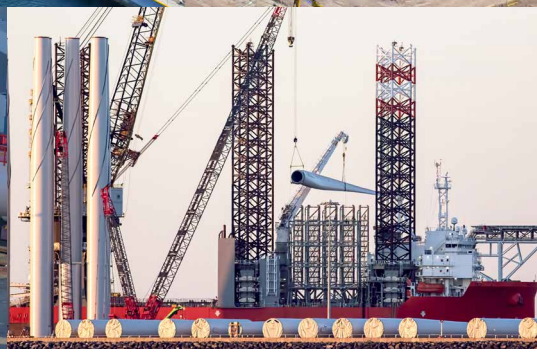
# ARDERSIER PORT ENERGY TRANSITION FACILITY PORT EXTENSION

Haventus

November 2025



# Chapter 1 Introduction

# Ardersier Port Extension

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| Author | Becky McLean |
| Technical Reviewer | Campbell Fleming |

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# 1 INTRODUCTION

This chapter introduces the proposals for the extension of Ardersier Port, as part of the Ardersier Energy Transition Facility (ETF) (henceforth referred to as the 'proposed development'). The proposed development is also referred to as the Ardersier Port Extension or the Ardersier Port Expansion interchangeably within this Environmental Impact Assessment Report (EIAR). This chapter also introduces the development, the history of the site, the planning context, the Applicant, the Environmental Impact Assessment (EIA) Team, the EIAR and also how you can view and comment on the Planning Application and Marine Licence applications.

## 1.1 THE DEVELOPMENT

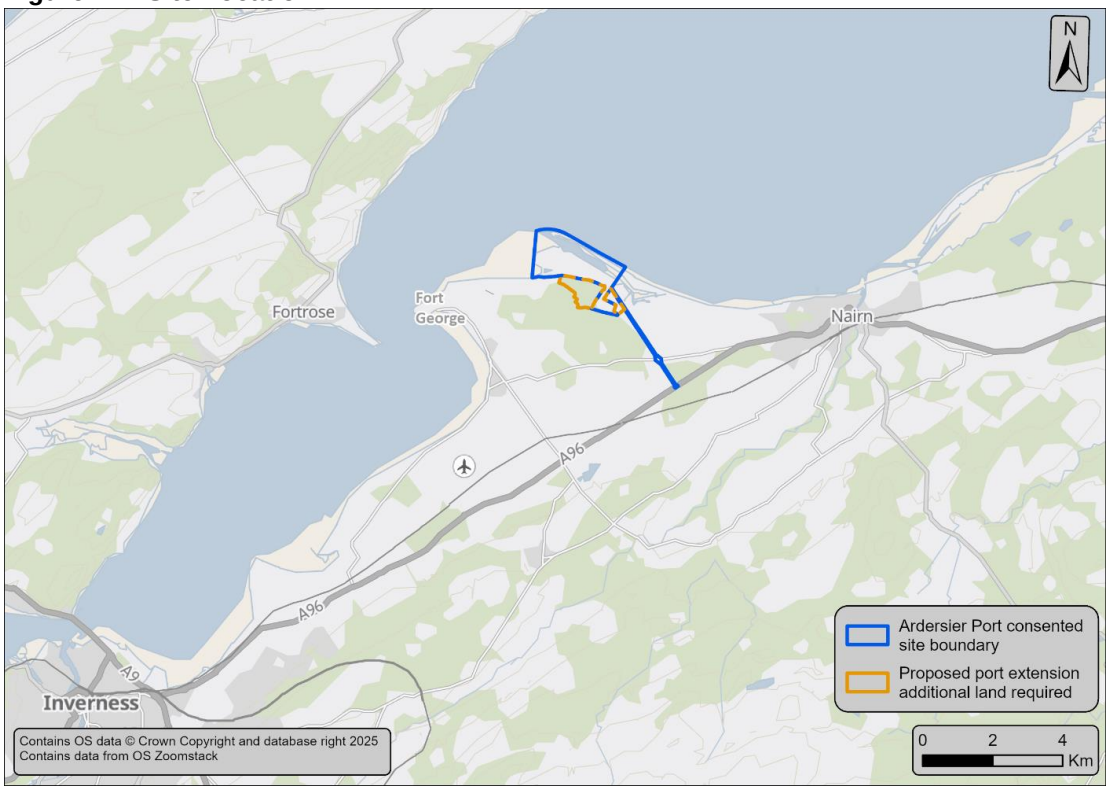
The proposed development is to expand the already consented Ardersier Port facility by around 198 acres of land. It is described as follows:

