Port of Cromarty Firth

Phase 4 Scoping Report

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Contents

1 Introduction 6
2 Background 7
2.1 Port of Cromarty Firth 7
2.2 Pre-Application Advice 8
3 Project Description 9
3.1 The Project Elements 9
3.2 The Location 10
3.3 Design Status 10
4 The Environment 11
4.1 Introduction 11
4.2 Site Description 12
4.3 Consenting, Permitting and Licensing Process 12
4.3.1 Marine Licence 12
4.3.2 Marine Pre-Application Consultation (PAC) 12
4.3.3 Planning Consent 12
4.3.4 European Protected Species 13
4.3.5 Habitats Regulation Appraisal (HRA) 13
4.3.6 The Water Environment (Controlled Activities) (Scotland) Regulations (CAR) 2011 (as Amended) 13
4.4 Policy Context 14
4.4.1 Marine Plan 14
4.4.2 Planning Policy 15
5 Acoustics 17
5.1 Policy and Guidance 17
5.2 In-Air 17
5.2.1 Baseline 17
5.2.2 Potential Impacts 17
5.2.3 Proposed Environmental Impact Assessment 17
5.3 Underwater 18
5.3.1 Baseline 18
5.3.2 Potential Impacts 19
5.3.3 Proposed Environmental Impact Assessment 19

6 Archaeology and Cultural Heritage 20
6.1 Policy and Guidance 20
6.2 Baseline 20
6.3 Potential Impacts 21
6.3.1 Construction 21
6.3.2 Operations 22
6.4 Proposed Environmental Impact Assessment 22
7 Air Quality 23
7.1 Policy and Guidance 23
7.2 Baseline 23
7.3 Potential Impacts 23
7.3.1 Construction 23
7.3.2 Operations 23
7.4 Proposed Environmental Impact Assessment 23
8 Coastal Processes, Ground Conditions and Contamination 24
8.1 Policy and Guidance 24
8.2 Baseline 24
8.3 Potential Impacts 25
8.3.1 Construction 25
8.3.2 Operations 25
8.4 Proposed Environmental Impact Assessment 25
9 Ecology 27
9.1 Policy and Guidance 27
9.2 Designated Sites 27
9.3 Ornithology 27
9.3.1 Baseline 27
9.3.2 Potential Impacts 28
9.3.3 Proposed Environmental Impact Assessment 28
9.4 Marine Mammals 29
9.4.1 Baseline 29
9.4.2 Potential Impacts 29
9.4.3 Proposed Environmental Impact Assessment 30
9.5 Otters 31
9.5.1 Baseline 31
9.5.2 Potential Impacts 31

9.5.3 Proposed Environmental Impact Assessment 31
9.6 Diadromous Fish 32
9.6.1 Baseline 32
9.6.2 Potential Impacts 32
9.6.3 Proposed Environmental Impact Assessment 32
9.7 Benthic Ecology 32
9.7.1 Baseline 32
9.7.2 Potential Impacts 33
9.7.3 Proposed Environmental Impact Assessment 33
10 Landscape and Visual 34
10.1 Policy and Guidance 34
10.2 Baseline 34
10.3 Potential Impacts 34
10.3.1 Construction 34
10.3.2 Operations 34
10.4 Proposed Environmental Impact Assessment 35
11 Local Community and Economy 36
11.1 Policy and Guidance 36
11.1.1 Policy and Guidance 36
11.2 Potential Impacts 36
11.2.1 Construction 36
11.2.2 Operations 36
11.3 Proposed Environmental Impact Assessment 36
12 Materials and Waste 38
12.1 Policy and Guidance 38
12.2 Potential Impacts 38
12.2.1 Construction 38
12.2.2 Operation 38
12.3 Proposed Environmental Impact Assessment 39
13 Traffic and Transport 40
13.1 Policy and Guidance 40
13.2 Baseline 40
13.3 Potential Impacts 40
13.3.1 Construction 40
13.3.2 Operations 40

13.4 Proposed Environmental Impact Assessment 41
14 Water Quality 42
14.1 Policy and Guidance 42
14.2 Baseline 42
14.3 Potential Impacts 42
14.3.1 Construction 42
14.3.2 Operations 43
14.4 Proposed Environmental Impact Assessment 43
15 Cumulative 44
15.1 Policy and Guidance 44
15.2 Offshore Developments 44
15.3 Onshore Developments 44
16 Conclusion 46
References 47
Glossary 49
Appendix A 50

PORT OF CROMARTY FIRTH

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1 Introduction

A scoping opinion is requested by the Port of Cromarty Firth, for the Environmental Impact Assessment (EIA) that will be carried out to support the marine licencing process for the construction of the proposed Phase 4 development at the Invergordon Service Base.

Marine licence's for the construction of Phase 4 and associated capital dredging and disposal will be sought under the Marine (Scotland) Act 2010.

Construction of harbours and port installations fall under Section 10(e) of Annex II of the EIA Directive and as such falls within the Marine Works (EIA) Regulations 2007 as amended. The Phase 4 development will cover more than 1Ha; due to the scale of the project and proximity to potentially sensitivity receptors it is presumed that an EIA is required and hence no screening opinion has been requested.

This scoping report has been produced to provide Marine Scotland and their consultees, along with appropriate information to allow them to respond to this request for a scoping opinion. This is conducted under Section 13, and in alignment with Schedule 4 of the Marine Works (EIA) Regulations 2007.

Information on the proposed development and its background is provided to give an understanding of the project. The environment and potential impacts are then discussed on a subject by subject basis.

2 Background

2.1 Port of Cromarty Firth

The Cromarty Firth is situated on the East Coast of the Scottish Highlands; 14 miles (22.5km) north of the city of Inverness, and 65 miles (105km) South West of Wick. Invergordon is on the north shore of the Cromarty Firth 7miles (11km) west of Sutors at the mouth of the firth.

The Cromarty Firth provides a natural deep water harbour and as such Invergordon was developed as a port in the early twentieth century, and had particular naval importance. Invergordon being the closest outcrop of land into the deep water of the Cromarty Firth was established as a Naval Base in the early 18th century. It played a part in many naval conflicts but most notably the first and second world wars. The naval base at Invergordon provided fuelling, repairs and safe anchorage facilities for the navy until its closure 1984. Invergordon has a long history of marine engineering and this was easily transferred to the oil and gas industry in the early 1970's.

The Port has developed since the 1970's to support industrial developments on the banks of the Firth, starting with the British Alcan Aluminium Smelter built in 1971, then the Nigg fabrication yard in 1982. Improvements to onshore transport links such as the opening of the Kessock Bridge in 1982 and the Cromarty Bridge in 1983 have allowed industry on the north banks of the Cromarty Firth to prosper and grow.

The operations of the Firth were transferred to the Cromarty Firth Port Authority by an act of parliament in 1973, at this time the Firth ceased to be under the control of the Navy and a greater reliance was placed on commercial shipping activities.

Work commenced on the construction of the Invergordon Service Base in 1979 with the first oil rig work being undertaken in the facility in 1982.

The Invergordon Service Base is run by CFPA, the CFPA is an independent statutory body administered by a Board of eight Trustees; the Board is accountable under its Trust Port Status to the Scottish Government. The trading name of CFPA is the Port of Cromarty Firth (PoCF).

The existing Invergordon Service Base encompasses 4 berths and the Queens Dock providing 450m of berthing. PoCF have undertaken a series of improvement projects on the service base in recent years. The first two phases involved the surfacing of 2.88Ha of existing port land with block paving. Phase 3 is currently under construction and consists of 3.6Ha of new laydown and a 13.8m deep, 154m long berth to the west of the Queens Dock's West Finger. PoCF have undertaken these developments in response to actual and predicted market demand, based on information available in 2012.

During discussion with potential clients for the Phase 3 development it has become clear that additional laydown space and berthing is required.

The Invergordon Service Base includes office and fabrication buildings in addition to laydown space. Bases clients now include:

- Oil and Gas Operational and Maintenance Support activities including servicing and refitting of offshore platforms;
- The sub-sea fabrication and support sector;
- Onshore renewables, primarily the delivery of wind turbine components;
- Wave and tidal devices, fabricated and assembled at Invergordon, and deployed from the port;
- Offshore wind, the Invergordon service base was utilised in the deployment of the Beatrice wind turbines; and
- Fish meal receipt and storage.

2.2 Pre-Application Advice

PoCF have undertaken an optioneering exercise to identify the best way to meet existing and new client requirements, full details of the optioneering will be included within the 'Consideration of Alternatives' section of the ES. It identified the area to the west of the Service Base as being the most appropriate for additional development, it was however noted that any construction on the shoreline would have a direct impact on ecological designated area and as such posed a significant project risk.

PoCF utilised the Pre-Application Advice Service for Proposed Major Developments, offered by The Highland Council. The meeting was attended by various council department representatives, Marine Scotland and Scottish Natural Heritage (SNH) in addition feedback was also provided by Scottish Environment Protection Agency (SEPA). The process aided PoCF's understanding of the concerns of the regulators and statutory consultees, and provided insight into what would be required to gain the appropriate consents.

Due to the feedback received and consenting requirements (including two seasons bird data) for construction on the designated areas, the consenting process does not fit within PoCF's project timeframe. The initial proposals have therefore been adapted to avoid construction on the shoreline. As these works will be carried out primarily below the Mean Low Water Spring (MLWS) then it is unlikely that planning consent will be required, discussions are ongoing with The Highland Council to confirm this.

PoCF see The Highland Council as a key stakeholder for the project as such the advice received by the Council, during the pre-application process has been considered within this scoping assessment. In conjunction with the Phase 4 proposals it is likely that other activities will be carried out which will be subject to planning however they will not be of a scale that they will require an EIA to support them.

3 Project Description

3.1 The Project Elements

There are three potential project elements associated with the proposed Phase 4:

- Laydown – reclaim additional laydown space.
- Berth - additional berthing to the west of Phase 3, to provide one long berthing face.
- Roll-On-Roll-Off (Ro-Ro) – the provision of a Ro-Ro facility.

PoCF would like to reclaim in the region of 7Ha of land. This would be co-located with Phases 1, 2, and 3, to provide 11Ha of adjacent laydown space, suitable for use by multiple clients.

