commonly referred to as 'ghosting'), with the result that the signal at the receiver will be degraded, decreasing the performance and reliability of the service.

5.12.1. Proposed EIA Methodology

The assessment will comprise a thorough consultation exercise to establish the impacts of the proposals. The following list illustrates those consultees that will be contacted during the course of the EIA:

- Civil Aviation Authority;
- Ofcom;



- Maritime and Coastguard Agency;
- National Air Traffic Service (NATS);
- Forth and Tay Navigation Services;
- BAA Edinburgh;
- Defence Estates;
- BBC;
- CSS Spectrum management;
- Joint Radio Company;
- Network Rail; and
- Scottish Water.

No bodies have yet been consulted specifically in relation to telecommunications and aviation during the preparation of this scoping study.

Should the results of the consultation process indicate a potential environmental impact, then this will be addressed through design. However should no telecommunication links or aviation issues arise, this will be stated in the Project Description chapter.

An assessment will also be made of the likely impacts on television reception in the surrounding area.

5.12.2. Baseline Description

Edinburgh Airport is located approximately 11.5km south west of the proposed site.

TV signals are transmitted in the Leith area from various sources, including the Black Hill transmitter (NS828637) Craigkelly (NT233872) transmitter and the Angus (NO394407) transmitter.

5.12.3. Potential Impacts

The land based element of the proposed scheme will comprise large blocks of buildings which have the potential to cause interference with communication systems such as telecommunication systems, television and radar by reflecting and scattering electromagnetic signals, depending on its location, the materials and dimensions of the structure(s). This can cause blocking or distorting of the signal, or reflected signals may be superimposed on the original signal (commonly referred to as 'ghosting'), with the result that the signal at the receiver will be degraded, decreasing the performance and reliability of the service.



5.12.4. Mitigation

Where impacts on communication systems are predicted, the design of the project may need to be adjusted and discussions will be held with the appropriate bodies to identify a cost effective solution, if appropriate.

5.13. Air Quality

5.13.1. Introduction

This section deals with the potential air quality impacts associated with the proposed development.

5.13.2. Guidance

The assessment of the potential air quality impacts will be carried out in accordance with, or with reference to, the relevant guidance produced by the Scottish Government, Scottish Environment Protection Agency and other relevant UK regulatory and professional bodies. This will include the following guidance:

- Scottish Government, Local Air Quality Management, Technical Guidance LAQM. TG (09), February 2009;
- Institute of Air Quality Management, '*Guidance on the Assessment of the Impacts of Construction on Air Quality and the Determination of their Significance*' January 2012;
- Greater London Authority, '*The control of dust and emissions from construction and demolition: best practice guidance*', November 2006;
- Environmental Protection UK, Development Control: Planning for Air Quality (2010 Update); and
- SEPA, Odour Guidance 2010, Version 1, January 2010.

5.13.3. Proposed EIA Methodology

Construction

The construction of the proposed scheme may generate emissions of dust which could affect nearby residential or sensitive locations.

It is proposed that the potential dust impacts arising during construction of the proposed outer berth and the land based development are appraised using guidance recently developed by the Institute of Air Quality Management (IAQM). This provides a method for determining the risk posed by demolition and construction activities and, based on the calculated risk level associated with the construction activities and the sensitivity of the surrounding environment (including both human and sensitive habitat receptor locations), specifies in separate guidance (produced by the Greater



London Authority) a suite of recommended mitigation measures to minimise any off-site dust impacts. A risk level is then calculated, subsequent to the application of the recommended mitigation measures, to demonstrate the residual impacts during the construction phase. The mitigation measures set out in the guidance are applicable to a wide range of demolition and construction activities and would be representative of the activities associated with the construction of the proposed outer berth, supplemented with best practice for marine-based construction.

There may also be potential odour impacts associated with the excavation and storage of potentially odorous material, such as sediment from the Port area / seabed or use of seabed material extracted from the Middle Bank Extraction Area.

A qualitative risk-based appraisal will be carried out to determine the likely risk of odour impacts at nearby sensitive areas and suitable mitigation measures will be recommended. For example, this may focus on the methods employed for dredging and placement of the materials.

It is anticipated that the recommended dust and odour mitigation measures set out in the Air Quality chapter of the ES would form the basis of dust and odour management plans or a combined Construction Environmental Management Plan (CEMP) which would be agreed with the relevant authority prior to any construction works commencing.

Emissions to air from construction plant or machinery associated with the construction of the proposed development may have the potential to impact at nearby existing residential properties. If it is considered that the level of activity is such that emissions from the on-site plant have the potential to impact at the nearest residential properties (i.e. the scale and massing of on-site plant such as dredging barges and earth moving equipment is relatively large), details on construction activities and type of plant will be used to build an emissions source representing the likely plant to be working at any one time in the construction areas. A conservative modelling assessment of emissions from plant which could arise during the construction phase will be carried out, assuming that these occur at the closest point within the development area to the nearest existing / consented residential properties on the Western Harbour or in Leith. The emissions will be modelled using the ADMS 4.2 modelling software using 5 years of meteorological data recorded at Edinburgh Gogarbank. As the area for the land based development is relatively large, the on-site construction plant source can be moved to other areas of demolition or construction to determine if the dispersion contours intersect with nearby residential properties and calculate any potential impact. Airborne emissions from construction plant / machinery are temporary in nature and therefore are not considered to lead to any long-term potential impact at nearby sensitive habitat sites. This particular aspect has therefore been scoped out of the air quality assessment.

At this stage, the road traffic movements associated with the construction of the proposed outer berth have not been established. However, it is assumed that the volume of construction traffic



travelling to and from the site associated with the construction of the new marine access will not exceed the criteria set out in the Environmental Protection UK (EPUK) guidance. This sets out criteria and thresholds for requiring detailed assessment of road traffic emissions.

It is assumed at this stage that the development of the landward aspects will be progressed in stages. On this basis, the volume of construction traffic is not likely to be significant on the local road network as it will not occur simultaneously. The projected construction traffic will be compared to the EPUK criteria and, assuming there will not be any additional movements within the Leith Air Quality Management Area (AQMA), it is anticipated that this should be sufficient to demonstrate that any additional movements associated with the construction of the land-based elements will not lead to any significant increase in pollution at relevant receptor locations. However, if the volume of traffic exceeds the EPUK criteria, a detailed assessment of road traffic emissions will be carried out in line with the methodology set out for the operational phase below.

Land-based Development – Operation

There may be a potential impact on local air quality as a result of the additional road traffic movements associated with the operation of the land based developments once these are operational. The road traffic movements are likely to include staff car movements travelling to and from work and deliveries of goods and materials using light goods and heavy goods vehicles. The increase in road traffic movements has the potential to lead to increases in concentrations of nitrogen dioxide (NO₂) and fine particulates (PM₁₀ and PM_{2.5}) at sensitive locations (i.e., residential accommodation) close to the local road network.

Given the scale of the land-based development, it is likely that the operational traffic generation on the local road network will exceed the criteria for detailed assessment of road traffic emissions set out in the EPUK guidance. On this basis, the potential impacts of emissions from road traffic associated with the proposed development will be identified using a dispersion modelling technique as follows:

- A quantitative modelling technique will be used to evaluate the predicted key air pollutant levels (NO₂, PM₁₀ and PM_{2.5}) resulting from traffic emissions on the nearby road network adjacent to the Port (the A199: Commercial Street, Bernard Street, Baltic Street and Salamander Street). If any traffic increases are forecast within the current Leith AQMA (Great Junction Street / Ferry Road), which would be considered to be measureable (e.g. more than a 5% change in traffic levels), then this area will also be assessed using a quantitative modelling technique. A state-of-the-art model for representing road traffic emissions, ADMS-Roads version 3.1, will be used to model pollutant levels. We will agree relevant receptor locations and other detailed study inputs, such as traffic flows, with CEC, where appropriate, prior to



undertaking the assessment. The dispersion model will be run using five years of hourly sequential meteorological data recorded at Edinburgh Gogarbank weather station.

- The assessment will be carried out for the “without development” (i.e., do nothing) scenario and the “with development” (do something) scenario for the first year of completion of the initial phases of the land-based development, and one further assessment year as the landward development progresses towards completion, if required.
- A model verification exercise will be carried out in accordance with the appropriate LAQM. TG(09) guidance to ensure model predictions are robust. This will be conducted in the same way as the verification exercise for the Leith Renewable Energy Plant, where model predictions for a past year were compared to actual measurements on Great Junction Street, Ferry Road, Commercial Street and Bernard Street. Verification for PM₁₀ will also be carried out using the analyser measurements at Salamander Street (although it is understood that these are likely to also include a contribution from nearby industrial sources).
- Contributions from any other sources not modelled (i.e. other existing roads or industrial sources) will be represented by incorporating appropriate baseline levels which will be agreed with CEC. The vehicle flows on the local road network associated with any cumulative developments (i.e. those developments with planning permission which are not yet operational) will be incorporated into the assessment.
- The significance of the results will be determined using the overall approach set out in the EPUK guidance. The magnitude of change and impact descriptors will first be determined using the method set out in Chapter 5 of the EPUK guidance. The overall significance of the results will follow the approach set out in Chapter 6 of the EPUK guidance.