> *"Continued port development and expansion of port related services for energy related uses, including marine dredging within the inner harbour, sea disposal of dredged sands, possible temporary stockpiling of dredged material, quay construction, erection of offices, industrial and storage buildings and associated infrastructure including manufacturing, assembly, storage, delivery and export of port related cargo, parking, infrastructure, services, upfilling and re-grading/surfacing of new landward areas and landscaping."*

The proposed development is located within the Highland Council area with the marine elements located within the jurisdiction of the Marine Directorate[1]. The site location is shown in Figure 1.1.

[1] Marine Directorate - gov. scot

**Figure 1.1: Site Location**




The proposed development includes additional quay construction, dredging of the inner harbour, woodland clearance and the upfilling and creation of a platform. It also includes drainage, landscaping and the retention of a 15m woodland buffer along the southern edge.

The proposed development area could include port and offshore wind related buildings including manufacturing, workshops, assembly facilities (principally bases), storage, offices, and business units but the design and exact details of these will be confirmed by future tenants.

An indicative site layout has been drafted to give an idea of what could be included on the proposed development site, and this has been used where required for the EIA technical assessments. Further information is provided in EIAR Chapter 3 (Project Description).

## 1.2 BACKGROUND

Ardersier Port is located on the Moray Firth. The site is bordered by the Moray Firth to the north, Carse of Delnies to the east, Carse Wood to the south, and the sand dunes and tidal sandflats of Whiteness Sands to the west. Fort George's live firing range is to the southwest, and Whiteness Head Spit, which shelters a harbour.

The site is located on the edge of a relatively well settled rural landscape. Settlement within proximity of the site is predominantly farms and rural houses. The closest area of settlement is Ardersier village, which is located approximately 3km southwest of the site. Nairn (5km east) and Rosemarkie (5km west) are relatively close coastal settlements with views towards the site. Other villages and towns within 15km of the site include Fortrose (5.5km west), Cromarty (8.5km north), and Invergordon (13km northwest). Between 15km and 35km, settlement is predominately located at elevations below 200m AOD, leaving the uplands relatively remote and unpopulated. Within the lowlands, the city of Inverness is located approximately 18km southwest of the site, Forres is located approximately 20km east of the site, and Dingwall is located approximately 24km west of the site. The A96 trunk road is the main road through the area. Other larger roads include the A9 (west of Inverness), the A939 (east of the site), and several B

roads in addition to the network of rural lane and tracks which connect individual properties and farmsteads with the main road network. There are three train routes within the study area: the Far North Line, The Highland Main Line, and the Aberdeen–Inverness Line. Inverness Airport is approximately 5km southwest of the site.

The large-scale landscape associated with the site is informed by the high degree of openness, both inland over the port area and seaward over the Moray Firth. Beyond the site, the sense of scale is variable depending on the position in the landscape, but the overall perception is one of a large-scale landscape, informed by the open views over the coastal plains and long-range views towards the uplands north, west and south of the site.

The site has a long industrial history, having been a hub of activity for the energy sector in Scotland. In the 1970s a substantial area of land was reclaimed from the foreshore and utilised for industrial purposes for the fabrication and construction of offshore platforms for the oil and gas industry, employing in the region of 4,500 people.

Activity ceased in early 2000 and it was vacant for approximately 18 years. Once closed, it became one of the largest brownfield sites in the UK and the site has undergone significant decontamination works since operations ceased.