The laydown construction would be similar to that of Phase 3 laydown area. A rock armoured revetment would be placed around the perimeter. A geotextile membrane would then be installed to allow the area to be infilled while allowing water to move in and out of the area. Once the area is reclaimed appropriate drainage and services would be installed prior to surfacing.

PoCF would like to provide an additional 350m of berthing to the west of Phase 3; in effect providing a 350m-500m long berth. The new berth would be suitable for a variety of uses including the largest cruise ships which cannot be berthed on existing infrastructure.

PoCF do not currently have Ro-Ro capabilities and as such would like to provide this as part of the Phase 4 development. The Ro-Ro would be at the end of the quay wall on the same orientation. The associated mooring dolphins could be utilised by large vessels berthing on the quay wall, hence if the Ro-Ro is to be included then the length of the quay wall will be shorter, while providing the same berthing capabilities.

The quay wall is likely to be similar to that utilised for Phase 3, which is a combination HZM-AZ pile wall configuration. Assuming the ground is similar to that in the Phase 3 area then vibro-piling will be utilised. The Ro-Ro dolphins will also be vibro-piled into place.

The Ro-Ro and quay walls will incorporate reinforced concrete to facilitate lifting. The finish for the main laydown area is yet to be decided.

Dredging may be required to facilitate the land reclamation or to obtain appropriate depths at the berths, if the material is suitable for reuse in the reclamation infill it will be. If not then a Marine License will be sought for dredged spoil disposal at the Sutors.

3.2 The Location

The proposed redline boundary is shown in Drawing 5121683-GA-908. The area encompassed within the red line boundary is much larger than the development, however as discussed in Section 3.3 the shape of the development has not as yet been finalised.

3.3 Design Status

Phase 4 is at the outline design stage and as such the details of the project are not fully developed. The design will be influenced by the following factors:

- The findings of the hydrology modelling;
- Landscape and visual assessment;
- Ecological studies;
- Noise modelling;
- Findings of the Ground Investigation;
- Input from stakeholders including:
    - Potential clients;
    - Local residents;
    - The Highland Council; and
    - Other interested parties.

However it is assumed that the project elements are described in Section 3.1 will not increase in size.

4 The Environment

4.1 Introduction

One of the main purposes of the EIA process is to influence and improve design through iteration. Environmental impacts will be considered throughout the project. Wherever possible, environmental considerations will be incorporated into the design. The land reclamation and berth design, and proposed construction techniques will be heavily influenced by the hydrology, ecology, landscape, visual, local community and potential noise issues associated with the development.

An environmental specialist will be involved throughout the process and, where necessary, appropriate topic experts will be commissioned to inform the design process. The project design will therefore avoid and minimise impacts wherever possible and, as such, identify embedded 'primary mitigation measures' to avoid or reduce negative effects. These will be incorporated within the assessment of effects.

This scoping report and the responses received, will determine the work required to complete the EIA, including:

- Additional environmental baseline understanding requirements, including: surveys and desk based assessment;
- The impacts to be considered through the design process;
- The assessment methods to be utilised;
- The assessment of in-combination/cumulative impacts; and
- Mitigation identification.

The EIA process will culminate in the production of an ES, including a Non-Technical Summary and a Schedule of Mitigation. The ES will document:

- The consideration of alternative.
- The baseline information utilised.
- The assessment process undertaken.
- The assessment results.
- Mitigation measures proposed.
- The significance of effects.

The Schedule of Mitigation will list all the mitigation measures identified through the EIA process. It will then be utilised to inform the detailed design process, and as the starting point for Construction Environmental Management Documents (CEMD), and in turn the operational and maintenance instructions for Phase 4.

The intent is to ensure that appropriate environmental consideration is given throughout the lifecycle of Phase 4. The ES and Schedule of Mitigation will not only inform the consenting process, but also provide a strong base for the environmental management of Phase 4 from design to operation.

Each of the EIA topics are discussed in Sections 5-14, in terms of available baseline data, potential impacts for each stage of the project, and the proposed environmental assessment to be undertaken.

Each ES topic chapter will include:

- The legislative and regulatory context; it will be made clear which sections apply to the planning consent and which to the marine licensing;
- Methodology for the assessment;
- Baseline data:
    - Desk based assessment of all available data;
    - Survey information if appropriate;
- Potential impact identification and primary mitigation;
- Initial impact assessment;
- Secondary mitigation identification
- Assessment of residual impacts; and
- Conclusions.

4.2 Site Description

4.3 Consenting, Permitting and Licensing Process

4.3.1 Marine Licence

Under the Marine (Scotland) Act 2010 a number of activities listed under Part 4, Section 21 of the Marine (Scotland) Act 2010 require a Marine Licence issued by the Marine Scotland Licensing Operations Team (MS-LOT). Any activity involving the deposit or removing of substances or objects in the sea either on or under the seabed, construct/alter/improve any works in or over the sea or on or under the seabed or any kind of dredging activities, under the Mean High Water Spring (MHWS) line are all subject to marine licence according to the Act. All of Phase 4 is below the MHWS and hence will require a marine licence. In addition there will be a requirement for dredging and potentially dredged spoil disposal this will also require a marine licence.

4.3.2 Marine Pre-Application Consultation (PAC)

The Marine Licensing (Pre-application Consultation) (Scotland) Regulations 2013, prescribe the marine licensable activities that are subject to pre-application consultation and in combination with the Marine (Scotland) Act 2010, set out the nature of the pre-application process. The legislation came into force on 1st January 2014 and applies to all relevant marine licence applications submitted to MS-LOT on or after 6 April 2014. The Phase 4 development falls within these regulations as it covers an area larger than 1 hectare (Ha).

4.3.3 Planning Consent

Under the Town and Country Planning (Scotland) Act 1997, any type of development, i.e. carrying out of building, engineering, mining or other operations in, on, over or under land,

or the making of any material change in the use of any buildings or other land, over the Mean Low Water Spring (MLWS) line will require a Planning Consent issued by The Highland Council. The exception to this is developments falling under the permitted development rights of the Harbour under the Harbours Act 1964.

In association with the Phase 4 development there maybe works carried out above the MLWS which could require planning consent, this will be applied for separately.

4.3.4 European Protected Species

If it is determined that the development of construction activities will likely affect European Protected Species (EPS) listed under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended); which includes dolphins, harbour porpoises and European otters; an EPS Licence will be required. An EPS licence will only be granted if it is proved that:

(1) The project is on Imperative Reasons of Overriding Public Interest;

(2) There are not satisfactory alternatives; and

(3) The proposed action must not be detrimental to the maintenance of the species at 'favourable conservation status'.

Depending on the construction techniques there is a potential to disturb dolphins and harbour porpoises. Although there is evidence of European otters in the area no Holts, layups our couches have been identified in the immediate vicinity as such it is unlikely that an EPS licence will be required for otters.

4.3.5 Habitats Regulation Appraisal (HRA)

An appropriate assessment (AA) is part of the Habitats Regulations Appraisal (HRA) process. It is required when a plan or project potentially affects a European Natura site. The Natura sites' network in the UK consists of Special Protection Areas (SPAs) and Special Areas of Conservation (SACs). An AA must demonstrate that there will be no adverse effect on site integrity. Should this requirement not be satisfied, a project would only receive consent (as Marine Licence and/or Planning Consent) if:

(1) Imperative Reasons of Overriding Public Interest are proved; and

(2) There are not satisfactory alternatives.

Phase 4 may affect the adjacent Cromarty Firth SPA as such an appropriate assessment will most probably be required. In addition if it is deemed that an effect could occur on the bottlenose dolphins associated with the Moray Firth Special Area of Conservation (SAC) then this may also require an Appropriate Assessment.

4.3.6 The Water Environment (Controlled Activities) (Scotland) Regulations (CAR) 2011 (as Amended)

Controlled Activities Regulations (CAR) authorisations are required for various activities including:

- abstraction of water from the water environment; and

- any activity liable to cause pollution of the water environment, including discharges of pollution matter.

During construction there may be a need to abstract seawater for activities such as material dampening, to control dust. During construction and operation there is a potential for surface water and water abstracted from excavations to require discharge to the water environment, hence there maybe requirements for CAR Authorisations.

4.4 Policy Context

4.4.1 Marine Plan

As the project is below the MHWS and within 12 nautical miles (nm) of the Scottish Coastline it falls within the remit of the Marine (Scotland) Act 2010. The Scottish National Marine Plan (NMP) covering inshore waters was adopted earlier this year; this was as a requirement of the act. The NMP lays out Scottish Minister's policies for the sustainable development of Scotland's seas (Scottish Government, 2015).

It provides General Planning Principles (GEN), most of which apply to the proposed Phase 4 development. Many are specific to environmental topics and are identified in Section 5 to 15. In addition the EIA process will employ GEN 19:

> *Sound evidence: Decision making in the marine environment will be based on sound scientific and socio–economic evidence.*

PoCF are keen to work with stakeholders through the project development process; this aligns with GEN 18:

> *Early and effective engagement should be undertaken with the general public and all interested stakeholders to facilitate planning and consenting processes.*

The NMP lays out sector specific objectives and policies, the relevant objectives for shipping, ports, harbours and ferries are as follows:

- *Safeguarded access to ports and harbours and navigational safety.*
- *Sustainable growth and development of ports and harbours as a competitive sector, maximising their potential to facilitate cargo movement, passenger movement and support other sectors.*
- *Best available technology to mitigate and adapt to climate change, where possible, supporting efficiencies in fleet management and ensuring port infrastructure and shipping services are able to adapt to the consequences of climate change. Consideration of the provision of facilities for shoreside power in new developments to allow for this to be provided when markets require it, if it becomes cost effective to do so.*

The relevant Marine Planning Policies for shipping, ports, harbours and ferries are:

- *TRANSPORT 4: Maintenance, repair and sustainable development of port and harbour facilities in support of other sectors should be supported in marine planning and decision making.*

- *TRANSPORT 5: Port and harbour operators should take into account future climate change and extreme water level projections, and where appropriate take the necessary steps to ensure their ports and harbours remain viable and resilient to a changing climate. Climate and sea level projections should also be taken into account in the design of any new ports and harbours, or of improvements to existing facilities.*

Marine Planning Partnerships are being developed for 11 regions around Scotland; they will work to develop regional marine plans. The Cromarty Firth lies within the Moray Firth Region but the Marine Planning Partnership for the area has not as yet been established, and is unlikely to be prior to the EIA being completed.