The operation of the proposed development may generate additional shipping movements. As this will fall under Forth Ports permitted development rights, it is considered that potential ship emissions are scoped out of the EIA.

CEC, SEPA and SNH will be contacted during the course of the EIA.

5.13.4. Baseline Description

The environment that may be affected is the amenity at nearby residential and other sensitive locations in terms of dust and odours.

The local air quality environment may also be affected by the additional vehicles on the local road network during the construction and operational phases, shipping movements and construction plant. These could lead to increases in the concentrations of key substances: NO₂, PM₁₀, PM_{2.5} and SO₂.



The nearest residential area to the proposed outer berth is the existing and consented residential accommodation on the Western Harbour area. The nearest existing houses are approximately 550m to the south-west of the nearest section of the proposed outer berth. There is also consented residential and mixed-use development which could be approximately 400 – 500m to the south and south-west of the nearest section of the proposed outer berth.

The nearest residential areas to any of the development plot areas for the proposed land based development are on Ocean Way / Ocean Drive, Constitution Street, Tower Street and Salamander Street generally to the west / south-west of the development plot at Edinburgh Dock. The closest residential areas (those on Ocean Way / Ocean Drive) are approximately 150m to the nearest section of the development plot.

As described above, CEC has declared an AQMA in the Leith area which currently covers Great Junction Street and a section of Ferry Road. This was declared due to exceedences of the annual mean NO₂ air quality objective because of emissions from road traffic. CEC is currently planning on extending the Leith AQMA to include Bernard Street where recent measurements have indicated that the annual mean air quality objective for NO₂ may be exceeded at relevant exposure locations close to the road. There are two other AQMAs within the CEC area covering the city centre (Central AQMA) and St Johns Road (St Johns Road AQMA). These were also declared on the basis of elevated NO₂ concentrations due to emissions from road traffic. CEC has set in place an Air Quality Action Plan (AQAP) which includes measures to reduce nitrogen dioxide concentrations across the city and within the AQMA zones.

The baseline concentrations of substances will be taken from measurements undertaken by CEC in the Leith area. These comprise NO₂ diffusion tube measurements at a large number of locations adjacent to the key local roads which are to be considered in the assessment (i.e. Commercial Street, Bernard Street, Baltic Street and Salamander Street, including those measurements within the AQMA on Great Junction Street and Ferry Road). CEC also carries out measurements of PM₁₀ on Salamander Street. Urban background concentrations would be sourced from appropriate urban background diffusion tube measurements or from the St Leonards automatic monitoring station operated by CEC. CEC will be contacted to obtain the latest available measurement data and to agree use of specific concentrations at the various receptor locations for the air quality assessment.

It is anticipated that, if required, some baseline dust deposition monitoring would be carried out as part of the CEMP which would be agreed with CEC prior to any construction works commencing. This would set the baseline against which future construction operations would be considered.



5.13.5. Potential Impacts

Potential impacts on air quality are summarised below.

Construction

The construction of the proposed development may generate emissions of dust which could affect nearby residential or sensitive locations. If not controlled properly, dust emitted from the construction areas could deposit onto residential gardens, windows, cars etc causing a loss of amenity.

Emissions to air from construction plant or machinery could potentially impact upon ambient air quality. The emissions of substances associated with the combustion of petrol/diesel are similar in nature to those of on-road vehicles such as cars, vans and lorries. Health would only potentially be affected if the concentrations of those substances are in exceedence of the respective health-based air quality objectives.

With regard to the potential odour impacts associated with the excavation and storage of potentially odorous material associated with construction of the outer berth, this may also cause a loss of amenity at nearby residential or public areas due to malodours being detected by residents or users of public areas.

Land-based Development – Operation

Emissions to air from road vehicles such as cars, vans and lorries associated with the operation of the land-based development could potentially impact upon ambient air quality at locations close to the local road network. Health would only potentially be affected if the concentrations of those substances (NO₂, PM₁₀ and PM_{2.5}) are in exceedence of the respective health-based air quality objectives.

5.13.6. Mitigation

The air quality assessment will identify relevant mitigation measures which could be implemented to minimise any significant air quality impacts at sensitive locations. With regard to the construction phases, this will focus on mitigation measures to prevent or minimise the release of dust and odours. As stated above, it is anticipated that the recommended mitigation measures will be discussed and agreed with the CEC prior to any construction works commencing. These would then form the basis of a CEMP which would consider construction activities on site and the provision of measures to address any potential significant loss of amenity for nearby residents or members of the public or any significant impacts on designated nature conservation sites.



Where appropriate, the air quality impact assessment will also include measures that will be adopted to minimise the impact on air quality in relation to emissions from combustion sources (e.g. construction plant, road vehicles, etc). This may include the use of appropriate vehicle routing, travel plans, on-site management plans.

5.14. Noise and Vibration

5.14.1. Introduction

This section deals with the potential impact of noise and vibration on nearby noise sensitive receptors (NSRs), amenity and recreational locations.

It does not deal with the impacts of noise and vibration on the terrestrial and marine ecology, which is covered in Section 5.6, 5.7 and 5.8.

The consultation bodies which have informed the scoping study are CEC and SEPA.

5.14.2. Guidance and Assessment Methodology

The Scottish Government has recently revised its guidance on noise. Planning Advice Note (PAN) 1/2011 '*Planning and Noise*' provides a general framework and advises on the role of the planning system in helping to prevent and limit the adverse effects of noise. The guidance is notable in encouraging dialogue with Environmental Health Officers at an early stage of a development. It also stresses the need for '*a pragmatic approach to the location of new development within the vicinity of existing noise generating uses, to ensure that quality of life is not unreasonably affected and that new development continues to support sustainable economic growth*'.

Further technical guidance is available in a similarly recent document TAN (Technical Advice Note): '*Assessment of Noise*' (2011). This is a detailed and clear guidance designed to assist in the technical evaluation of noise assessment. It also seeks to establish the level of significance, in terms of the effect to a receptor, of the magnitude of noise impact.

The overarching guidance from the Scottish Government is further supported in the individual noise and vibration assessments through further important guidance specific to each particular impact. These are now considered, however it should be noted that where these might conflict with the Scottish Government Guidance PAN/TAN, the Scottish Government Guidance will take precedence.



Construction and decommissioning noise

Noise during site clearance, demolition, construction and finally decommissioning is assessed in accordance with Annex E 'Significance of noise effects' of BS 5228-1:2009 '*Code of practice for noise and vibration control on construction and open sites*' – Part 1: Noise, and includes a number of methods of assessment.

Construction site noise is assessed differently to noise from permanent installations, as it is recognised that some degree of noise is an inevitable by-product of required works and that the construction works are a transient activity.

BS 5228-1:2009 provides information on construction noise levels from various plant and construction operations and provides recommendations on procedures and mitigation that can be adopted to reduce the impact of construction noise. Annex E considers the impact of construction or demolition noise to be significant if there is a 5 dB(A) increase in ambient noise (LAeq). This is subject to a lower cut-off value, for the construction or demolition noise contribution alone, of 65 dB(A) during the daytime, 55 dB(A) during the evening and 45 dB(A) at night. It is proposed to adopt the LAeq daytime value of 65 dB(A) as a criterion for significant effect for daytime construction noise.

Road traffic noise during construction and operation

Procedures for calculating and assessing road traffic noise impacts are described in the Department of Transport, Welsh Office document: Calculation of Road Traffic Noise (CRTN)¹⁶, and the Highways Agency advice note Design Manual for Roads and Bridges (DMRB), Vol 11 Section 3, Part 7 – Noise and Vibration (August 2008)¹⁷.

The latter document provides a procedure for measuring and predicting traffic noise levels (albeit based on CRTN) and estimating response of people to changes in traffic noise levels outside dwellings, expressed in terms of LA10 (18 hour). The procedure covers situations where existing traffic increases with a 25% increase threshold corresponding to a change in calculated noise level of +1dB, the smallest increment in noise increase that is generally regarded as being discernible.

The DMRB classifies the magnitude of noise impact against change in road traffic noise level. This same classification is referred to within TAN '*Assessment of Noise*', Table 2.3.

¹⁶ Calculation of Road Traffic Noise –Department of Transport, Welsh Office. Note, this document is relevant for use in Scotland.

¹⁷ Design Manual for Roads and Bridges (DMRB), Vol II, Section 3, Part 7, Highways Agency 2008. Note, this is considered to be relevant for use in Scotland.



Determination of significance of effects is based on a subjective view taking into account a number of issues, including the sensitivity of the receptors, the absolute levels of noise, the number and type of receptors affected and whether the change is temporary or permanent.

Vibration impact during construction

Vibration impact during the most critical phase of the project, especially during piling activity, can be assessed in accordance with Annex B of BS 5228-2:2009 Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration¹⁸.

Vibration limits are expressed in Annex B of BS5228-2.

It is considered that in relation to the impact to people, a significant vibration effect occurs when vibration exceeds 0.3 mms-1, if this is a permanent level of vibration from normally operating plant. It is considered that, during construction and with appropriate warnings to residents, vibration up to a limit of 1.0 mms-1 for temporary activity would be tolerated, and therefore would not constitute a significant effect.