Planning permission in principle (PPiP) was sought and granted in January 2014 (application reference: 13/01689/PIP) for the following:

> *"Establish a port and port related services for energy related uses, including marine channel dredging, quay realignment, repair and maintenance, erection of offices, industrial and storage buildings and associated infrastructure, delivery and export of port related cargo, associated new road access, parking, infrastructure, services, temporary stockpiling of dredged material, re-grading and upfilling of landward areas and landscaping."*

This PPiP application was renewed on 4 February 2019 (application reference: 18/04552/PIP) and the following components have been constructed on site:

- Access channel
- Quay wall construction
- Main port activity area laydown
- Port support/administrative buildings
- Temporary on-site storage area for dredged material
- Roundabout on B9092 and new security gatehouse

The PPiP can be implemented in conjunction with the extant permitted development rights conferred on the designated port area via The Port of Ardersier Harbour Revision Order 2014 (HRO).

A Marine Dredge License was also obtained in February 2025 (application reference: 00010940)[2], which allowed dredging to create access to the new quayside. Marine Directorate granted this license, and the associated dredging is now complete.

With the 2019 consent for the port in place, the existing port is considered to be part of the 'baseline' scenario for the purposes of this EIA.

Ardersier ETF will provide Scotland's largest facility on the North Sea coast for deploying and servicing offshore wind installations, offering deployment solutions across the entire value chain, from manufacturing to storage and integration. Increasing the scale of the Ardersier ETF supports the economic growth and net zero ambitions of both the Scottish and UK Governments. The logistical, manufacturing and assembly needs of the offshore wind industry require very large land areas, not least due to development scale and size of components.

[2] Marine Licence - Capital Dredging & Sea Deposit - Ardersier Port - 00010940 | marine.gov.scot

The application site is shown in Figure 1.2.

**Figure 1.2: Application Site**

The site adjoins with the existing port land which extends to some 350 acres. Together the site will comprise some 547 acres of industrial land which in turn will support the economic growth and net zero ambitions of both the Scottish and UK Governments.

The need for the development and the benefits associated with the extension are explained in more detail in EIAR Chapter 3 (Project Description).

Ardersier Port Limited falls under the terms of:

- the Port of Ardersier Harbour Revision Order 2014
- the Port of Ardersier Harbour Revision (Transfer) Order 2017
- the Statutory Harbour Authority ("SHA") under the terms of the Ardersier Port Limited (Pilotage Powers Order 2024) as a Competent Harbour Authority ("CHA") in respect of the Port of Ardersier.

As the SHA, Ardersier Port Limited has responsibility for conservancy and safety, regulation of navigation, undertaking harbour works and development, managing the harbour environment, complying with law, and following and enforcing the Port Marine Safety Code. As the CHA, Ardersier Port Limited also has a duty to provide pilotage where appropriate.

As the SHA, Ardersier Port Limited have powers to (i) make Byelaws for the efficient management and regulation of the harbour and (ii) give General Directions and/or Special Directions for the purposes of securing conditions conducive to the ease, convenience and safety of navigation in the harbour.

Powers to make Byelaws and General and/or Special Directions is wide-ranging and includes regulating the use, operation and superintendence of the harbour and berths through to the regulating the conduct of persons within the harbour and regulating or prohibiting certain activities in the harbour, such as fishing.

In addition to powers to make Byelaws and/or give General and/or Special Directions Ardersier Port Limited's harbour master can issue Notices to Mariners in respect of any temporary matters that may affect the safe use of the harbour.