4.4.2 Planning Policy

Although the proposed development does not require planning consent, due to the close proximity to land, it is deemed appropriate to take account of the planning policy context.

The development plan system in Scotland, which provides the framework for considering planning applications, is made up of three main documents:

- The National Planning Framework (NPF);
- Strategic Development Plans (SDPs); and
- Local Development Plans (LDPs).

The National Planning Framework (NPF) is a requirement of the Planning (Scotland) Act 2006 and sets out the strategy for long-term development within Scotland. The third NPF (NPF3), was published in 2014, sets out the strategy for development for the next 20 to 30 years.

All Scottish Planning Policy (SPP) was consolidated into one overall policy document in February 2010. The SPP is also subject to regular updates, and a revised version was published in 2014.

The Scottish Government provides advice and technical planning information in the form of Planning Advice Notes (PANs). Relevant PANs for this Phase 4 development which will be used to support the EIA are identified in Sections 5 to 15.

The Highland Council adopted the Highland wide Local Development Plan (HwLDP) in 2012 and the Inner Moray Firth Local Development Plan (IMFLDP) in 2015. The HwLDP lays out the planning policies. The process to update the HwLDP is underway and the draft main issues report has been published. For the purpose of the EIA process the 2012 HwLDP will be utilised, however the main issues report will be reviewed to identify any areas that are likely to change significantly from the 2012 version that may affect Phase 4.

The IMFLDP provides the strategy and plans for the area to aid in the implementation of council policy, with specific regard to spatial planning. The proposed development is immediately adjacent to the area noted as IG11 Invergordon Harbour Area in the IMFLDP, it

is assumed that the requirements laid out within this section of the IMFLDP are applicable to the proposed Phase 4 development and will be taken account

The following Policies will specifically be considered:

- Policy 28: Sustainable Design
- Policy 29: Design, Policy and Place Making
- Policy 31: Developer Contributions
- Policy 34: Settlement Development Area
- Policy 41: Business and Industrial Land
- Policy 43: Tourism
- Policy 49: Coastal Development
- Policy 56: Travel
- Policy 57: Natural, Built and Cultural Heritage
- Policy 58: Protected Species
- Policy 59: Other Important Species
- Policy 60: Other Important Habitats
- Policy 61: Landscape
- Policy 63: Water Environment
- Policy 64: Flood Risk
- Policy 65: Waste Water Treatment
- Policy 66: Surface Water Drainage
- Policy 77: Public Access

5 Acoustics

5.1 Policy and Guidance

Relevant policy and guidance includes:

- GEN 13 Noise: Development and use in the marine environment should avoid significant adverse effects of man-made noise and vibration, especially on species sensitive to such effects (Scottish Government, 2015).
- PAN 1/2011: Planning and Noise;
- BS 5228-1:2009, Code of practice for noise and vibration control on construction and open sites – Part 1: Noise (British Standard Institute, 2009).
- BS 4142: 2014 Methods for rating and assessing industrial and commercial sound (British Standards Institute, 2014)
- BS7455-1: 2003 Description and Measurement of Environmental Noise (British Standard Institute, 2003).

5.2 In-Air

5.2.1 Baseline

In-air noise monitoring has previously been carried out at residential receptors close to the Port of Cromarty Firth, prior to the Phase 3 construction works and during Phase 3 construction. The noise levels measured are highly variable depending on the activities being carried out on the Service Base and elsewhere.

5.2.2 Potential Impacts

5.2.2.1 Construction

During the construction phase the equipment and plant utilised on the site for construction will be a source of noise. In addition there will be noise associated with the road delivery of materials, the extent of which will depend on where materials are being sourced from, quantities and frequency of deliveries.

It should be noted that there have been no noise complaints or measured noise issues associated with the Phase 3 construction phase. Phase 4 will utilise similar construction techniques hence no significant effects are expected.

5.2.2.2 Operations

The operation of the new area will vary, depending on the activities being carried out. Operations are likely to be carried out 24 hours a day 7 days a week.

5.2.3 Proposed Environmental Impact Assessment

Phase 3 is due to move into operations late autumn 2015. To provide an understanding of noise levels associated with the Invergordon Service Base with Phase 3 operational, baseline noise measurements will be taken after construction has been completed. It should be noted that the activities being carried out on the Service Base will be determined by client demand, and hence may not be representative of ongoing noise levels.

Noise monitoring will be undertaken in line with the method outlined in BS 4142: 2014, in accordance with guidance outlined in BS 7445-1:2003, taking precautions outlined in BS 4142:2014 to avoid interference from wind, heavy rain and electrical interference. The proposed locations for monitoring are detailed in Table 5.1.

Table 5.1: Proposed Noise Measurement Locations

Receptor	Location (Grid Ref)	Reasoning
King George Street	NH 698 689	Residential receptors close to the development.
Cromlet Drive 1	NH 7024 687	Residential receptors close to the development (location used in Phase 3 assessments).
B817 Carpark	NH697 688	Representative of noise levels on recreational users of Linear Park and the associated Car Parks.
McDonald Court (adjacent to the fountain)	NH705 685	Near the fountain which is a landmark in the village and close to the residential receptors on McDonald Court/west end of the High Street.
Balblair	NH706 671	Nearest houses, south across the water from the development (location used in Phase 3 assessments).

The PoCF are currently considering installation of a long-term noise monitoring station, if this is installed prior to the EIA being completed records from it will be utilised as part of the assessment.

An assessment of construction noise will be carried out in line with BS 5228-1:2009 and appropriate mitigation measures identified, this is likely to include implementation of construction best practice and limiting working hours for the noisier construction activities.

Separate application's under Section 61 of Control of Pollution Act 1974 (as amended) (COPA) for an agreement on limits and mitigation methods for noise during construction will be made.

An operational noise assessment will be carried out; this will include an overall assessment of the full Service Base operations.

The noise assessment will provide details of noise mitigation measures employed by the PoCF including details of controls they impose on incoming vessels and contractors.

5.3 Underwater

5.3.1 Baseline

An underwater noise dissipation model was developed for the Phase 3 development of the Invergordon Service Base (Affric, 2013). Monitoring during Phase 3 showed that the transmission loss modelling equation was slightly conservative (Affric, 2015).

During the Phase 3 development hydrophones were utilised to measure underwater noise associated with the construction activities. As such PoCF have a significant database of information with regard to background noise levels within the Cromarty Firth and the noise levels associated with various construction activities.

5.3.2 Potential Impacts

5.3.2.1 Construction

During construction there is a potential for underwater noise to be created. From the experience of Phase 3 activities such as dredging and rock revetment construction create very little underwater noise. The main noise source is piling activities, with vibro-piling being much quieter that percussion activities. No percussion piling was carried out on Phase 3, and assuming that due to the close proximity, the ground conditions are similar then it is not expected that the construction of Phase 4 will require percussion piling.

Increased marine noise can affect marine mammals and fish. Assuming no percussion piling is required the effects on ecology from underwater noise are expected to be low and not significant.

5.3.2.2 Operations

Underwater noise sources during operations are limited to those associated with boat movements and will not differ from normal activities, no significant effects are predicted.

5.3.3 Proposed Environmental Impact Assessment

The data collated during the Phase 3 development and the associated underwater noise model will be utilised to predict noise levels within the Cromarty Firth during the construction of Phase 4. The predicted noise levels will be considered within the ecology chapter of the Environmental Statement (ES) to predict the actual effects on marine mammals and fish. Although no significant effects are expected, underwater noise will be considered within the ES for transparency purposes.

6 Archaeology and Cultural Heritage

6.1 Policy and Guidance

Relevant policy and guidance includes:

- GEN 6 Historic environment: Development and use of the marine environment should protect and, where appropriate, enhance heritage assets in a manner proportionate to their significance (Scottish Government, 2015);
- PAN 2/2011: Planning and Archaeology (Scottish Government, 2011);
- Managing Change in the Historic Environment, Settings Guidance (Historic Scotland, 2010); and
- Protocol for Archaeological Discoveries for Offshore Renewables Projects (The Crown Estates, 2010).

6.2 Baseline

The sources of information on cultural heritage assets are:

- The Royal Commission on the Ancient and Historical Monuments of Scotland's (RCAHMS) PASTMAP interactive mapping service; and
- The Highland Councils Historic Environmental Record Website.

Within 500m of the proposed development area there are 15 listed buildings, 11 of which are on the High Street, all the listed buildings are category B or C. There is one Category A listed building with 2km (see Table 6.1) there are two Schedule Monuments within 2km of the proposed development, details of which are provided in Table 6.1. There are no Conservation Areas, Battlefields, World Heritage Sites or Gardens and Designed landscapes within 2km of the site.

A review of PastMaps identified that there have been a number of ships wrecks recorded in the Cromarty Firth over the years, however the majority of these have been salvaged due to the value of the vessels and/or cargo and to maintain the shipping channels. No records of residual wrecks were therefore found in the proposed location of the development. The bathymetric surveys of the area do not show any evidence of wreck debris or associated articles on the seabed. The closest recorded wreck is that of the Harmony formerly known as the Unison which collided and sank off Invergordon on the 15th of November 1941, however the position logged is essentially arbitrary, no evidence of the vessel has been found during routine bathymetric surveys of the port (RCAHMS, 2013).

There are other items listed in the historic records with 500m of the development site but none on the actual site itself.

Table 6.1: Schedule Monuments and Listed Buildings Category A

Site/Description	Index No.	Designation/ Status	Location
THE CLACH A'MHEIRLICH or the Thief's Stone The stone is 6 foot (1.83m) tall by 1foot 6inches (0.46m) across. It is thought to be inscribed with a 'step' symbol on the front and a crescent symbol above a pair of pincers or a 'tuning fork' on the left side (The Highland Council 2013a)	1675 Highland Council ID: MHG14745	Schedule Monument	NH681 691 60m north of the Cromarty Firth between the B817 and the railway line approximately 1.5km to the west north west of the proposed development
NEWHALL POINT SITE OF CHAPEL AND BURIAL GROUND The chapel has never been located, but is thought to be early medieval to medieval potential Pre-reformation. The circular burial ground has been subject to trial excavations and rescue excavations. Carbon dating of skeletons showed them to be 10th-11th century (The Highland Council, 2013b).	5950 Highland Council ID:MHG8766	Schedule Monument	NH707 670 The site is to the south and west of houses in Newhall Point 1.5km south east of the proposed development.
OLD ROSSKEEN PARISH CHURCH and BURIAL The Rosskeen Parish Church was built in 1832 adjacent to previous churches; the church is no longer used and is showing signs of erosion damage to the south face. To the east of the church are older buildings thought to date back to the 15th of 16th century these are Mausoleum's, six in total. The Munro Mausoleum was built in 1664 and restored in 1908 according to the plaque the remaining five mausoleums are unroofed (The Highland Council 2013c-e). Two ruined lengths of wall measuring 17m and 6.5m could be the remains of an earlier church or chapel. The buildings are surrounded by a graveyard which has been extended to the west and north uphill to accommodate its continued use (The Highland Council 2013e).	15040 Highland Council ID MHG22559 (Mausoleum), MHG17561 (Church) and MH16255 (Graveyard).	Listed building status (A)	NH688 693 North of the railway line, approximately 1.1km north west of the proposed development.