Operational noise

Noise during the operation of the development will be assessed in accordance with guidance given in Planning Advice Note PAN 1/2011 and TAN 'Assessment of Noise' 2011.

This Scottish Government advice is clear in the way operational noise should be assessed, commenting that an evaluation in accordance with BS 4142:1997 '*Method for rating industrial noise affecting mixed residential and industrial areas*', should be undertaken.

The guidance also considers assessing, where appropriate, the change in ambient noise level assigning the magnitude of impacts and finally, the significance of effects.

Scottish Government guidance also allows consideration of absolute levels of noise as considered by the WHO.

5.14.3. Proposed EIA Methodology

The proposed methodology is dependent upon the particular aspect being considered (noise, vibration, construction, operation etc) as each is defined by the relevant guidance.

¹⁸ BS 5228-2:2009 Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration. Annex B 'Significance of Vibration Effects'.



The recent 2011 Scottish Guidance documents PAN 1/2011: '*Planning and Noise*' and TAN: '*Assessment of Noise*' give a clear methodology that should apply to projects within Scotland, and even include spreadsheet formats for information submissions to enable stakeholders to review and evaluate as necessary.

It is proposed wherever practical to carry out the methodology indicated within the Scottish Government guidance, and to use the formats suggested for information submitted.

In preparing the noise and vibration EIA, it will be important to make early contact with the key Stakeholders, especially CEC and SEPA, to share information and outline the approach. CEC and SEPA will also be contacted during the course of the EIA.

5.14.4. Baseline Description

The extensive area of the Port of Leith and its surrounding areas already incorporates widely varying uses ranging from residential through to commercial, industrial and port activities.

Whilst there will be some long established residential noise sensitive receptors (NSRs) that will need to be considered it is likely that the most critical receptors will be those associated with more recent residential development at the south and south west of the Port of Leith, and also the consented Western Harbour residential / mixed-use development.

Agreement will be sought with representatives of CEC to identify precise locations for Noise Sensitive Receptors (NSRs) and 8-10 NSRs are currently considered necessary for the whole site to get a full and complete picture of the baseline noise environment.

It is intended that attended noise measurements techniques with sampling during day and night periods will be adopted rather than the use of unattended noise monitoring. In this way, significant information regarding the nature and reasons for variations in noise levels are able to be noted by the attending acoustic engineer. In order to obtain a statistically robust set of background noise data, it is proposed to undertake attended sampled noise measurements over a period of up to 6 days. This will provide an opportunity to measure under a range of meteorological conditions and port activity levels.

5.14.5. Potential Impacts

The potential noise and vibration impacts are described within the construction phase and then the operation phase.

The impacts will depend upon the final decisions on details of the development, and methods of construction to be utilised.



Construction phase

The construction of the project is divided between the construction of the proposed marine facilities/ changes to docks and the construction of the land based infrastructure including roads, industrial developments and mixed-use developments.

Noise during the construction phase will be predicted using information contained within BS 5228-1:2009 '*Code of practice for noise and vibration control on construction and open sites*' – Part 1: Noise. A number of predictions will be made using the large quantity of reference noise data for equipment contained in the appendices of this Standard. The method of prediction will likely include computer noise modelling of a number of different construction phases and scenarios.

Data for some of the noise sources, especially those associated with the construction of the marine facilities, may not be fully defined within BS 5228 Part 1, and will therefore be obtained from either potential vendors, equipment manufacturers or from Spectrum's own measurement database of equipment noise.

The potential impact of sources of vibration will be predicted using data within BS 5228-2:2009 *Code of practice for noise and vibration control on construction and open sites* – Part 2: Vibration.

Potential sources of noise and vibration will include:

- Piling;
- Material placement including concreting associated with the gravity quay or other construction techniques;
- Other marine activity using barges including dredging;
- Miscellaneous demolition work;
- Construction of outer berth;
- Reclamation activity and machinery;
- Road infrastructure construction;
- Construction of land based development for a mix of uses; and
- Road traffic during the construction phase.

Operational Phase

There will be a large range of noise sources considered during prediction of noise from operations at the Port of Leith. These include those associated with the type of activity present already within the port, but may be extended to new or alternate locations or intensified port activities. There may also be some new types of noise from new sources.



Sources considered will include:

- Noise from operating industrial units; and
- Noise from road activity on nearby road networks.

It is proposed that the impact of ground borne vibration generated during operations are to be scoped out from further consideration in the EIA due to there being no anticipated significant sources and effects.

Cumulative Impacts

Assessment procedures in BS5228 for construction noise indicate that limits should be applied at single NSRs but should be appropriate to one development site only. In this instance the site is extensive and predictions will be undertaken representing different phases in the construction programme. At each of these phases, and at each NSR, there will be a cumulative build up of noise from a wide range of construction activity over the whole port site.

Cumulative assessment will however be undertaken for noise during operation, to include noise from any consented industrial site within the area, which is not yet operational, and not therefore contributing to the surveyed ambient noise levels. Noise data on other potential new developments will be taken from relevant EIAs or Noise Impact Assessments submitted to relevant stakeholders.

5.14.6. Mitigation

Construction Phase

The Scottish Government stresses in *TAN: 'Assessment of Noise' 2011*, the value of the previous 1997 version of this Standard, which shall be used in relation to ensuring any Contractor complies with Codes of Practice as required within the 1974 Control of Pollution Act.

The main method of mitigation will be restriction of hours of work to normal working hours.

Sequencing of the different stages of the development will affect the noise impact.

Potential Operational Phase Mitigation

Where noise mitigation is identified as being necessary, consideration will be given to the control of operational noise by careful acoustic specification and design of the development and in particular consideration of the detailed layouts, and introducing shielding by ensuring vehicle access doors are directed away from the most noise sensitive directions, and any external plant or yard areas are also shielded by larger buildings on the site, where possible.



5.15. Traffic and Transport

5.15.1. Introduction

This section will deal with the potential traffic and transport impacts resultant from the proposed development. It will consider the impacts of the construction and operational stages of both the marine access and terrestrial elements of the project.

It is intended that the overall project scoping activities, of which this document is the initial part, will confirm the following:

- Suitability of the technical parameters for the studies and proposed assessment methodology;
- Availability of traffic flow information and the need for further traffic surveys;
- Arrangements for transporting construction equipment and material
- Arrangements for accommodating abnormal loads;
- HGV routes for operational and construction phases
- Accident records;
- The location of the key sensitive receptors for air quality and noise assessments; and
- Other stakeholders to be consulted such as Lothian buses, maritime services, walking and cycling groups.

A full Transport Statement and/or Assessment will be prepared as a standalone supporting document. The preparation of this will inform the assessment of environmental effects in consultation with other team members.

5.15.2. Guidance

The environmental impacts attributable to the construction and operational phases of the marine access and terrestrial projects will be undertaken using the '*Guidelines for the Environmental Assessment of Road Traffic*' published by the IEMA. In accordance with this guidance issues relating to road traffic will be investigated including traffic generation, severance, driver delay, pedestrian amenity and delay, accidents and road safety.

This document will be used as the primary guide for the analysis, although this will be supplemented by further guidance produced by the Scottish Government entitled '*Transport Assessment and Implementation: A Guide*', Planning Advice Note 75 (PAN 75) – '*Planning for Transport*' and Scottish Planning Policy (SPP).



5.15.3. Proposed EIA Methodology

In projects of this nature it is common practice for a separate Transport Assessment or Statement to be produced in addition to the Transport and Traffic Chapter of the EIA for all elements of the project. It is envisaged that a more limited Transportation Statement would suffice for the marine based element with a full TA for the land based element. The following text provides the methodology for each.

Transportation Statement for Marine Based Development

The assessment will be primarily undertaken using the '*Guidelines for the Environmental Assessment of Road Traffic*' (IEMA).

Baseline road traffic conditions will be established using either existing road traffic data or by commissioning new surveys where gaps in the existing data are present. This data will be used in conjunction with the proposed marine based development trips by all modes to identify potential impacts on the key parameters outlined in the guidance for both the construction and operational phases and propose measures to mitigate these. The assessment will consider both the local area impacts in Leith and also the wider impacts considering the catchment draw for construction workers and also the routing strategy for any construction HGV traffic.

Transport Assessment for Land Based Development

Currently there is a minded to grant decision in place for the Leith Docks Development comprising a residential led mixed use scheme. The supporting Transport Assessments and the previous Colin Buchanan work which used the Council's tram model showed this development to be a very significant trip generator with a heavy reliance placed on a modal shift to tram and bus to achieve a no net detriment effect on the operation of the local road network. This work considered a large area in Leith and North Edinburgh with Ferry Road forming the study area boundary to the south, Seafield to the east and Newhaven to the west.

Since the work was undertaken the decision has been made to terminate the tram at St Andrew Square and more importantly Forth Ports have indicated their intention not to progress with the previous residential led mixed-use scheme. The uses now proposed for the land based development are likely to generate significantly less traffic and the TA will need to account for this significant change. The TA will be carried out in accordance with the guidance previously discussed and seek to determine:

- The transport impacts during both the construction and operational phase by all relevant transport modes (excluding consideration of the Edinburgh Tram) including:
 - Sustainable travel networks



- Junction capacity impacts
 - Road safety concerns
 - Heavy and abnormal vehicle routes if required
- Mitigation of any material impacts including preparation of a Travel Plan; and
- Monitoring arrangements for the Travel Plan once implemented.