### 1.2.1 Site sensitivities and surroundings

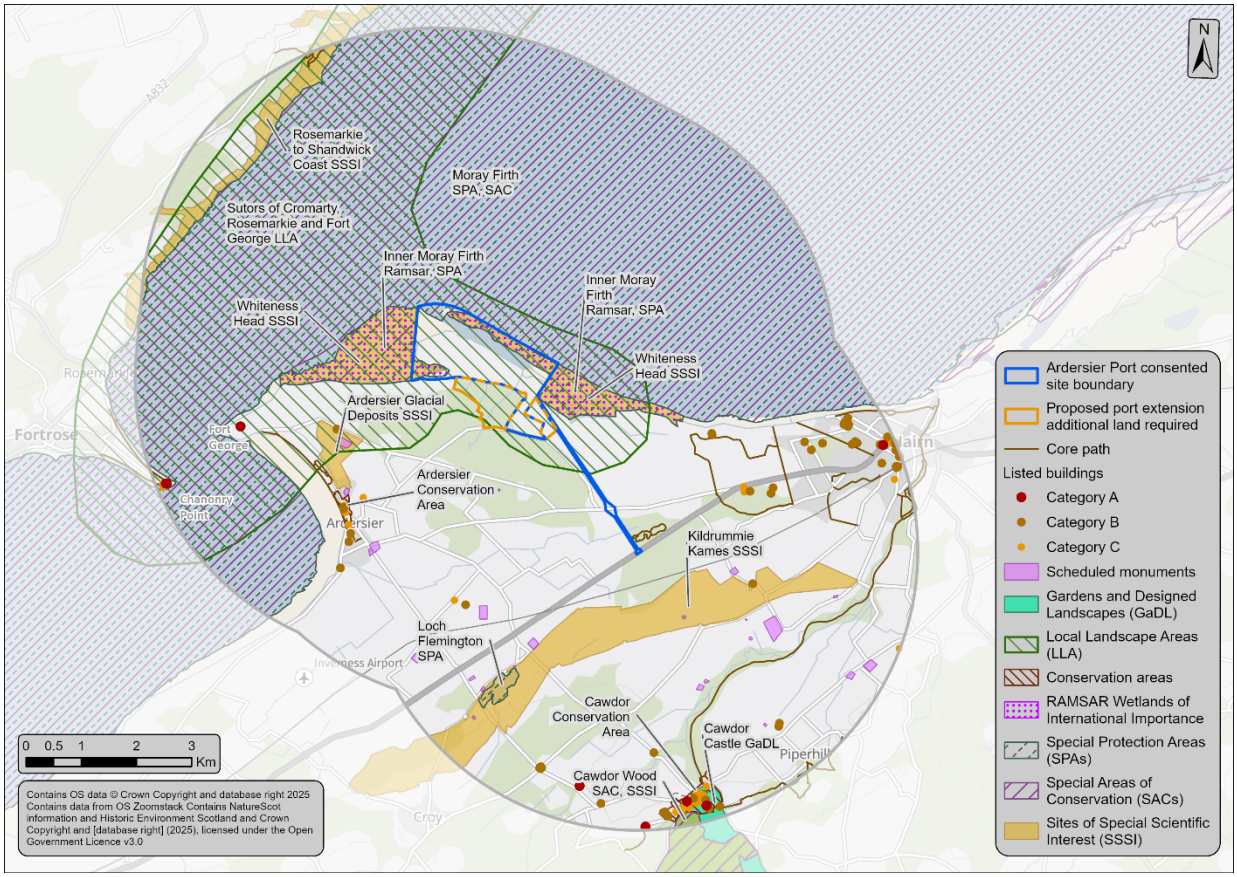
Ardersier Port, located on the Moray Firth, features a rich coastal ecosystem with diverse habitats supporting wildlife, including various bird and mammal species including bottlenose dolphins, seals, and harbour porpoise (and others). Whiteness Head is designated as a Site of Special Scientific Interest (SSSI) and is part of the Inner Moray Firth Special Protection Area (SPA) and a RAMSAR site, while the Moray Firth is a Special Area of Conservation (SAC), and the area encompasses the Sutors of Cromarty, Rosemarkie, and Fort George Special Landscape Area (SLA).

The site is bordered by the Moray Firth to the north, Carse of Delnies to the east, Carse Wood to the south, and the sand dunes and tidal sandflats of Whiteness Sands to the west. Fort George's live firing range is to the southwest, and Whiteness Head Spit, which shelters a harbour, is included in the site boundary.

Nearby, there is the village of Ardersier around 3 km to the south and Nairn approximately 6.5 km to the east. The site is visible from the surrounding coastline, although tree cover, and topography provide some screening to the south and west.

Key environmental considerations include the sensitive marine and terrestrial habitats, potential impacts on landscape and cultural heritage, and the need to minimise water environment, air quality, noise, carbon, and transport impacts during construction and operation, all key designations and areas of sensitivity are shown in Figure 1.3.