6.3 Potential Impacts

6.3.1 Construction

There is a potential to destroy or cover up any historical assets on the seabed, within the development footprint during construction, however desk studies and bathymetry studies of the area have not identified any items within the potential construction area. Hence no significant effect is predicted.

Construction could potentially have impacts on setting of local historical assets, the three most significant assets in the area as detailed within Table 6.1 are all more than 1km from the site. Considering each of the sites in turn:

Clach a' Mheirlich

Clach a'Mheirlich, is too far from the development site to be impacted by any changes in noise sources at the Invergordon Service base, traffic noise will continue to be the main disturbance at the stone. The inter-visibility between the Thief's Stone and the proposed development is low and screened by trees and the Invergordon Boat Club facility, hence effects on setting will be minimal and not significant.

Newhall Point Site of Chapel and Burial Ground

The Newhall Point the chapel and burial grounds were not found, their documented location is behind a row of houses and as such there is no inter-visibility with the proposed development site, hence no effects on setting are predicted.

Old Rosskeen Parish Church and Burial Ground

The site is well screened from the development by the railway line, bridges, embankment and trees, to the extent that it will not be possible to see the development from the asset. The main noise sources at the Church are associated with the railway and B817, hence it is unlikely that the development 1.1km away will have an impact on the noise levels. No significant effects on setting are predicted.

6.3.2 Operations

Consideration of the impacts on setting, of operations on local historical assets, is the same as construction and as such not significant effects are predicted.

6.4 Proposed Environmental Impact Assessment

No significant effects on archaeology and cultural heritage assets are predicted hence it is proposed that the topic is screened out of the EIA. However due to the potential for previously unidentified items to be found on the seabed during construction it is proposed that an Archaeology Protocol aligning to the Crown Estates (2010) guidance: Protocol for Archaeological Discoveries for Offshore Renewables Projects is included within the Schedule for Mitigation for inclusion within the CEMD for the project.

7 Air Quality

7.1 Policy and Guidance

Relevant policy and guidance includes:

- GEN 14 Air quality: Development and use of the marine environment should not result in the deterioration of air quality and should not breach any statutory air quality limits.
- Assessment of dust from demolition and construction (IAQM, 2014)
- Air Quality Monitoring in the Vicinity of Demolition and Construction Sites (IAQM, 2012).

7.2 Baseline

Invergordon is not designated as an Air Quality Management Area. The Highland Council only have three automatic air quality monitoring sites; these are in Inverness, Fort William and Strath Viach. Through 2012 there was an additional 10 non-automatic monitoring sites form Nitrogen Dioxide utilising passive diffusion tubes in Inverness and Dingwall (The Highland Council, 2013). All of The Highland Council monitoring locations are too far from the proposed development to be representative. However, the lack of monitoring would suggest that there are no air quality issues in the area.

7.3 Potential Impacts

7.3.1 Construction

During construction there is a potential for construction materials especially infill materials to dry out and become airborne, causing effects associated with dust. These are of particular concern during dry windy weather. Dust can be effectively mitigated against, and no dust complaints were received during the construction of Phase 3 using similar techniques, hence with mitigation it is assumed that the resultant effects will not be significant.

7.3.2 Operations

Depending on the final surfacing of the proposed development there is a potential to have dust effects during periods of dry weather and windy weather. As with the construction phase appropriate mitigation can be deployed to ensure that no significant effects occur.

7.4 Proposed Environmental Impact Assessment

It is proposed that an assessment of dust impacts is carried out utilising the Institute of Air Quality Management (IAQM) Assessment of Dust from Demolition and Construction Sites (2012) methodology. The methodology will assist in ensuring that appropriate mitigation methods are identified and if appropriate, monitoring is to be employed to check its effectiveness.

It is acknowledged that there will be an associated carbon cost of construction primarily due to transport and raw material usage. However this will be addressed within the Traffic and Transport and Material and Waste sections.

8 Coastal Processes, Ground Conditions and Contamination

8.1 Policy and Guidance

Relevant policy and guidance includes:

- GEN 8 Coastal process and flooding: Developments and activities in the marine environment should be resilient to coastal change and flooding, and not have unacceptable adverse impact on coastal processes or contribute to coastal flooding.
- PAN 79: Water and Drainage.
- The Highland Council's Supplementary Guidance: Flood Risk and Drainage Impact Assessment (The Highland Council, 2013f).

8.2 Baseline

The Cromarty Firth is an extensive elongated water body, some 30km long. There is a major expansion of the Firth at its eastern end and two shallow embayment's just before it constricts once again at the Sutors of Cromarty. The Sutors is a relatively narrow channel which protects the Cromarty Firth from the full force of offshore sea conditions in the Moray Firth.

The existing service base is located approximately 11km westwards from the Sutors and some 13 km eastwards from the A9 road bridge, which marks a broad transition from deep to shallower water in the Firth. The central channel of the Firth in its eastern reaches is some 20m deep and around 800m wide. Shallows border this channel along both the northern and southern coasts.

Given the relatively sheltered location, most wave action will be from local wind-generated waves rather than open sea waves or swells. The longest fetch exists to the west, but the shallow gradient associated with the foreshore, intertidal and shallows along the northern coast of the Firth, mean that waves will tend to refract onto the beach, and also that near shore waves will break once they reach a modest size.

The water circulation within the body of the Cromarty Firth, and in particularly within the vicinity of the service base extension area, is not particularly strong, peaking at 2.5 knots.

The enclosed nature of the Cromarty Firth means that it is not particularly vulnerable to storm surges, although the Moray Firth itself is prone to surge events due to its 'wedge-like' structure. The levels of river input to the very large volume of the Firth are also so small, that there are no issues regarding river flood risk. Tidal ranges and heights for the area is well understood and published by PoCF each year.

A hydrological model was previously completed for the Phase 3 development.

Sediment analysis carried out for the Phase 3 development identified silts, fine sand, medium sand and course sand, the sediment layer is very deep, the piling of Phase 3 has not

encountered bed rock. The hydrogeology of the proposed Phase 4 development area is expected to be similar to Phase 3.

Sediment samples area regularly taken around the Invergordon Service Base prior to dredging, contamination levels within samples tend to be relatively low, allowing disposal at sea. The Phase 4 area has not historically been utilised by Port or other activities hence there are no known sources of contamination identified in the area. As such no contamination issues are expected.

In recent years there have been bathymetry surveys carried out prior to and following various dredging disposal activities at the Sutors, providing a growing understanding of the seabed in that area, and the capacity of the spoil ground.

8.3 Potential Impacts

8.3.1 Construction

Potential impacts associated with construction include:

- Creation of sediment plumes during:
  - Dredging;
  - Dredging disposal (if required);
  - Construction activities such as infilling;
- Re-release of contamination from the seabed.

8.3.2 Operations

The reclaimed area will be porous and as such seawater will be able to pass through (tidal rise and fall) within the material utilised to infill the reclaimed area. However there is still a potential that it will cause localised changes to currents and sedimentation rates. It could affect the sediment composition in the adjacent intertidal areas.

In theory it could be affected by flooding, however it is expected that the reclaimed land will be 5.9m above sea level as per Phase 3 and have a negligible flood risk. No existing surface water outfalls should be affected by the development. Surface water may be discharges from the site after appropriate treatment; this will require an authorisation under CAR from SEPA (see Section 4.3.6).

8.4 Proposed Environmental Impact Assessment

The hydrological model will be updated to include the proposed Phase 4 development to provide an understanding of the hydrological impacts and associated sediment movements. The modelling will be utilised in the finalisation of the design layout for the Phase 4 development to ensure impacts are minimised.

Ground Investigation (GI) will be required to inform the design process, samples will be taken as part of the GI to allow sediment size distribution to be measured and chemical analysis. The chemical analysis will identify any pollutants present in the sediments. The GI is being

designed to provide an appropriate coverage of the area. If the sediments that need to be dredged are of a suitable quality they will be utilised within the infilling of the land reclamation.

The design will also take account of the tidal levels, to identify an appropriate height above sea level for the land reclamation to minimise surface flooding risks. Appropriate drainage design will ensure that the surface waters are effectively managed, to prevent flooding. The drainage will be relatively simple, as such the production of a Drainage Statement in line with The Highland Councils Supplementary Guidance (The Highland Council, 2013f) is deemed proportionate to the development. It will outline the proposals for the drainage of permeable and impermeable areas including how surface water on the site will be treated and discharged.

The risk of sediment plumes and re-release of contamination from the seabed will be assessed and appropriate mitigation identified within the Schedule of Mitigation for inclusion within the CEMD to minimise risks.

9 Ecology

9.1 Policy and Guidance

Relevant policy and guidance includes:

- GEN 9: Natural heritage: Development and use of the marine environment must:
  - Comply with legal requirements for protected areas and protected species;
  - Not result in significant impact on the national status of Priority Marine Features;
  - Protect and, where appropriate, enhance the health of the marine area;
- GEN 10: Invasive non-native species: Opportunities to reduce the introduction of invasive non-native species to a minimum or proactively improve the practice of existing activity should be taken when decisions are being made;
- PAN 60: Planning for Natural Heritage;
- Guidelines for Ecological Impact Assessment in the United Kingdom, (CIEEM, 2006)
- Monitoring the Otter Lutra lutra, (Chanin, 2003)
- Handbook for Marine Intertidal Phase 1 Biotope Mapping Survey (Countryside Council for Wales, 2006)

9.2 Designated Sites

There are numerous designated sites within 20km of the proposed development site, a full list is provided in Appendix A.