The proposed study area for the TA extends from Newhaven in the west to Seafield in the east and is less than that considered for the previous Masterplan. The junctions to be addressed in the TA, subject to confirmation through detailed scoping discussions with the council and TS, are therefore as follows:

- Ferry Road / North Junction Street;
- Leith Walk / Great Junction Street / Constitution Street;
- Lindsay Road / Newhaven Place;
- Lindsay Road / Commercial Street / North Junction Street / Ocean Drive;
- Commercial Street / Bernard Street / Shore;
- Bernard Street / Constitution Street / Baltic Street;
- Bath Road / Salamander Street;
- Salamander Street / Seafield Place / Seafield Road; and
- Seafield Road / Marine Esplanade.

In the first instance a threshold analysis will be undertaken to identify those junctions where traffic under the development proposal demands will increase by more than 5% over the background flows, these junctions will be taken forward for further assessment.

5.15.4. Baseline Description

The proposed study area contains a mix of residential, leisure, industrial and retail areas with a mixture of strategic and local roads. Development in recent years in the area has resulted in enhancement of public transport provision, with the area also benefiting from good walking and cycling infrastructure.

Traffic accessing the site will likely utilise the existing road network with exact points of access to be determined.

The road network around the Port of Leith can be congested at peak times and there is a high proportion of heavy goods vehicle traffic due to the existing operational port and also the industrial uses in the area. Typically, the heavy vehicle traffic travels on more strategic routes and therefore outside immediate vicinity of the site the proportion of heavy vehicle traffic reduces as routes



become more local. Within the study area there are also large trip attractors such as Ocean Terminal.

5.15.5. Potential Impacts

The following are considered as potential impacts of the project:

- Lengthy phased construction period during which heavy and/or abnormal vehicle trips may be generated, although it is expected that construction equipment and materials will generally arrive by sea. Any residual construction related trips made on the road network will require impact on traffic flow and road safety to be managed;
- Increased movement of people during all stages of the project requiring capacity on public transport and road networks; and
- Leisure, industrial and retail areas within the study area are in close proximity and juxtaposed to the residential areas which can result in residential amenity issues.

5.15.6. Mitigation

For the construction phase, it is likely that the principal mitigation measure will be the production of a Construction Traffic Management Plan which will restrict heavy vehicles movements to specific routes and times during the construction phase but also provide a basis to control heavy vehicle movements during the operational stage should this be required. Infrastructure condition surveys are likely to be required, providing a benchmark against which post completion impact will be measured to identify remediation requirements.

Mitigation measures during operation will also be considered as part of the EIA.

The significance of any increase in traffic flow will be set against recognised criteria within the EIA chapter.

5.16. Shipping and Navigation

5.16.1. Introduction

This section deals with shipping and navigation risks associated with the marine consenting area for the proposed Port of Leith development.

5.16.2. Guidance

Specific guidance related to the consideration of marine risk will include the International Maritime Organisation (IMO) guidelines for Formal Safety Assessments and the principles of the Port



Marine Safety Code (PMSC). In addition, the following guidance will be considered when assessing the risks associated with the proposed Port of Leith Development:

- Provision of Harbour Works (EIA) Regulations 1999 – Sets out the procedure for making harbour orders (including HROs) in accordance with the provisions of the EIA Directive. Project requires EIA if it falls within Annex I or II of the EIA Directive;
- The Marine Works (EIA) (Amendment) Regulations 2011 – Makes provision for EIA in accordance with the provisions of the EIA Directive for licensable marine activities under the Marine Act;
- IMO (2002) – Guidelines for Formal Safety Assessment for use in the IMO Rule Making Process (MSC/Circ.1023/MEPC/Circ.392);
- Port Marine Safety Code (PMSC) 2009 – The Department of Transport; and
- Forth Ports Port Marine Safety Code

5.16.3. Proposed EIA Methodology

The proposed EIA methodology to identify impacts on shipping and navigation will be to establish the existing shipping and navigation baseline and is based on feedback from consultation with the Forth Harbour Master on the 13th August 2012.

It is anticipated that a navigation risk assessment (NRA) will be required to inform the EIA, which will include:

- Detailed baseline description of marine environment;
- Marine Traffic Analysis for the area of development (minimum 28 days);
- Collision risk modelling during (base and future case) including consideration for tidal and meteorological conditions;
- Stakeholder consultation; and
- Impact Assessment, mitigation measures and residual impacts.

The consultation process will establish the level of concern over the potential impacts and reveal any measures, in addition to those measures that are already in place, that are considered necessary in order to ensure the safe navigation of both commercial and recreational vessels.

The following list illustrates those consultees that have been or will be contacted during the course of the EIA;

- Northern Lighthouse Board (NLB) (Safety of Navigation and Aids to Navigation);
- Forth Ports Harbour Authority
- Chamber of Shipping



- Royal Yacht Association (RYA) Scotland; and
- Local fisheries representatives.

5.16.4. Baseline Description

This section presents baseline information relating to navigation of vessels within in the vicinity of the Port of Leith. Data sources include UK Admiralty Charts 734 and 735 and the Admiralty Sailing Direction – North Sea (West) Pilot, NP 54 for the Firth of Forth Area. Figure 5 and Figure 6 present general and detailed overviews of the navigational features in proximity to the Port of Leith. The Port of Leith contains a number of locked berths for vessels up to 259m length and 31.6 metres beam including large bulk carriers, support and supply vessels.

The Port of Leith is generally approached via the Leith Channel (shown in Figure 5), which runs through South Channel and Narrow Deep, to a position to the southeast of Inchkeith Island. Entry to the port is through a dredged approach channel with a maintained depth of 6.7m marked with a port lateral buoy Leith Approach.

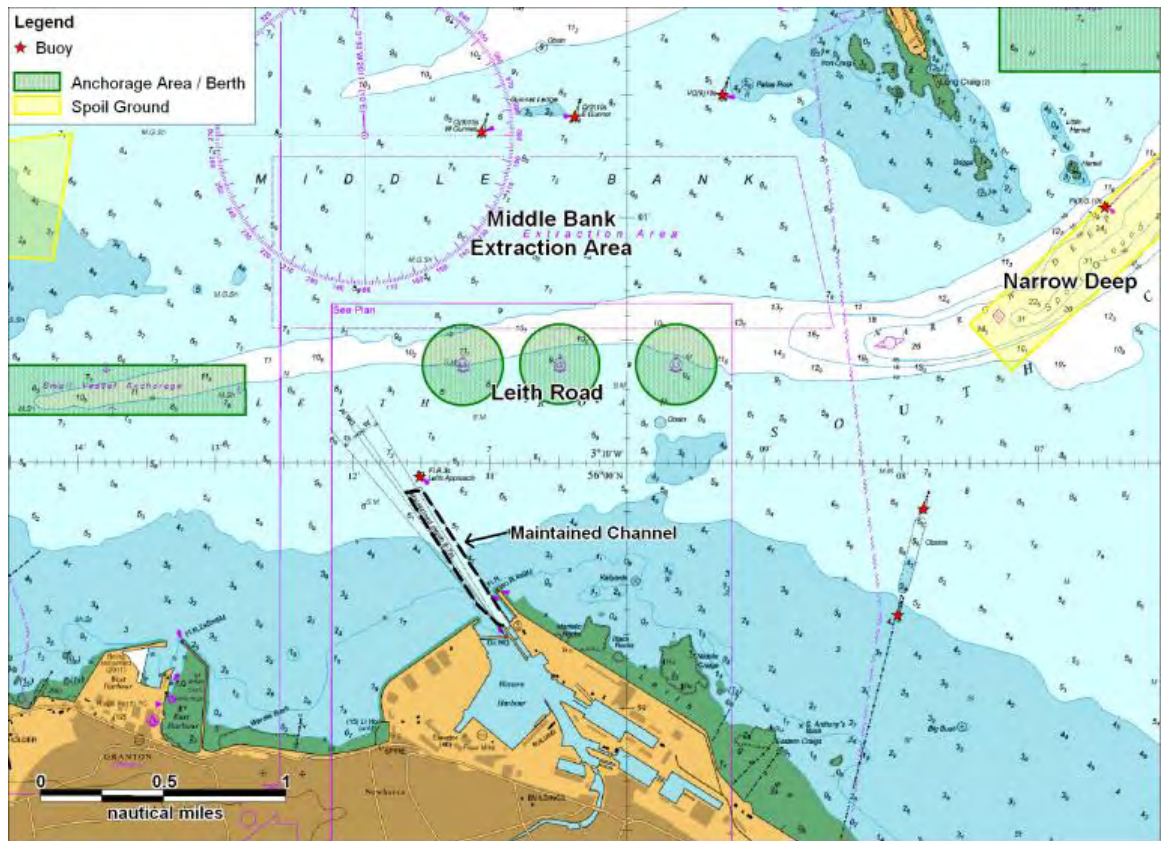
For vessels carrying twelve or more passengers, pilotage is compulsory within the Forth on passing west of 3° W (in the vicinity of the eastern limits of the Forth Deep Water Channel and Leith Channel). Pilotage is also compulsory for vessels bound for South Channel and Leith of 45m Length Overall (LOA) or more carrying dangerous cargoes, and all other vessels of 80m LOA or more, on passing west of 3° 06' .1 W (the western limit of the Leith Channel, to the southeast of Inchkeith). Vessels of 150m length and over and vessels carrying twelve or more passengers embark the pilot at the Fairway Light Buoy, at the eastern limit of the Leith Channel, whereas vessels of less than 150m in length routeing to South Channel embark the pilot within the Leith Channel as shown in Figure 5. Pilot vessels operate out of the Forth Pilot Station at Granton on the south of the Firth of Forth.