**Figure 1.3: Environmental Designations & Constraints**




## 1.3 PLANNING APPLICATION & SUPPORTING DOCUMENTS

The Applicant is applying for planning consent under the Town and Country Planning (Scotland) Act 1997 (as amended). The proposed development is classified as a 'major development' as defined in the Schedule of Major developments[3] and this sets out requirements. This classification sets out requirements with regards to the level of assessment and public consultation.

Public consultation requirements for the planning application are set out in the Town & Country Planning (Development Management Procedure) (Scotland) Regulations 2009, and The Marine Licensing (Pre-application Consultation) (Scotland) Regulations 2013 for the Marine Works Licence. Further details on the public consultation undertaken and the consultation with the statutory bodies is provided in EIAR Chapter 4 (Consultation).

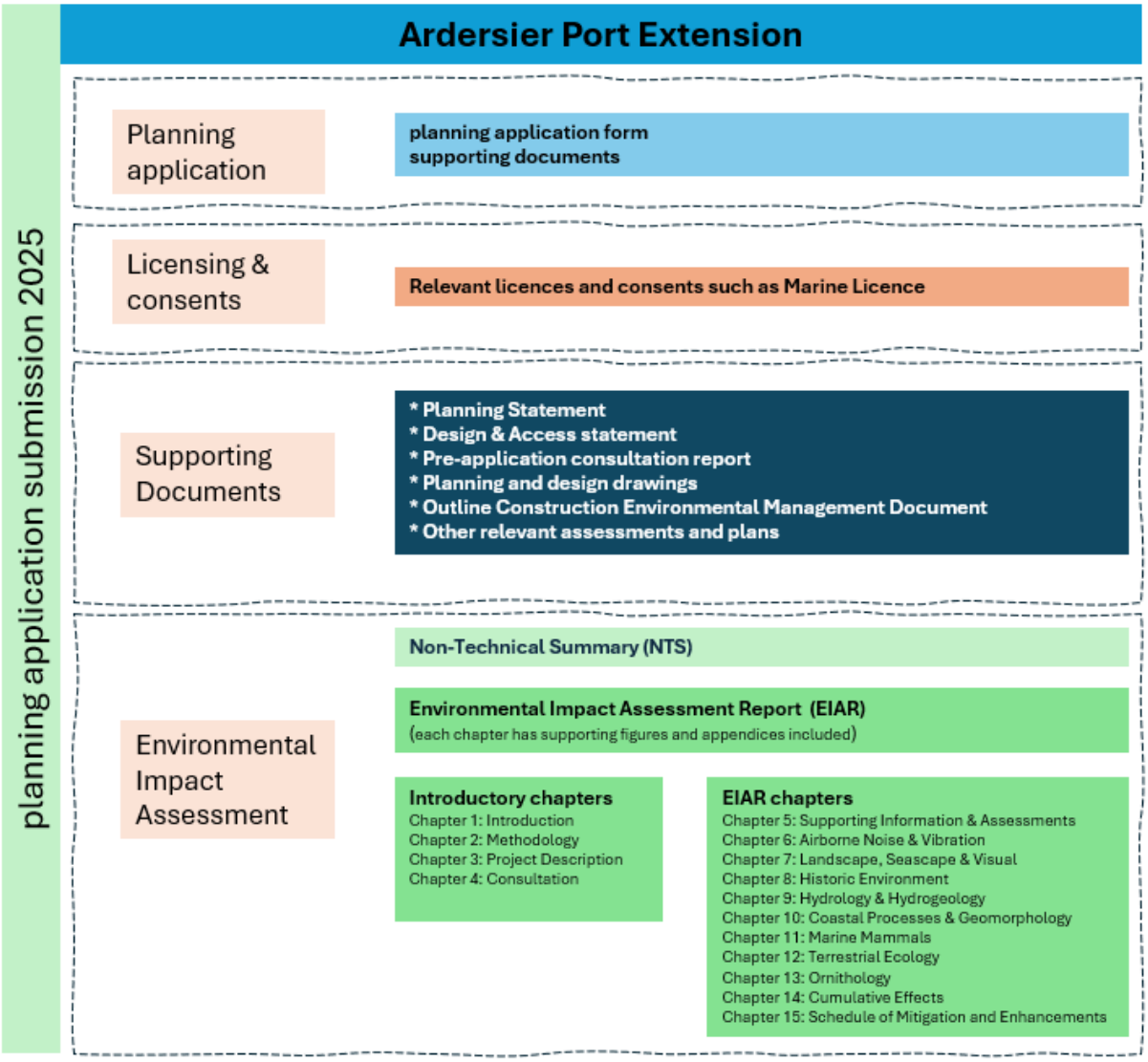
Further information can be found in the Planning Support Statement and EIAR Chapter 4 (Consultation).