9.3 Ornithology

9.3.1 Baseline

The shoreline immediately to the north of the Phase 4 development is part of the Cromarty Firth SPA, SSSI and Ramsar and as such has important bird value.

A breeding bird survey was carried out around the Phase 3 development and along the shoreline to the North West, towards to the sailing club, during the summer of 2015.

Coastal Bird surveys were carried out between December 2012 and March 2013 for an area 2km either side of the Phase 3 development covering high, medium and low tide states to provide an indication of avian use of the full tidal area (Affric, 2013).

Wetland Bird Survey (WeBS) counts were carried out in 1999/2000, 2003/04 and 2011/12 for the majority of the Cromarty Firth, the Dalmore Bay count section covers the area immediately to the North of the proposed Phase 4 development.

Low Tide counts were undertaken by the British Trust for Ornithology (BTO) in the winters 1999/2000, 2003/2004 and 2011/12 for the Cromarty Firth, this shows where birds were

feeding. Oystercatchers, Curlew and Redshank have all be noted utilising the area immediately north of the proposed Phase 4 area.

Royal Society Protection of Birds (RSPB) carry out annual tern counts, the last two years have included the colony on the Service Base its self; this information will be requested as it is more up to date than the Moray Firth tern monitoring report by Butterfield and Benn (2011).

Additional sources of information include:

- Highland Ringing Group;
- Highland Raptor Study Group; and
- SNH report No.252 Moray Firth Wildfowl & Wader Roosts (Swan, 2007).

9.3.2 Potential Impacts

9.3.2.1 Construction

Construction activities could cause localised disturbance and displacement of feeding and possibly roosting birds during the construction phases of the development.

Impacts on water quality could have knock on implications for birds (see Section 14).

9.3.2.2 Operations

Operational activities could cause localised disturbance and displacement of feeding and possibly roosting birds. As discussed in Section 8, there is a potential to effect the movement of sediments in the area, which could include changes to the intertidal areas utilised for feeding.

Impacts on water quality could have knock on implications for birds (see Section 14).

9.3.3 Proposed Environmental Impact Assessment

To augment existing survey data, it is proposed that two bird surveys are carried out each month from October to December. The surveys will cover high, medium and low tide levels. Where possible the age class of the bird will be recorded to provide an insight into the importance of the area.

To provide additional information on the value of the intertidal area for feeding, a marine invertebrate survey will be carried out. Intertidal habitat mapping of the area to the north of the proposed development will be carried out. This will inform the selection of locations from a quadrant survey. The quadrant survey will include at least one transect down the intertidal area from the shore, and other appropriate samples to ensure coverage of the various habitat types present.

The hydrology modelling will inform the assessment of impacts associated with sediment movements.

A full assessment of impacts on the ornithology in the surrounding area and the wider effects on the designation will be considered as part of the assessment. Appropriate mitigation measures will be identified to minimise impacts.

Effects associated with changes in water quality will be considered within the water quality section of the ES (see Section 14).

9.4 Marine Mammals

9.4.1 Baseline

The Moray Firth Special Area of Conservation (SAC) designated for its marine mammal interest including bottlenose dolphin Tursiops truncatus is located approximately 5km east of the development.

The Dornoch Firth and Morrich More SAC are designated for its seal populations.

A detailed review of published marine mammal data for the Cromarty was completed as part of the Phase 3 EIA process (Affric, 2013).

As part of the Phase 3 construction mitigation passive acoustic monitoring (PAM) and marine mammal observation (MMO) techniques were utilised, providing detailed information about marine mammal occurrences in the immediate vicinity of the Phase 4 proposed development area (Affric, 2015).

SNH previously commissioned modelling of marine mammal interactions with regard to port developments and vessel movements (Lasseau et al , 2011 & Lasseau, 2013).

The University of Aberdeen is currently working on a DECC SEA funded project investigating the potential impacts of the marine piling works conducted during the Nigg East Quay Development on the marine mammal populations of the Cromarty Firth. It is expected that the findings of this research will be published by late 2015 (Thompson, pers. coms.); this information will be incorporated in the EIA.

9.4.2 Potential Impacts

9.4.2.1 Construction

During construction there is a potential to cause direct harm to marine mammals if they are in the immediate vicinity of construction works, with simple mitigation measures the effect is not expected to be significant.

There is also a potential to disturb marine mammals; assuming only vibro piling is required then the area affected will be small, and as such effects are not expected to be significant.

Ship movements associated with the construction and potentially dredged spoil disposal will be relatively low in number in comparison to the normal movements in the firth as such no significant effects are predicted.

Dredged spoil disposal can cause harm to marine mammals in the immediate vicinity of the vessel during disposal, standards mitigation measures will minimise the risk of this effect.

Impacts on water quality could have knock on implications for marine mammals, either directly or via indirect ecosystem level effects (see Section 14).

9.4.2.2 Operations

Dredged spoil disposal from maintenance dredging can cause harm to marine mammals in the immediate vicinity of the vessel during disposal, standards mitigation measures will minimise the risk of this effect.

Vessel movement associated with the operation of the new berth and Ro-Ro will vary in number and size depending on the work being undertaken. A sizeable increase in vessel movements could increase the disturbance and stress levels on marine mammals.

Impacts on water quality could have knock on implications for marine mammals either directly or via indirect ecosystem level effects (see Section 14).

9.4.3 Proposed Environmental Impact Assessment

Aberdeen University carried out marine mammal investigations throughout 2014; hence they will be contacted to identify any additional information that may add value to the assessment.

The assessment of construction impacts on marine mammals will take account of the underwater noise predictions (see Section 5.3) and the potential to cause direct harm. Appropriate mitigation to minimise the risks and effects will be included in the Schedule of Mitigation for inclusion in the CEMD. Assessment and mitigation identification with regard to dredging disposal will take account of the work being undertaken by SNH on this topic.

An understanding of potential vessel movements for a range of use types will be developed including the likely number, type and seasonality of boat traffic. This information will be incorporated into existing modelling to allow the effects on marine mammals to be assessed.

Effects associated with changes in water quality will be considered within the water quality section of the ES (see Section 14).

9.5 Otters

9.5.1 Baseline

European otters use the areas around the Invergordon Service Base; signs and sightings of otters have been recorded on the existing rock armour installed as part of the Phase 3 development. In addition, two camera trap surveys were conducted during the Phase 3 works in order to ascertain the nature of the otter activity in the area. There is no evidence of couches, Holts or layups in the immediate vicinity of the Service Base.

9.5.2 Potential Impacts

9.5.2.1 Construction

In theory there is a potential to cause harm to otters, if they are in the immediate vicinity during construction, however their shy nature means that is very unlikely that they will come that close to the construction works.

Some areas of rock armour installed on the Phase 3 development will need to be removed to facilitate the construction of Phase 4. If Holts, couches or layups are found to be present in these areas, then there is a potential to destroy these features, and harm any cubs present.

There is a potential to cause disturbance to otters during construction works. With appropriate mitigation such as that utilised on the Phase 3 development, no significant effects should occur.

Impacts on water quality could have knock on implications for otter either directly or via indirect ecosystem effects (see Section 14).

9.5.2.2 Operations

Operations could cause disturbance to otters. The evidence from Phase 3 suggests that the otters only utilise the rock armour and as such no significant effects are expected.

Impacts on water quality could have knock on implications for otter either directly or via the food chain (see Section 14).

9.5.3 Proposed Environmental Impact Assessment

A review of the existing otter data will be carried out. A survey of the areas surrounding the proposed development will be conducted, including the Phase 3 area and the shoreline to the north from the service base westwards to at least 250m beyond the end of the proposed Phase 4 development.

An EPS licence will be applied for if required depending on the outcome of the survey.

Effects associated with changes in water quality will be considered within the water quality section of the ES (see Section 14).

9.6 Diadromous Fish

9.6.1 Baseline

A review of available literature with regard to diadromous fish was carried out as part of the Phase 3 EIA process (Affric, 2013).

9.6.2 Potential Impacts

9.6.2.1 Construction

There is a potential to cause direct harm to fish in the immediate vicinity of construction works, with the greatest risks occurring during the smolt runs. Additional impacts are associated with possibility of reduced water quality during some construction works, and dredged spoil disposal, if it is required (see Section 14). No evidence of fish mortality or distress has been recorded during the Phase 3 development; hence with appropriate mitigation no significant effects are predicted.

Underwater noise levels are unlikely to be high enough to have a significant effect on fish.

9.6.2.2 Operations

Impacts on water quality could have knock on effects to fish, see Section 14.

9.6.3 Proposed Environmental Impact Assessment

A desk based review of literature published since 2013 will be carried out to update understanding of diadromous fish in the Cromarty Firth. An assessment of effects associated with construction will be carried out; mitigation will be incorporated into the Schedule of Mitigation for inclusion in the CEMD.

Effects associated with changes in water quality will be considered within the water quality section of the ES (see Section 14).

9.7 Benthic Ecology

9.7.1 Baseline

Benthic surveys and desk based assessment of the Phase 3 area immediately adjacent to the proposed development including video transects and benthic grab sampling was carried out in 2013 (EcoFish, 2013).

The Joint Nature Conservation Council (JNCC) Mapping European Seabed Habitats database identifies the local habitat types as:

- Habitat: A5.23: Infralittoral fine snad or A5.24 Infralittoral muddy sand; and
- Habitat: A5.25: Circalittoral fine sand or A5.26 Circalittoral muddy sand.

9.7.2 Potential Impacts

9.7.2.1 Construction

The construction works and dredging, will lead to smothering and loss of habitat over the full footprint of the development with regard to benthic ecology. However the scale of the area in relation to the size of the rest of the firth, and lack of protected species likely to be in the area, are such that this effect is unlikely to be significant.

9.7.2.2 Operations

Impacts associated with changes in hydrology (see Section 8) and water quality (see Section 14).

9.7.3 Proposed Environmental Impact Assessment

To confirm the understanding of the Phase 4 development area, benthic grab samples will be taken at various locations across the development foot print. The sample locations will be selected to provide a representative selection, including sampling from a range of water depths

An assessment of the effects in the context of the wider Cromarty Firth will then be carried out.