Vessels navigating within the Firth of Forth are covered by the Forth and Tay Vessel Traffic Service (VTS), which is a Marine Traffic Organisation Service. A traffic organisation service includes the operational management of traffic and the forward planning of vessel movements to prevent congestion and dangerous situations, and is particularly relevant in times of high traffic density or when the movement of special transports may affect the flow of other traffic.

This nautical chart depicts the Firth of Clyde, Scotland, with a focus on the Leith Channel and the Middle Bank Extraction Area. Key features include:

- Legend:**
 - ★ Pilot Station
 - Green shaded areas: Anchorage Area / Berth
- Channels and Waterways:**
 - Leith Channel:** A major waterway running diagonally from the bottom right towards the top right.
 - Forth Deep Water Channel:** A channel running horizontally across the upper middle section.
 - Middle Bank Extraction Area:** A central area marked with a yellow circle and labeled "MIDDLE BANK EXTRACTION AREA".
- Geographical Features:**
 - Leith:** The town of Leith is located at the bottom left, with a label "Leith" and a small inset map showing its location relative to Glasgow.
 - Islands and Headlands:** Various islands and headlands are labeled, including "SINGHLETON NESS", "SOUTH", and "NORTH CHANNEL".
- Navigation and Depth:**
 - Depth soundings are provided throughout the chart in fathoms (e.g., 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100).
 - Navigation aids include "Pilot Station" (marked with a red star) and "Small Vessel Anchorage" (marked with green circles).
- Scale and Orientation:**
 - A scale bar at the bottom left indicates distances in nautical miles (0, 1, 2).
 - A compass rose is located in the bottom right corner, showing magnetic variation.

Figure 6 Detailed Overview of Navigational Features in proximity to Port of Leith



It can be seen that there are three designated anchorages with swinging circles in Leith Road, to the north of the port, and a small vessel anchorage area approximately 1.3 nautical miles (nm) to the northwest. These anchorages lie within the area of compulsory pilotage and, according to the local reference, vessels bound for Leith normally use Inchkeith Small Vessel Anchorage or Aberlady Bay Anchorage, further to the east.

The western limit of the dredged approach channel is indicated by a directional light beacon (144°-145°) by night, and by alignment (146°) of limiting marks during the day.

The vast majority of vessels routeing to and from Leith use the existing dredged and maintained channel to the harbour entrance. Vessels using Leith Docks include passenger vessels (cruise ships), cargo vessels, tugs, offshore support vessels and for example include facilities for agricultural, coal and aggregate cargoes.

Although there are marinas in Granton, there is limited recreational activity in the vicinity of the proposed development. The majority of activity, is based around Port Edgar near the Forth Road Bridge, approximately 14 km west of the Port of Leith.



5.16.5. Potential Impacts

The following receptors are likely to be affected by the proposed development;

- Commercial vessels including regular operators who use Leith Docks; and
- Small craft including recreational vessels.

The following have been identified as potential impacts for the proposed development, however, further data collection and consultation will be required to fully assess the impacts:

- Impacts on vessel navigation into the Port of Leith during construction when areas of navigable water will potentially be restricted due to on-going activities potentially increasing collision risk;
- Encounters with small recreational craft, displaced commercial vessels and traffic associated with construction, which could mean displacement and increased collision risk, though recreational activity is low in the vicinity of Leith Docks;
- Impacts on existing Aids to Navigation associated with the entrance to the Port of Leith including the directional light beacon or buoyage; and
- Positive impacts include the creation of new facilities for commercial operators in the Firth of Forth including the ability to accommodate an increased number and type of vessels in the Port as well increasing quay space for larger vessels.

The impacts that are proposed to be scoped out from further consideration in the EIA due to there being no anticipated significant effects are.

- Impacts on Emergency Response and Search & Rescue providers in the area due to the limited area of and shore based nature of the development;
- Impacts on commercial fishing which is limited in the vicinity of Leith Docks; and
- Impact of vessel anchoring within the Leith Road area due to the distance from the proposed development.

5.16.6. Mitigation

Forth Ports frequently manage development and construction activities within their harbour limits. As the Harbour Authority through statutory regulation, the actively and responsibly manage shipping receptors within the Forth and Tay through the Forth and Tay Navigation Service. During the construction and operation of the Leith Docks extension there are not expected to be any additional mitigation required they do not already undertake such as:



- Extensive provision and promulgation of information including recreational users and clubs within the area notifying them of construction works;
- Effective co-ordination of marine works including liaison with the Forth and Tay Navigation Service to implement guidance and future planning for safe navigation during the construction works; and
- Additional or amendments to existing Aids to Navigations both during construction and post development to aid navigation within the area.

It is noted that this is a high level review and all mitigation will be reviewed and refined during the Navigation Risk Assessment process.

6. Habitat Regulations Appraisal

6.1.1. Introduction

Under Article 48 of the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended in Scotland) (the Habitats Regulations) “*a competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which- (a) is likely to have a significant effect on a European site in Great Britain (either alone or in combination with other plans or projects), and (b) is not directly connected with or necessary to the management of the site, shall make an appropriate assessment of the implications for the site in view of that site's conservation objectives.*”

European protected sites are either Special Protection Areas (SPAs) or a Special Areas of Conservation (SACs) and are collectively referred to as Natura 2000 sites. Natura 2000 is a European network of protected sites which represent areas of the highest value for natural habitats and species of plants and animals which are rare, endangered or vulnerable in the European Community. Ramsar sites are designated as Wetlands of International Importance under the 1971 Ramsar Convention. The Scottish Government applies the same considerations to their protection as if they were classified as SPAs or SACs¹⁹.

Consideration of proposals affecting European sites under regulation 48 of the Habitats Regulations is commonly referred to as Habitats Regulations Appraisal (HRA). A stand-alone report to inform a HRA will be provided alongside the ES. The proposed scope of this report, which is based on advice provided by SNH in January 2012 and discussed further at a pre-scoping meeting in July 2012, is set out below.

6.1.2. Guidance

The report to inform a HRA will take account of the requirements of, and advice given in:

- SNH (2010). ‘*Natura sites and the Habitats Regulations: How to consider proposals affecting SACs and SPAs in Scotland – the essential quick guide*’²⁰;
- SNH (undated). Legislative Requirements for European Sites²¹;

¹⁹ Revised Guidance Updating Scottish Office Circular No. 6/1995, 2000):

<http://www.scotland.gov.uk/library3/nature/habd-00.asp> [accessed 07/08/12]

²⁰ <http://www.snh.org.uk/pdfs/publications/corporate/Natura%20sites%20and%20the%20Habitats%20Regulations%20an%202011.pdf> [accessed 07/08/12]

²¹ <http://www.snh.gov.uk/docs/A423286.pdf> [accessed 07/08/12]



- European Commission. 2000. *Managing Natura 2000 Sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/CEE*. Office for Official Publications of the European Communities, Luxembourg²²;
- *The Consolidated Scottish Planning Policy (SPP)* (February 2010), paragraphs 134-136²³;
- Scottish Government. 2010. Planning Circular 1/2009: Development Planning Appendix 1: The Habitats Regulations²⁴;
- SNH (2006). Guidance for Competent Authorities when dealing with proposals affecting SAC freshwater sites²⁵; and
- Revised Guidance Updating Scottish Office Circular No. 6/1995, 2000²⁶.

Other relevant published and unpublished sources will also be consulted as appropriate.

6.1.3. Proposed Methodology

There will be a number of consenting regimes involved in this project and there are therefore likely to be a number of different competent authorities (as defined in the Habitats Regulations). The above notwithstanding, it is proposed to produce a single report to inform a HRA covering the whole project. This is consistent with the approach used for the EIA in which a single ES will be produced covering the whole project, despite there being a number of different consenting bodies.

In line with SNH guidance, the following European sites will be considered in the HRA:

- Firth of Forth SPA/Ramsar Site²⁷;
- Forth Islands SPA;
- Imperial Dock Lock, Leith SPA;
- Isle of May SAC;
- Firth of Tay & Eden Estuary SAC;
- Berwickshire and North Northumberland Coast SAC;
- River Teith SAC; and
- Moray Firth SAC.

²² http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/provision_of_art6_en.pdf [accessed 07/08/12]

²³ <http://www.scotland.gov.uk/Topics/Built-Environment/planning/National-Planning-Policy/newSPP> [accessed 07/08/12]

²⁴ <http://www.scotland.gov.uk/Publications/2010/09/03095123/0> [accessed 07/08/12]

²⁵ <http://www.snh.org.uk/pdfs/publications/heritagemanagement/guidanceforcompetentauthorities.pdf> [accessed 07/08/12]

²⁶ <http://www.scotland.gov.uk/library3/nature/habd-00.asp> [accessed 07/08/12]

²⁷ SNH has advised that a separate assessment relating to the Ramsar site is not required, although a separate conclusion should be drawn for the Ramsar site.