[3] The Town and Country Planning (Hierarchy of Developments) (Scotland) Regulations 2009

The development will also require Marine Licences (Disposal Licence and a Construction Licence) to be issued by Marine Directorate under the Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017. This EIAR will be submitted as part of that Marine Licence application.

A diagram showing the format of the planning application, the Marine Licence application, supporting documents and this EIAR is provided below in Figure 1.4**.**

**Figure 1.4: Planning Application Submission**




## 1.4 THE APPLICANT & REGULATORY AUTHORITIES

The EIAR and the planning application will be submitted to the regulatory authorities as part of the planning and marine licence consenting process. Details of the applicant and the regulatory authorities relevant to this proposed development are set out below.

The Applicant for the proposed development is:

Haventus
Ardersier Port
Ardersier Port Approach
Inverness

IV2 7QX
Scotland
enquiries@haventus.com

The Planning Authority for the proposed development (considering all development on land) is:

Planning and building standards.
The Highland Council
Town House
High Street
Inverness
IV1 1JJ

The Regulatory Authority for Marine Works (for all construction work in the marine environment, dredging, and disposal) is:

Marine Directorate (MD-LOT)
Marine Directorate – Licensing Operations Team
Scottish Government
375 Victoria Road
Aberdeen
AB11 9DB
MD.MarineLicensing@gov.scot,

All these applications require an EIA and further details on what that is are provided in the next section.

## 1.5 THE ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

### 1.5.1 What is EIA?

An Environmental Impact Assessment (EIA) is a way of checking what effects a project—like extending a port in Scotland—might have on the local environment, such as marine life, water quality, coastal landscapes, and nearby communities. It helps identify possible problems early on so the design can be adapted to protect nature, reduce risks, and make sure the development is done in a responsible and sustainable way. The general methodology for this EIA is provided in EIAR Chapter 2 (Methodology) with more specific methodologies included in each of the EIAR Chapters (6 – 14) for their individual assessments.

### 1.5.2 The EIA Regulations

This EIA has been undertaken in accordance with Town and Country Planning (EIA) (Scotland) Regulations 2017 (further referred to as '*The EIA Regulations*[4]'). The EIA Regulations categorise developments according to their requirement for an EIA.

Schedule 1 of the Regulations lists the types of developments where EIA is always required, such as large scale and high impact developments (e.g. power stations). Schedule 2 lists developments that may or may not require an EIA depending on the potential for significant effects on the environment based on factors such as their nature, size, or location.

The proposed development is an extension to the consented Ardersier Port, and the previous application was deemed to require EIA. Therefore, this proposed development falls within Schedule 2, Section 13 *"Any change to or extension of development of a description mentioned in paragraphs 1 to 12 of Column 1 of this table where that development is already authorised, executed or in the process of being*

[4] The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017

*executed*". An EIA is therefore mandatory for the proposed development, and this document is presented as a formal EIAR prepared in accordance with the relevant EIA Regulations.

### 1.5.3 Scope of the EIA

The scope of the assessment has been shaped by consultation and to comply with the EIA Scoping Report submitted by Applicant and Scoping Opinions provided by the Highland Council (Ref - 25/00226/SCOP), the Marine Directorate (Ref SCOP-0062), and the various statutory consultees. Further information and a copy of the Scoping Request and Opinions from THC and MDLOT are provided in EIAR Chapter 4 (Consultation).