10 Landscape and Visual

10.1 Policy and Guidance

Relevant policy and guidance includes:

- GEN 7 Landscape/seascape: Marine planners and decision makers should ensure that development and use of the marine environment take seascape, landscape and visual impacts into account.
- Guidelines for Landscape and Visual Impact Assessment (GLVIA) (Landscape Institute and Institute of Environmental Assessment, 2013)
- Practice Advice Note, Photography and photomontage in Landscape and Visual Impact Assessment. Advice Note 01/11 (Landscape Institute, 2011).
- Visualisation Standards for Wind Energy Developments (The Highland Council, 2015)

10.2 Baseline

Sources of relevant baseline information include:

- Ross and Cromarty Landscape Character Appraisal (SNH, 1999);
- Inner Moray Firth Landscape Character Appraisal (SNH, 1998);
- Appraisal of Highland Special Landscape Areas (The Highland Council and SNH, 2012);
- OS 1: 50000 map sheet 21;
- OS 1: 25000 map sheets 432 and 438;
- An Inventory of Gardens and Designed Landscapes (Historic Scotland, 2015); and
- This Noble Harbour – A History of the Cromarty Firth (Macaulay et al 1991).

Initial bare earth and screened Zone of Theoretical Visibility (ZTV) assessments have been completed (Drawings 19401/ZV/007 & 8). As the development has not as yet been designed they included the whole red line boundary, visibility was assessed for the likely level of the reclaimed land (5.9m above sea level) show in blue on the drawings. It was assumed that the highest component on the laydown will be lighting towers which are 25m high (30.9m above sea level); this height was also used in the ZTV and is also shown on the drawings. The ZTV's are an unrealistic worse case; however they are useful in identifying viewpoints for the purpose of photomontage assessments.

10.3 Potential Impacts

10.3.1 Construction

During construction, landscape and visual impacts could be associated with the development itself and the plant, equipment and vessels involved in its construction.

10.3.2 Operations

Landscape and visual impacts of operations are associated with the physical development and the activities it is used for, such as laydown of components and materials, and vessels berthing alongside.

10.4 Proposed Environmental Impact Assessment

A study area with a 10km radius around the development is proposed, beyond which the proposed development is unlikely to result in significant impacts. The assessment will be based on the GLVIA (Landscape Institute and Institute of Environmental Assessment, 2013).

A desk-based appraisal will be undertaken to define landscape character, to identify landscape designations and relevant government policy.

Zone of Theoretical Visibility maps (ZTVs) bare earth and screened will be generated for the layout of the development once it has been designed. These will identify the potential extent of visibility over a 10km radius study area.

Photomontage images will be prepared in line with Visualisation Standards for Wind Energy Developments (The Highland Council, 2015). The proposed viewpoints are provided in Table 10.1 and show on drawings 19401/ZV/008.

Table 10.1: Proposed Viewpoint Locations

Viewpoint	Location (Grid Ref)	Reasoning
1. B817 Invergordon	NH697 688	Representative of recreational users of Linear Park, users of the associated Car Parks and views for vehicle drivers on the B817.
2. King George Street	NH 700 688	Representative or the residential receptors of Invergordon
3. Near Balblair	NH704 667	Representing the view from the south side of the Cromarty Firth for receptors in Balblair and Kirkton from a higher elevation than viewpoint 5.
4. Fyrish	NH 608 698	Representative of the views seen by walkers visiting the monument on Fyrish Hill.
5. Newhall Point	NH709 671	Representing the view from the south shore near the residential receptors.

It is recognised that the development could have multiple uses; these will be driven by client demand. It is proposed that the photomontages are completed for 2 potential use scenarios:

- Wind turbine storage and assembly; and
- Cruise ship and general laydown of components.

The assessment will be completed by a Chartered Landscape Architect, whom will carry out their fieldwork in clear weather conditions. In addition to carrying out the assessment, the Landscape Architect will work with the design team, to identify ways in which to minimise landscape and visual impacts and where possible identify enhancement. This may include improvements to the linear park area and the gateway to Invergordon.

11 Local Community and Economy

11.1 Policy and Guidance

11.1.1 Policy and Guidance

Relevant policy and guidance includes:

- GEN 2 Economic benefits: Sustainable development and use which provides economic benefit to Scottish communities is encouraged when consistent with the objectives and policies of this Plan.
- GEN 3 Social benefits: Sustainable development and use which provides social benefits is encouraged when consistent with the objectives and policies of this Plan.
- HM Treasury Green Book: Appraisal and Evaluation in Central Government.

11.2 Potential Impacts

11.2.1 Construction

Effects on the local community and economy associated with construction include both positive and negative effects:

- Direct jobs associated with construction works;
- Indirect jobs through the supply chain and service industry sectors; and
- Recreational amenity of linear park reduced during construction works.

11.2.2 Operations

Effects on the local community and economy associated with operation include:

- Direct jobs and income associated with PoCF staff required to operate phase 4.
- Direct jobs and income associated with the range of additional activity that can be accommodated/carried out at the service base. This will include additional capacity to support offshore wind, oil & gas sector, and cruise liner.
- Indirect jobs and income through the supply chain;
- Wider 'off-site' jobs and income to the tourism sector across the highlands associated with additional Cruise sector activity; and
- Recreational amenity of linear park.

11.3 Proposed Environmental Impact Assessment

The assessment of the potential social and economic impacts associated with the Phase 4 development will include analysis of the development/construction and operation of phase 4. Specifically, the socio-economic impact assessment will address the following:

1. Baseline socio-economic analysis of the local economy set in the context of Scotland as a whole.
2. Impacts of the development and construction of phase 4.
3. Impacts arising from the operation and maintenance of phase 4.

4. Impacts arising from activity accommodated as a consequence of the extra capacity available from phase 4.
5. Potential impacts on recreational and tourism activities.

The socio-economic analysis covers:

1. Demographic trends-population, age structure, migration trends etc.
2. Structure of, and trends in, the local economy.
3. New business creation.
4. Employment trends.
5. Unemployment trends.
6. Structure and trends in wages & earnings.

The economic impacts will be measured in terms of:

- Employment.
- Income (earnings).
- Gross Value Added (GVA).

12 Materials and Waste

12.1 Policy and Guidance

Relevant policy and guidance includes:

- GEN 11 Marine Litter: Developers, users and those accessing the marine environment must take measures to address marine litter where appropriate. Reduction of litter must be taken into account by decision makers.
- Waste Hierarchy
- PPG6: Work at Construction and Demolition Sites (SEPA et al, 2014);

12.2 Potential Impacts

12.2.1 Construction

During construction large volumes of materials will be required to build the berth, Ro-Ro facility and to reclaim the land; materials likely to be required are detailed in Table 12.1.

Table 12.1: Material Requirements.

Material	Use	Comment
Rock	Rock Armour	Rock armour requiring removal from Phase 3 development will be reused.
Sand/gravel	Infill material	If dredged material is suitable it will be utilised as infill. If suitable dredged material from other sources is available it shall be utilised as infill.
Metal	Piles, quay furniture (ladders and bollards etc).	Pile will be of a suitable length to reach a firm layer in the seabed. The length will be confirmed by ground investigation works.
Cement	Surfacing/ Quay and Bollard Bases.	It is assumed that it will be brought to site as ready mix.
Hydrocarbons: Fuel, Oils, and hydraulic fluids	Plant, equipment and vessel operations.	Plant, equipment and vessels will require fuel, oils and hydraulic fluids.

Waste arising during construction may include: dredged material not suitable for reuse, cement washings and various other miscellaneous materials which will be segregated to facilitate recycling.

There are risks associated with the storage of wastes and materials including dust from dry materials and spillages of hydrocarbons.

12.2.2 Operation

Material requirements and waste arising during operations will be dependent on the activities being undertaken.

As with construction there are risks associated with the storage of wastes and materials including dust from dry materials and spillages of hydrocarbons.

12.3 Proposed Environmental Impact Assessment

Material requirements will be identified and quantified based on the design developed for Phase 4. Waste types will also be identified. Applicable waste legislation and best practice with regard to storage of materials and pollution prevention will be reviewed. Mitigation will be identified in line with best practice in the Schedule of Mitigation for inclusion in the CEMD to minimise the effect of material usage, employ the waste hierarchy, and to minimise risks associated with material and waste storage.

It is not possible to predict the material and waste requirements of operations on the Phase 4 development. However appropriate material and waste management will need to be applied. This will be noted within the Schedule of Mitigation of incorporation into the ports operational environmental management system prior to operations commencing.

13 Traffic and Transport

13.1 Policy and Guidance

Relevant policy and guidance includes:

- Planning Advice Note (PAN) 75: Planning for Transport;
- Roads and Transport Guidelines For New Developments (The Highland Council, 2013g)
- Transport Assessment Guidance (Transport Scotland, 2012); and
- Guidelines for the Environmental Assessment of Road Traffic, Institute of Environmental Management and Assessment (IEA, now IEMA, 1993).

13.2 Baseline

The Department of Transport publish travel count information collected at various points along the A9, including Alness and Tomnich; data collated between 2000 and 2014 is currently available.

Information on traffic counts for the B817 carried out in 2010 by The Highland Council has previously been provided.

13.3 Potential Impacts

13.3.1 Construction

The construction works may take up to 18 months, associated transport requirements include:

- Construction personnel commuting to work;
- Material deliveries (Aggregates, cement and components);
- Delivery and removal of heavy plant to carry out works; and
- Removal of waste from site (small volume).

Impacts will be associated with road travel including increased heavy good traffic, large slow moving vehicles, and parking of personal vehicles.

13.3.2 Operations

During operations, transport will be requirements may include:

- Personnel commuting to work;
- Cruise ship passenger bus tours;
- Material delivery;
- Export of materials from the base to onshore destinations; and
- Waste removal from site.

Impacts will be associated with road travel including large slow moving vehicles and parking of personal vehicles.

13.4 Proposed Environmental Impact Assessment

The available baseline data for existing traffic flows in the area will be reviewed. Predictions of transport and parking requirements for both construction and operational phases will be made. This will allow the impact of increased road movements to be assessed in line with IEMA Guidelines (1993); it is expected that the impacts will not be significant in EIA terms. However appropriate mitigation measures to minimise impacts will be identified.

The Highland Council has requested that a full Transport Assessment is carried out; this will be completed separate to the EIA. The ES will refer to the Transport Assessment as appropriate, and any management or mitigation measures identified to minimise impacts during construction will be incorporated into the Schedule of Mitigation for inclusion in the CEMD.