SNH guidance²⁰ identifies the following three steps as part of HRA:

- Step One: Is the proposal directly connected with or necessary for site management for nature conservation?
- Step Two: Is the proposal likely to have a significant effect on the site?
- Step Three: Can it be ascertained that the proposal will not adversely affect the integrity of the site?

The proposed development is not directly connected with or necessary for site management for nature conservation and therefore the HRA will begin at Step Two.

Step Two acts as a scoping stage to identify whether it can be ruled out that a proposed development, both alone and in combination with other proposed developments, will have an effect on a Natura 2000 site. For an impact to be possible there must be a connection between the proposal and the qualifying Natura 2000 interest. For example, if the application site is on a migration route of a qualifying fish species, or is located within the catchment of a freshwater Natura 2000 site, such a connection is present. Where there is no connection, no impact is possible and the Natura 2000 interest can be excluded from further consideration. If an effect cannot be ruled out, detailed assessment under Step Three is required.

Step Three comprises an 'Appropriate Assessment' (AA) with the aim to establish beyond reasonable scientific doubt that a proposal will or will not adversely affect Natura 2000 site integrity. This step therefore takes into account the conservation objectives for each interest feature for which the relevant site is classified and for each designation where a site is classified under more than one international obligation. In addition, where both primary and secondary qualifying interests occur, these must both be evaluated.

Taking the above into consideration the report to inform a HRA will include the following sections:

- Project description – this will describe the proposed development in terms of the scale and magnitude of possible effects.
- Potential for impacts – this will act as a screening stage and consider whether the proposed development, including proposed mitigation measures, is capable of affecting the qualifying feature or features of a Natura 2000 site, either alone or in combination with other plans or projects. Where there is no connection between the proposal and the qualifying interest, or where it is very obvious that the conservation objectives for the site's qualifying interests will not be undermined despite a connection, the qualifying interest can be ruled out from further consideration.
- Information to inform an appropriate assessment – where likely impacts upon the qualifying interest of a Natura 2000 site are identified (or if there is insufficient evidence to clearly



demonstrate that there will be no impact), detailed consideration will be made of the impact of the project (alone or in combination) on the integrity of the Natura 2000 site, with respect to its conservation objectives. At this stage a determination will be made as to whether there will be adverse effects on the integrity of the site.

6.1.4. Baseline Description

A summary of baseline data collected to date and anticipated sources of further baseline information is presented in Section 5.6 (Marine Ecology) and Section 5.8 (Ornithology) of this scoping report. Baseline data will be presented in detail in the ES chapters of the same name. The HRA will summarise data which are directly relevant to the qualifying features for each of the relevant European sites.

6.1.5. Potential Impacts

The assessment of impacts will be reported in detail in the ES Ornithology and Marine Ecology chapters and the HRA will summarise information which is directly relevant to the qualifying features for each of the relevant European sites.

Potential impacts on qualifying features for European sites are considered likely to include the following:

Construction

- Permanent and temporary habitat loss (1);
- Disturbance (noise and visual) from people and machinery (although it should be noted that the site is currently an active port subject to high existing levels of disturbance) (2);
- Underwater noise and vibration impacts from piling & construction, and traffic movements during construction (3); and
- Reduced water quality (including increased suspended solids, reduced dissolved oxygen and release of contaminants) from piling, deposition of materials and dredging (4).

Operation

- Disturbance (noise and visual) from people and machinery (although see above in relation to disturbance during construction) (5);
- Barrier and over-shadowing effects caused by new structures (6);
- Lighting (7); and
- Changes to coastal processes, e.g. hydrology and sedimentation (8).



A summary of potential impacts on each of the European sites to be included in the HRA, based on information provided by SNH in January 2012, is set out in Table 14.

Table 24 Summary of potential impacts on European sites to be considered in the HRA

European site	Qualifying feature	Potential impacts (see list above)
Firth of Forth SPA and Ramsar Wetland	Aggregations of non-breeding birds	1, 2, 4, 5, 6, 7, 8
Imperial Dock Lock, Leith SPA	Breeding common tern	2, 4, 5, 6, 7, 8
Forth Islands SPA	Aggregations of breeding birds	2, 4, 5, 6, 7, 8
Isle of May SAC	Grey seal	3, 4, 5, 8
	Reefs	No connectivity
Firth of Tay and Eden Estuary SAC	Common (harbour) seal	3, 4, 5, 8
	Intertidal mud & sandflats	No connectivity
	Subtidal sandbanks	No connectivity
	Estuaries (including sub-features)	No connectivity
Berwickshire and North Northumberland Coast SAC	Grey seal	3, 4, 5, 8
	Intertidal mudflats and sandflats	No connectivity
	Reefs	No connectivity
	Sea caves	No connectivity
River Teith SAC	Shallow inlets and bays	No connectivity
	Atlantic salmon	3, 4, 5, 8
	Sea lamprey	3, 4, 5, 8
	River lamprey	3, 4, 5, 8
Moray Firth SAC	Brook lamprey	No connectivity
	Bottlenose dolphin	3, 4, 5, 8

The in-combination assessment will include all major development proposals which could potentially affect the relevant Natura 2000 sites. At this stage the list of developments to be included is considered likely to include those listed in Section 3.5 of this report.

It is likely that other projects may emerge in future and these will also need to be considered. The final list of projects to be included will be agreed with SNH and the relevant competent authorities and further guidance on other projects to be included is requested as part of the scoping opinion.

6.1.6. Mitigation

Mitigation measures will be developed as required during the course of the EIA and will be reported in detail in the ES Ornithology and Marine Ecology chapters. The HRA will summarise those mitigation measures which are directly relevant to the qualifying features for each of the relevant European sites.



7. Invitation to Comment

Consultees are invited to comment on the possible significant environmental effects of the Port of Leith development, the proposed environmental impact assessment methodologies and the Environmental Statement structure, as presented within this Scoping Request.

In particular, assistance with identifying any sources of information which may be relevant to the assessment would be welcomed.

Transport Scotland will be co-ordinating the response to scoping for both the proposed marine and land based developments and will be responsible for preparing the scoping opinion.

Consultee responses should be directed to the Transport Scotland, Ports and Harbours branch at the address below.

Main Contact for Scoping Responses:
Redacted Transport Scotland – Ports and Harbours Area 2GN Victoria Quay Edinburgh EH6 6QQ

It should be noted that consultee responses will not be treated as confidential unless otherwise explicitly stated within the response.



List of Abbreviations

AA	Appropriate Assessment
ASCOBANS	Agreement on the Conservation of Small Cetaceans in the Baltic and North Seas
CEC	City of Edinburgh Council
CEMP	Construction and Environmental Monitoring Programme
CITES	Convention on International Trade in Endangered Species of Wild Flora and Fauna
CSEMP	Clean Sea Environmental Monitoring Programme
DECC	Department for Energy and Climate Change
EC	European Commission
EIA	Environmental Impact Assessment
EPS	European Protected Species
EQSD	Environmental Quality Standards Directive
ERL	Effects Range Low
ERM	Effects Range Median
ES	Environmental Statement
GPDO	General Permitted Development (Scotland) Order 2011
HRA	Habitats Regulation Appraisal
ICES	International Council for the Exploration of the Sea
IEEM	Institute for Ecology and Environmental Management
IMO	International Maritime Organisation
ISQG	Canadian Interim Sediment Quality Guidelines
IUCN	World Conservation Union
JAMP	Joint Assessment and Monitoring Programme
JNCC	the Joint Nature Conservation Committee
LOA	Length Overall
MarLIN	Marine Life Information Network
MARPOL	International Convention for the Prevention of Pollution from Ships 1973
MCA	Maritime and Coastguard Agency
MESH	Mapping European Seabed Habitats
MHWS	Mean High Water Springs
MIR	The Main Issues Report
MPA	Marine Protected Area
MSFD	Marine Strategy Framework Directive
MS-LOT	Marine Scotland Licensing Operations Team
NBN	National Biodiversity Network
NPF2	National Planning Framework for Scotland 2
NRA	Navigation Risk Assessment
N-RIP	National Renewables Infrastructure Plan
NTS	Non-technical Summary



OSPAR Convention	Convention for the Protection of the Marine Environment of the Northeast Atlantic
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
PLA	Port of London Authority
PMSC	Port Marine Safety Code
Radar	Radio Detection and Ranging – an object-detection system which uses radio waves to determine the range, altitude, direction, or speed of objects.
RBMP	River Basin Management Plan
RYA	Royal Yacht Association
SAC	Special Area of Conservation
SCOS	Special Committee on Seals
SE	Scottish Enterprise
SEA	Strategic Environmental Assessment
SEPA	Scottish Environment Protection Agency
SESPLan	The South East Scotland Plan
SMRU	Sea Mammal Research Unit
SNH	Scottish Natural Heritage
SPA	Special Protection Area
SPP	Scottish Planning Policy
SSSI	Site of Special Scientific Interest
SWF	SeaWatch Foundation
TS	Transport Scotland
UKBAP	UK Biodiversity Action Plan
VTs	Vessel Traffic Service
WCA	Wildlife and Countryside Act
WEWS Act	Water Environment and Water Services (Scotland) Act 2003
WFD	Water Framework Directive