The EIAR comprises a series of technical chapters, figures and appendices as shown in **Figure 1.4.** A digital version of the Non-Technical Summary can be found – Public Consultation: Haventus - Montagu Evans.

### 1.5.4 The EIA Team

Regulation 5(5) of the EIA Regulations states that the EIAR must be prepared by competent experts. A summary of the expertise of the technical leads involved in the EIA and its reporting is provided in Table 1.1**.**

**Table 1.1: EIA Team**

| Company | Individual | Role | Competency |
|---|---|---|---|
| Civic | Becky McLean | EIA Technical Reviewer | **Qualifications**: BSc(Hons), FIEMA, CEnv<br><br>**Experience**: 22+ years experience in leading, managing and advising on EIAs in the fields of infrastructure, urban development and energy. Rebecca also has extensive experience in facilitating environmental design optimisation/mitigation solutions. |
| Sweco | Helen Makewell | Airborne Noise and Groundborne Vibration | The competent expert has a BSc (Environmental Studies) and has passed the Institute of Acoustics Diploma in Acoustics and Noise Control, is a Member of the Institute of Acoustics (MIOA) and the Institute of Environmental Science (MIEnvSc). The competent expert is an acoustician with over 17 years' experience in delivering and managing environmental noise assessments for challenging projects. This includes EIA and non-EIA projects in a range of sectors, such as industrial facilities, offshore wind farms and transportation. |
| Sweco | Phillip Black | Landscape, Seascape and Visual | The assessment has been led by a Chartered Member of the Landscape Institute (CMLI) with over 25 years' experience of assessing the landscape and visual effects of large scale infrastructure in all nations of the United Kingdom. |
| ORCA | Gareth Talbot | Historic Environment | The competent expert has a BSc (Archaeology) and is a full Member of the Chartered Institute for Archaeologists. The competent expert is a heritage consultant with over 25 years of experience in academic and commercial heritage consultancy and since 2003 has delivered and managed historic environment assessments for a range of projects in the UK and Saudi Arabia. This includes EIA and non-EIA projects in a range of sectors including on and offshore wind farms, solar farms, transportation, nuclear and defence. |
| Envirocentre | Iain Struthers | Hydrology and Hydrogeology | The competent expert has a BSc (Land & Water Management), BEng (Environmental Engineering, Hons) and PhD. The competent expert has over 21 years' experience in hydrological and hydrodynamic model development and application within consultancy and academia in the UK, Australia and Japan, |

| Company | Individual | Role | Competency |
|---|---|---|---|
| | | | including expertise in flood risk assessment, surface water management planning, sustainable drainage (SuDS) design, and the development and application of hydraulic models of rivers and sewer networks. |
| Envirocentre | Martin Nichols | Coastal Processes & Geomorphology | The competent expert has a BSc (Geoscience, Hons) and MSc (Water Resources Engineering) and is a chartered member of The Chartered Institution of Water and Environmental Management (C.WEM, MCIWEM). The competent expert has over 14 years consultancy experience in EIA, coastal processes and geomorphology, geology, hydrology and flood risk, within both the private and public sectors, including expertise in coastal modelling in support of development. |
| Tetra Tech | Doug Blease | Terrestrial Ecology | The competent expert has a BSc Hons in Sustainable Environmental Management and is a Full Member of the Chartered Institute of Ecology and Environmental Management, with over 20 years' experience in habitat survey and assessment, and particular specialisms in woodland and protected species ecology. This includes input to, authoring and management of EcIA chapters. |
| SMRU Consulting | Jack Clarkson | Marine Mammals | The competent expert holds an MSc (Marine Mammal Sciences) has over 7 years' experience of in marine mammal sciences. This included two years' experience conducting visual and acoustic marine mammal surveys and marine mammal behaviour studies for non-profit organisations, as well as over 5 years of environmental consulting experience. The competent expert specialises in marine mammal impact assessment and has conducted a wide array of industry-funded project work, including the production of marine mammal Environmental Impact Assessment (EIA) chapters and environmental supporting documents, marine mammal mitigation plans and protocols, and acoustic survey design and coordination. |
| Sweco | Rebecca McClenaghan | Cumulative Effects Assessment | Rebecca McClenaghan has over 19 years' experience in EIA and environmental planning and is a Technical Manager at Sweco UK. She is a Chartered Environmentalist (CEnv). Rebecca is a full member of the Institute of Environmental Sciences (IES) and the Institute of Sustainability and Environmental Professionals (ISEP). |