14 Water Quality

14.1 Policy and Guidance

Relevant policy and guidance includes:

- GEN 12: Water quality and resource: Developments and activities should not result in a deterioration of the quality of waters to which the Water Framework Directive, Marine Strategy Framework Directive or other related Directives apply;
- PAN 79: Water and Drainage;
- Pollution Prevention and Environmental Management in the Marine Environment (SEPA, 2015);
- Pollution Prevention Guideline Note (PPG) 5: Works and Maintenance in or Near Water (SEPA et al, 2007);
- PPG6: Work at Construction and Demolition Sites (SEPA et al, 2014);
- Guidance on Marine Non-Native Species (GreenBlue, 2013); and
- Marine Non-Native Species (Scottish Natural Heritage, 2013).

14.2 Baseline

Information with regard to the status of the transitional waters of the Cromarty Firth (Inner 200443 and Outer 200442) and the Coastal Waters of the Moray Firth (Hilton of Cadboll to Whiteness Head 200501) is published in 2014 by SEPA as part of the River Basin Management Plan.

The transitional waters of Cromarty Firth (Inner 200443 and Outer 200442) have been categorised by SEPA as not being heavily modified, not being artificial, and with a typology of TW2. In 2012 SEPA classified the Inner and Outer Cromarty Firth as having an overall status of Good with High confidence, and with an overall ecological status of Good, with an overall chemical status of Pass.

The coastal waters of the Moray Firth (Hilton of Cadboll to Whiteness Head 200501) have been categorised by SEPA as not being heavily modified, not being artificial, and with a typology of CW2. In 2012 SEPA classified Hilton of Cadboll to Whiteness Head as having an overall status of High with High confidence, and with an overall ecological status of High, with an overall chemical status of Pass.

14.3 Potential Impacts

14.3.1 Construction

For the construction process the following potential impacts have been identified:

- Re-release of contamination from the seabed (see Section 9.3);
- Pollution risks associated with the use of hydrocarbons: oils, fuels, hydraulic fluids;
- Pollution risks associated with cement products and cement washings (sediments, suspended solids and alkalinity);
- Pollution risks associated with sediments and suspended solids from the storage of materials; and

- Introduction of Marine Non-Native Species (MNNS);
- Discharges to the marine environment; and
- Suspended solids issues arising during:
    - Dredging;
    - Dredging disposal (if required);
    - Construction activities such as infilling;

14.3.2 Operations

During operations the following potential impacts could occur:

- Pollution risks associated with the use of hydrocarbons: oils, fuels, hydraulic fluids;
- Pollution risks associated with sediments and suspended solids from the storage of materials; and
- Introduction of MNNS; and
- Surface water discharges.

14.4 Proposed Environmental Impact Assessment

Desk based baseline assessment to understand the general water quality and sensitivity of the area is proposed only.

The pollution risks and risks associated with introducing MNNS will be assessed utilising the following approach:

Risk = Probability x Impact Magnitude

Appropriate mitigation in line with best practice such as those mentioned in Section 14.1 will be identified in the Schedule of Mitigation for inclusion within the CEMD to minimise risks to water quality.

Any discharges associated with the construction works or operations will be appropriately treated and licensed under CAR (see Section 4.3.6). Potential discharges and the proposed management will be discussed in the ES.

15.1 Policy and Guidance

Relevant policy and guidance includes:

- GEN 21 – Cumulative impacts affecting the ecosystem of the marine plan area should be addressed in decision making and plan implementation

15.2 Offshore Developments

Projects which have a Marine Licence or are within the licensing process and are within 100km by sea of Invergordon have been identified and considered with regard to cumulative and in combination effects in Table 15.1.

Table 15.1: Marine Projects need for Cumulative Assessment

Project	Comment
Beatrice Offshore Wind Farm (Beatrice Offshore Wind Limited: BOWL) – 277 turbines	The original aim is for BOWL to start works in 2015; this now looks to be more like 2017/18. The PoCF wish to have the Phase 4 development constructed prior to this date. Hence the construction phases (especially the in-water elements) are unlikely to overlap. The additional vessel movements associated with the wind farm have been included within modelling of effects on dolphins previously completed (Lusseau, 2013).
Moray Offshore Wind Farm (Moray Offshore Renewables Limited: MORL) – Proposals for a 1.5 GW offshore wind farm at Smith Bank in the Outer Moray Firth;	The construction of the MORL project has been delayed; current expectation is that work will start late 2017 early 2018. PoCF wish to have the Phase 4 development constructed prior to this date. Hence the construction phases (especially the in-water elements) are unlikely to overlap. The additional vessel movements associated with the wind farm have been included within modelling of effects on dolphins previously completed (Lusseau, 2013).
The laying of cables in the outer Moray Firth associated with wind farm developments	The impacts associated with cable laying are very localised disturbance impacts. All the proposed cables are far enough away not to have cumulative effects with the Phase 4 Invergordon development
Dredging/Construction activity being carried out by Ports within the Moray Firth	The permission in place for Highland Deephaven and Whiteness will be considered in the cumulative assessment, as will any dredging licences in force during the assessment period.

15.3 Onshore Developments

Onshore developments entering the planning system in the past 2 years within 1km of the site were reviewed. The PoCF has submitted planning consents for:

- Car park at Clyde (14/01382/FUL) this was granted and the carpark has been constructed.
- Temporary car parking on the Old Railway sidings (15/01101/FUL).
- Temporary access at the west end of the (13/04837/FUL) a request to extend this has recently been submitted.

These consents will be considered as part of the Traffic and Transport Assessment as they are part of the current situation, hence there is no need to access cumulative effects.

All other applications within 1km relate to alterations to residential properties or construction of new residential developments. None of which are likely to have in combination or cumulative effects with the proposed Phase 4 development.

16 Conclusion

A scoping response is requested under Section 13, and in alignment with Schedule 4 of the Marine Works (EIA) Regulations 2007. Table 16.1 summarises the proposed scope of the EIA process proposed for the proposed Phase 4 development of the Invergordon Service Base, by the PoCF.

Table 16.1: Summary of Topics Scoped In and Out

Topic	Construction	Operations
Acoustics: In-Air		
Acoustics: Under water		
Archaeology & Cultural Heritage		
Air Quality		
Coastal Processes, Ground Conditions & Contamination		
Ecology: Ornithology		
Ecology : Marine Mammals		
Ecology: Otters		
Ecology: Diadromous Fish		
Ecology: Benthic		
Landscape & Visual		
Local Community and Economy		
Materials and Waste		
Traffic & Transport		
Water Quality		

Key

	Negligible Effect – Scoped Out
	Potential Effect – Scoped In
	Potential Significant Effect – Scoped In

PoCF are committed to working with Marine Scotland, The Highland Council, SNH, SEPA and Historic Scotland to ensure the design minimises environmental effects and where this is not practicable appropriate mitigation will be implemented.

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AA	Appropriate Assessment
BTO	British Trust of Ornithology
CAR	Controlled Activities Regulations
CEMD	Construction Environmental Management Document
CIEEM	Chartered Institute of Ecology and Environmental Management
COPA	Control of Pollution Act
EIA	Environmental Impact Assessment
EPS	European Protected Species
ES	Environmental Statement
GEN	General Planning Principles
GI	Ground Investigation
GLVIA	Guidelines for Landscape and Visual Impact Assessment
Ha	Hectare
HRA	Habitat Regulation Assessment
HwLDP	Highland wide Local Development Plan
IAQM	Institute of Air Quality Management
IEMA	Institute of Environmental Management and Auditing
IMFLDP	Inner Moray Firth Local Development Plan
JNCC	Joint Nature Conservation Council
MHWS	Mean High Water Spring
MLWS	Mean Low Water Spring
MMO	Marine Mammal Observations
MNNS	Marine Non-Native Species
MS-LOT	Marine Scotland- Licensing Operation Team
NMP	National Marine Plan
NPF	National Planning Framework
PAC	Pre-Application Consultation
PAM	Passive Acoustic Monitoring
PAN	Planning Advice Note
PPG	Pollution Prevention Guidance
PoCF	Port of Cromarty Firth
RCAHMS	Royal Commission on the Ancient and Historical Monuments of Scotland
Ro-Ro	Roll on, Roll off
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SEPA	Scottish Environment Protection Agency
SNH	Scottish Natural Heritage
SPA	Special Protection Area
SPP	Scottish Planning Policy
SSSI	Special Site of Scientific Interest
ZTV	Zone of Theoretical Visibility

Summary of Designated Nature Conservation Sites (SNH Sitelink)

Site	Designation	Distance and Direction	Feature Category/Feature
Cromarty Firth	SSSI	Immediately adjacent	Designated for non-breeding birds (bar-tailed godwit, red-breasted merganser, redshank, whooper swan, and wigeon), littoral sediment (coast/saltmarsh), and littoral sediment (marine/mudflats and sandflats).
Cromarty Firth	SPA	Immediately adjacent	Designated for breeding osprey and common tern and non-breeding whooper swan, bar-tailed godwit and greylag goose. Also designated for its non-breeding waterfowl assemblage comprising wigeon, pintail, scaup, red breasted merganser, knot, curlew and redshank. .
Alness River Valley	SSSI	5km NW	Designated for broadleaves, mixed and yew woodland (upland mixed ash woodland).
Loch Achnacloich	SSSI	6km NW	Designated for fen, marsh and swamp (wetland/open water transition fen), and standing open water and canals (eutrophic loch).
Loch Achnacloich	SAC	6km NW	Designated for standing open water and canals (naturally nutrient-rich lakes or lochs which are often dominated by pondweed).
Kinrive-Strathroy	SSSI	5km N	Designated for coniferous woodland (native pinewood) and fen, marsh and swamp (wetland/springs including flushes).
Morangie Forest	SPA	5km N	Designated for breeding birds (capercaillie).
Pitmaduthy Moss	SSSI	10km NE	Designated for bogs (wetland / raised bog) and other invertebrates (flies).
Calrossie	SSSI	10km NE	Designated for coniferous woodland (native pinewood).
Pitmaduthy Moss	SAC	10km NE	Designated for coniferous woodland (bog woodland).
Loch Eye	SSSI	15km NE	Designated for non-breeding birds (greylag goose, whooper swan and standing open water and canals (eutrophic loch).
Loch Eye	SPA	15km NE	Designated for non-breeding birds (greylag goose, whooper swan).
Talich	SSSI	16km NE	Designated for broad-leaved mixed and yew woodland (wet woodland).
Dornoch Firth and Morrich More	SAC	20km NE	Designated for inshore sublittoral rock (marine/reefs), inshore sublittoral sediment (marine/subtidal sandbanks), littoral sediment (coast/Atlantic salt meadows and glasswort/other annuals colonising mud and sand), littoral sediment (marine/estuaries), mammals (otter *Lutra luta*), mammals (marine/harbour seal *Phoca vitulina*), supralittoral sediment (coast / coastal dune heathland and dunes with juniper thickets).
Dornoch Firth and Loch Fleet	SPA	20km NE	Designated for breeding birds (osprey, and non-breeding birds (dunlin, greylag goose, wigeon, bar-tailed godwit, curlew, oystercatcher, and teal).
Craigroy Burn	SSSI	20km N	Designated for broad-leaved, mixed and yew woodland (upland birch woodland).