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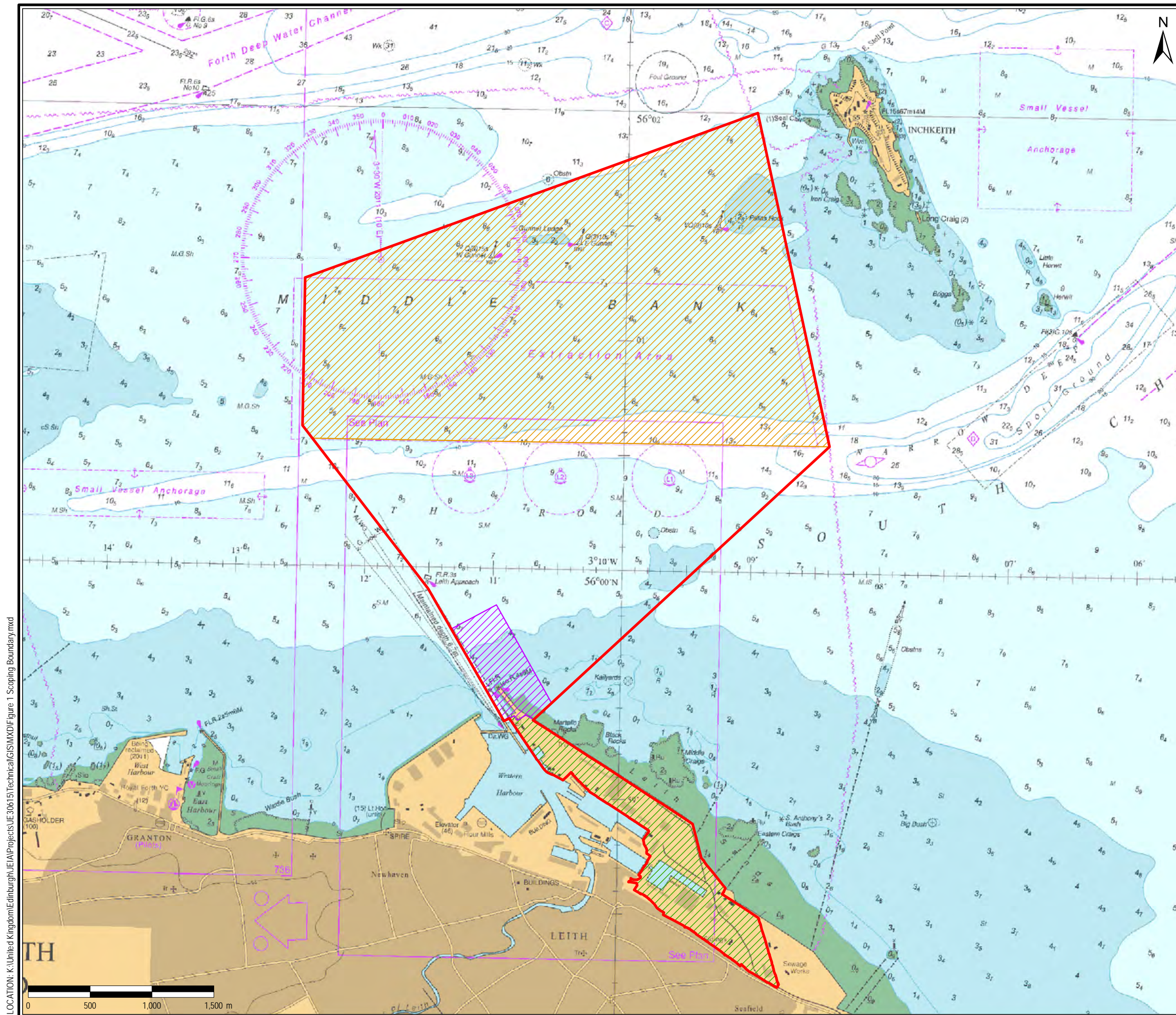


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Figures



- KEY:
- Scoping Boundary
 - Middle Bank Extraction Area
 - Proposed Outer Berth
 - Land Based Development



PORT OF LEITH: 21ST CENTURY GATEWAY PORT

FIGURE 1
SCOPING BOUNDARY

SCALE

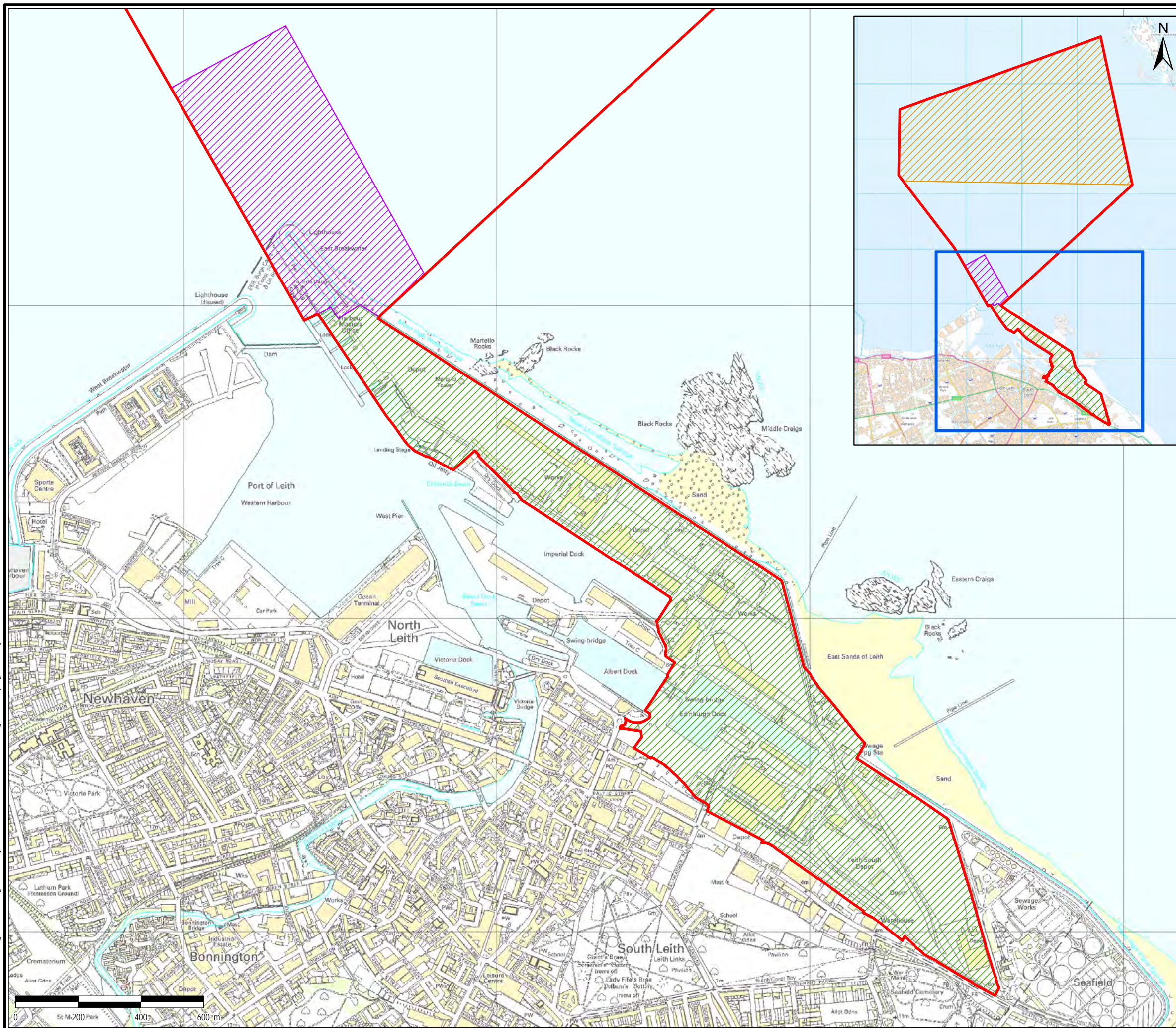
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PROJECT NO.

JE30615





KEY:

- Scoping Boundary
- Middle Bank Extraction Area
- Proposed Outer Berth
- Land Based Development



PORT OF LEITH: 21ST CENTURY GATEWAY PORT

FIGURE 2
SCOPING BOUNDARY DETAIL

SCALE

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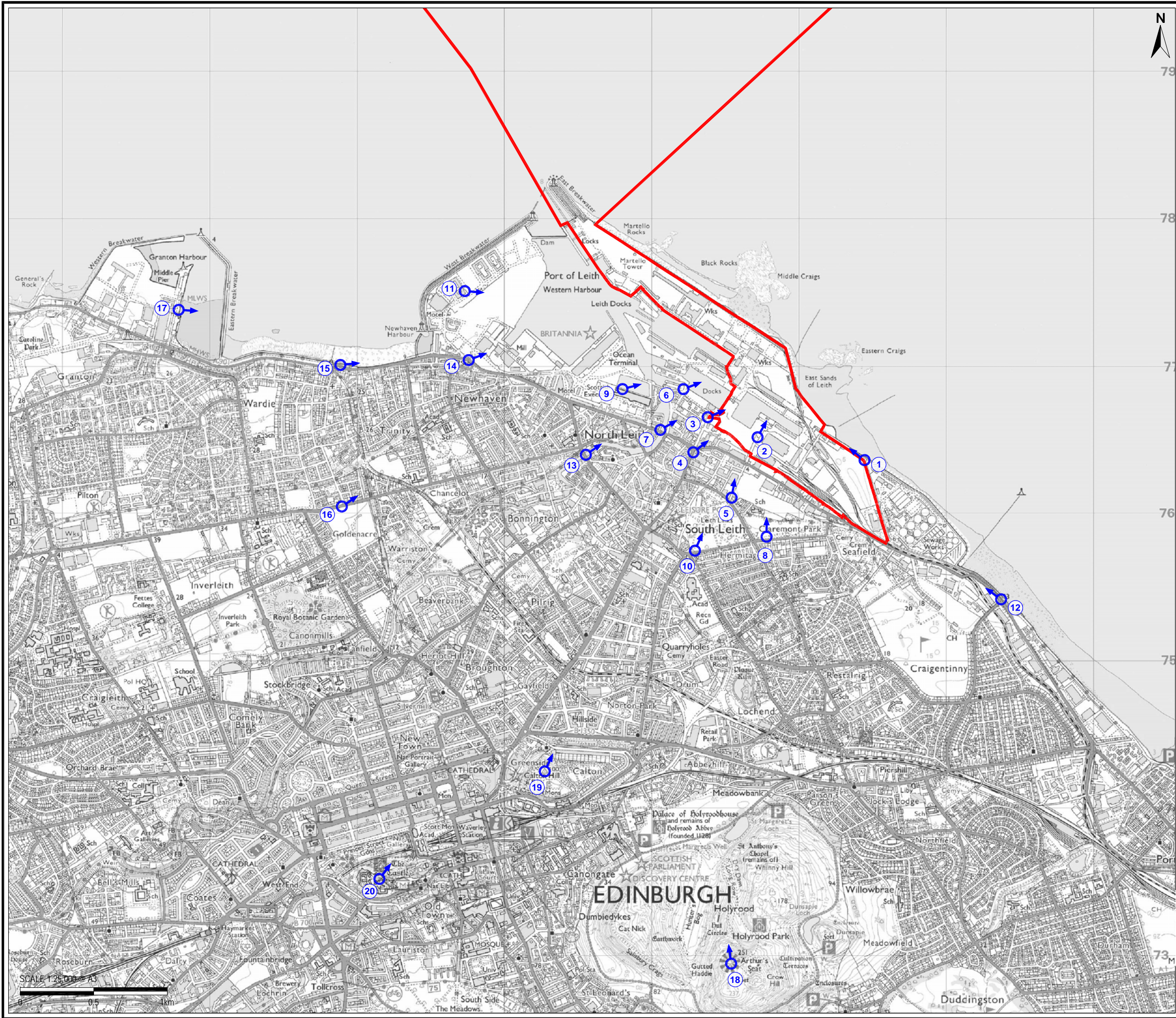
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JE30615

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KEY:



Scoping Boundary



Viewpoint Locations

1. Marine Esplanade, Leith
2. Bath Road at Entrance to Docks, Leith
3. Junction of Ocean Drive and Ocean Way, Leith
4. Constitution Street
5. Salamander Place
6. Ocean Drive, Leith
7. Customs Wharf, Leith
8. Leith Links, Summerfield Gardens
9. Royal Yacht Britannia
10. Leith Links, East Hermitage Place
11. Western Harbour Drive
12. Seaford Road
13. Junction Bridge, Great Junction Street
14. Lindsay Road, Entrance to Western Harbour
15. Trinity Crescent, Trinity
16. A602 Ferry Road
17. Granton Harbour
18. Arthur's Seat, Holyrood Park
19. Calton Hill
20. Edinburgh Castle, Esplanade
21. Fisherrow Links, Musselburgh
22. Blackford Hill
23. Kinghorn Pier, Fife
24. Inchcolm Island
25. Aberdour, Fife
26. Allenuir Hill (Pentland Hills)
27. A68 near Dalkeith



PORT OF LEITH: 21ST CENTURY GATEWAY PORT

FIGURE 4a

VIEWPOINT LOCATION PLAN

SCALE

1:25,000 @ A3

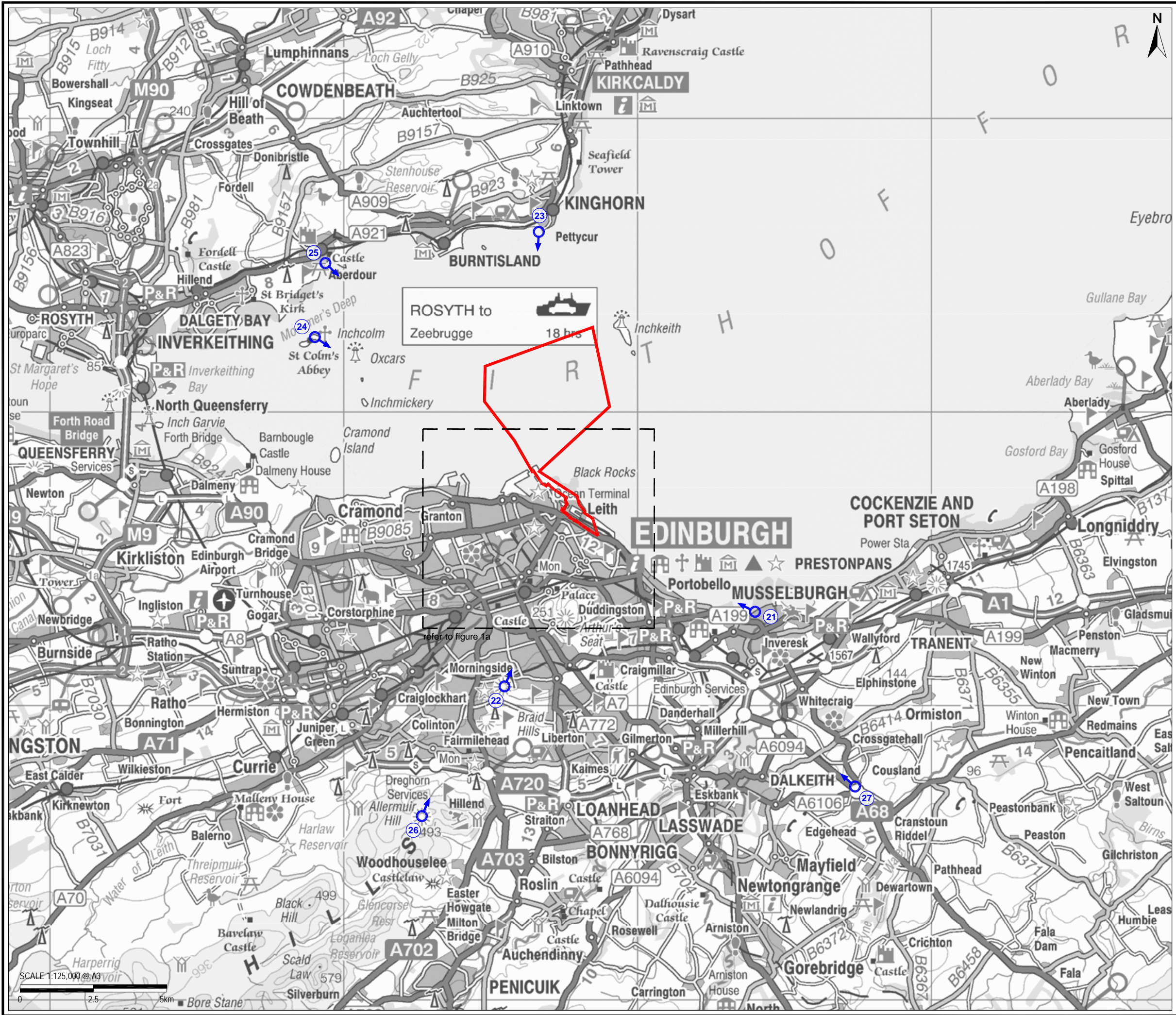
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KEY:



Scoping Boundary



Viewpoint Locations

1. Marine Esplanade, Leith
2. Bath Road at Entrance to Docks
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8. Leith Links, Summerfield Gardens
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10. Leith Links, East Hermitage Place
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13. Junction Bridge, Great Junction Street
14. Lindsay Road, Entrance to Western Harbour
15. Trinity Crescent, Trinity
16. A602 Ferry Road
17. Granton Harbour
18. Arthur's Seat, Holyrood Park
19. Calton Hill
20. Edinburgh Castle, Esplanade
21. Fisherrow Links, Musselburgh
22. Blackford Hill
23. Kinghorn Pier, Fife
24. Inchcolm Island
25. Aberdour, Fife
26. Allmuir Hill (Pentland Hills)
27. A68 near Dalkeith



PORT OF LEITH: 21ST CENTURY GATEWAY PORT

FIGURE 4b

VIEWPOINT LOCATION PLAN

SCALE

1:125,000 @ A3

PROJECT NO.

JE30615

Redacted