Site	Designation	Distance and Direction	Feature Category/Feature
Allt nan Caorach	SSSI	18k W	Designated for broad-leaved, mixed and yew woodland (upland birch woodland).
Ben Wyvis	SSSI	18k W	Designated for breeding birds (dotterel *Charadrius morinellus*), bogs (upland/blanket bog), mosaic (upland assemblage), quaternary geology and geomorphology (quaternary of Scotland), standing open water (dystrophic and oligotrophic lochs) and canals and vascular plants (vascular plant assemblage).
Ben Wyvis	SAC/SPA/SSSI	18k W	Designated for bogs (upland/blanket bog), dwarf shrub heath (upland / dry heaths), inland rock (tall herb communities), inland rock (plants in crevices on acid rocks), inland rock (acidic scree), montane habitats (alpine and subalpine heaths), montane habitats (montane acid grasslands), and standing open water and canals (clear water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels).
Loch Ussie	SSSI	20k SW	Designated for broad-leaved, mixed and yew woodland (upland oak woodland), and standing open water and canals (oligo-mestrophic loch).
Loch Ussie	SAC	20k SW	Designated for standing open water and canals (clear water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels).
Lower River Conon	SSSI	15k SW	Designated for broad-leaved, mixed and yew woodland (wet woodland), fen, marsh, swamp (wetland/open water transition fen), and littoral sediment (coast/saltmarsh).
Conon Islands	SAC	15k SW	Designated for broad-leaved, mixed and yew woodland (alder woodland on floodplains).
Monadh Mor	SSSI	15k SW	Designated for coniferous woodland (native pinewood).
Monadh Mor	SAC	15k SW	Designated for bogs (wetland/very wet mires often identified by an unstable "quaking" surface), and coniferous woodland (bog woodland).
Dam Wood	SSSI	14k SW	Designated for dwarf shrub heath (lowland wet heath).
Dam Wood	SAC	14k SW	Designated for broad-leaved, mixed and yew woodland (upland/juniper on heaths or calcareous grasslands), fen, marsh, swamp (upland/base-rich fens).
Roskill	SSSI	15k SW	Fen, marsh, swamps (grassland/fen meadow).
Munlochy Bay	SSSI	17k S	Designated for non-breeding birds (greylag goose *Anser anser* and Wigeon *Anas penelope)*, littoral sediment (coast/saltmarsh), and littoral sediment (marine/mudflats).
Inner Moray Firth	SPA	17k S	Designated for breeding (osprey *Pandion haliaetus*) and non-breeding birds (common tern, goldeneye, goosander, greylag goose, red-breasted merganser, redshank, scaup, bar-tailed godwit, cormorant, curlew, waterfowl assemblage, oystercatcher, and teal.
Moray Firth	SAC	5k E	Designated for inshore sublittoral sediment (marine/subtidal sandbanks), and mammals (marine/bottlenose dolphin *Tursiops truncatus*).
The Dens	SSSI	12k S	Geomorphology (mass movement).
Ardersier Glacial Deposits	SSSI	14k SE	Quaternary geology and geomorphology (quaternary of Scotland).

Site	Designation	Distance and Direction	Feature Category/Feature
Longman and Castle Stuart Bays	SSSI	20k S	Designated for breeding birds (cormorant, goldeneye, red-breasted merganser, redshank, wigeon, littoral sediment (coast/saltmarsh), littoral sediment (marine/eelgrass beds), littoral sediment (marine/mudflats).
Whiteness Head	SSSI	12k SE	Designated for non-breeding birds (bar-tailed godwit, and knot *Calidris canutus)*, geomorphology (coastal geomorphology of Scotland), littoral sediment (coast/saltmarsh), and littoral sediment (marine/mudflats), supralittoral sediment (coast/sand dunes), and supralittoral sediment (coast/shingle).
Kildrummie Kames	SSSI	20k SW	Designated for broad-leaved, mixed and yew woodland (upland/juniper scrub), fen, marsh, swamp (wetland, open water transition fen), quaternary geology and geomorphology (quaternary of Scotland), and standing open water and canals (eutrophic loch).
Rosemarkie to Shandwick Coast	SSSI	10k E	Designated for breeding birds (cormorant), broad-leaved, mixed and yew woodland (upland birch woodland), palaeontology (mesozoic palaeobotany), stratigraphy (Callovian), structural and metamorphic geology (moine), supralittoral rock (coast/maritime cliff), supralittoral sediment (coast/sand dunes), and vascular plants (purple oxytropis *Oxytropis halleri*).

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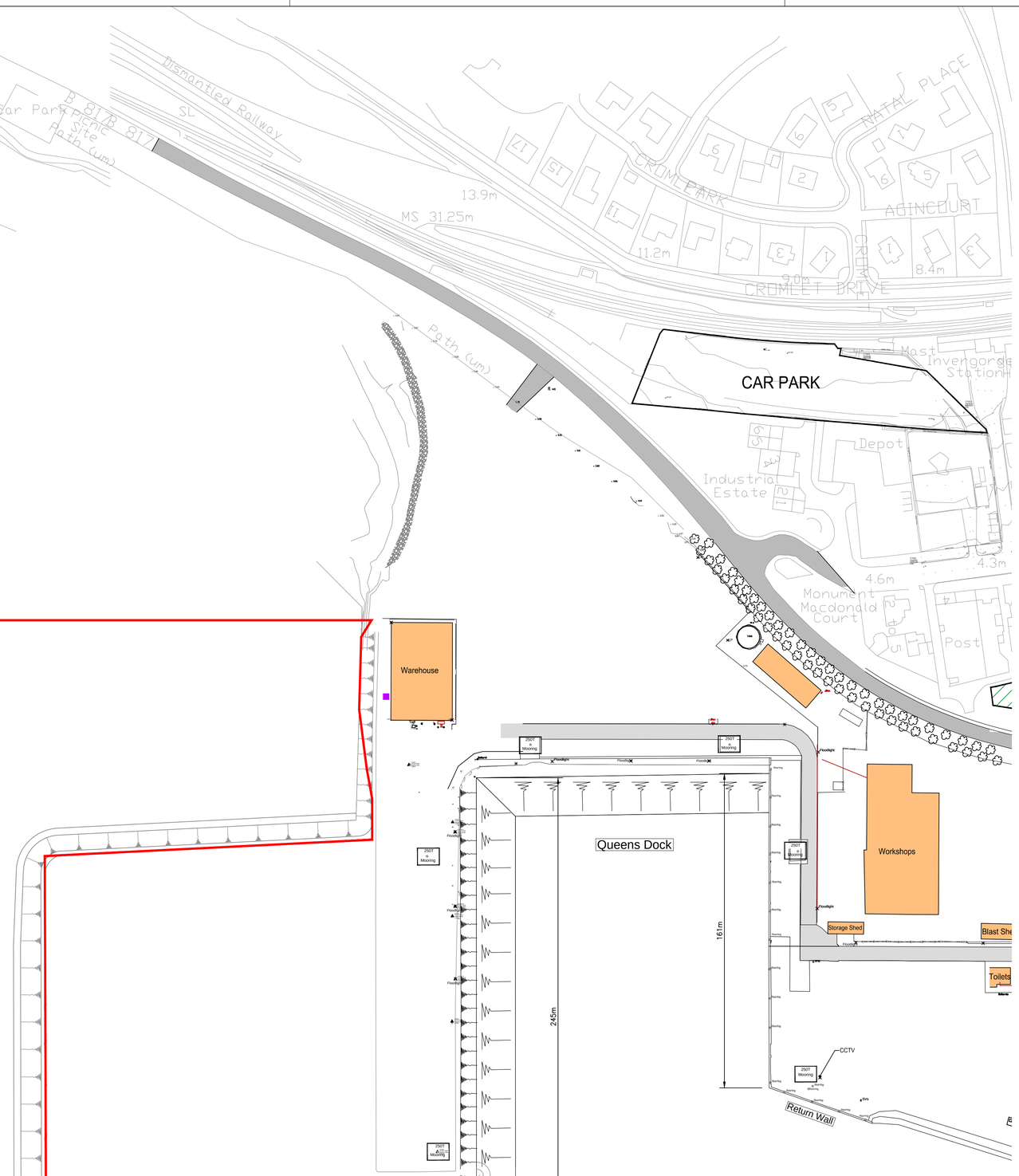

PLANNING BOUNDARY

AREA
134913.13m²
13.50 hectares
33.34 acres

ATKINS

KEY

PLANNING BOUNDARY

Drawing No: 5121683-GA-908

Rev 2

THIS IS A CAD DRAWING - HAND AMENDMENTS SHOULD BE CARRIED OUT IN ACCORDANCE WITH Q.A. PROCEDURES

Rev	Modifications	Drawn	Chk'd	Auth	Date
2	BOUNDARY AMENDED	BJH	GMcC	GMcC	01.09.15

Status

ATKINS
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GLASGOW
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Tel: 0141 220 2000
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Client

PORT OF CROMARTY FIRTH

Project

INVERGORDON SERVICE BASE
PROPOSED PORT LAYOUT

Title

PLANNING BOUNDARY

Original Size:	Scale:	Designed:	Drawn:	Checked:	Authorised:
A1	NTS	GMcC	SKM	GMcC	GMcC
		Date: 11.05.15	Date: 11.05.15	Date: 11.05.15	Date: 11.05.15

Drawing No. 5121683-GA-908 Rev: 2

DO NOT SCALE