## 1.6 VIEWING THE APPLICATIONS

The planning application and supporting documents (including this EIAR) will be submitted to The Highland Council and the Marine Directorate. These will be publicly accessible through the planning authority website (View planning applications | Planning permission | The Highland Council) and for the Marine Directorate they can be viewed here (All applications | marine.gov.scot). On these websites you can find all documentation related to the applications.

The development website (**www.montagu-evans.co.uk/public-consultation-haventus**) will also provide a direct link to the planning application and hard copies will be available for viewing at the following locations during the stated opening hours[5] (Table 1.2).

[5] Correct as of November 2025.

**Table 1.2: Planning Application Viewing Locations**

| Location 1 | Location 2 |
|---|---|
| Ardersier Library<br>Station Road<br>Ardersier<br>IV2 7SU<br><br>Opening times<br>Mon 12:00 – 17:00<br>Wed 10:00 – 13:00<br>Fri 12:00 – 17:00<br>Sat 10:00 – 13:00<br><br>Closed Tue, Thurs, and Sun | Nairn Library<br>68 High Street<br>Nairn<br>IV12 4AU<br><br>Opening times<br>Mon 09.30 – 17:30<br>Tues 09.30 – 17.30<br>Wed 09.30 – 14:00<br>Thurs 09.30 – 19:00<br>Fri 09.30 – 17.30<br>Sat 10.00 – 14.00<br><br>Closed Sun |

Hard copies of the EIAR are available for a charge of £1,000 or electronic copies can be provided for £25 (including VAT). Hard copies of the Non-Technical Summary are also available for free. These can be obtained by writing to: **Montagu Evans LLP, 4th Floor, Exchange Tower, 19 Canning Street, Edinburgh, EH3 8EG (ardersier@montagu-evans.co.uk)**

## 1.7 NEXT STEPS

Following submission of the planning application and the marine licence, all documents will be publicly available online on the regulator's website and in hard copy at the locations noted above. There will be advertisements in the local press (Inverness Courier) and the national press, and the website will be updated. Details are provided below if you wanted to make a representation to the Highland Council and/or the Marine Directorate.

Making Representation to the Planning Authority

Once the planning application is lodged, if you want to make a representation, you can make a comment, whether to object, to support or make any general comments, within 21 days of the latest date:

- that the application was registered with The Highland Council
- when you were notified as a neighbour
- where it was advertised by The Highland Council

All comments to applications should be made electronically through the Highland Council Public Access (external link) site. You need to Register (external link) your details on the site before you can submit a comment. Full guidance on how to register and comment can be found in our Guide to Using Highland Council Public Access.

Making Representation to the Marine Directorate

For the proposed development Marine Licence Application, the publication requirements of *The Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017* also apply. Therefore, a notice has been published on the development website, in *The Edinburgh Gazette*, and in the Inverness Courier.

Anyone wishing to make representations on the EIAR or the marine licence application can do so **within 30 calendar days of the latest publication date of the notice in the newspapers.** Representations can be submitted via email or post, and you should ensure that you quote the application reference

(Ardersier Port Extension) and identify the proposed works that you are writing to them about (i.e. dredging and/or construction works).

Following consideration by the regulatory authorities through the statutory determination period, they will make and publish their decisions on the proposed development application. Notice of the decisions will also be publicly available on the regulatory websites, should you wish to view it.

# ARDERSIER PORT ENERGY TRANSITION FACILITY PORT EXTENSION

Haventus

November 2025

# Chapter 2 Methodology

# Ardersier Port Extension

| | |
|---|---|
| Revision Number | Final |
| Date | October 2025 |
| Version: | 1 |
| Author | Becky McLean |
| Technical Reviewer | Campbell Fleming |

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# 2 METHODOLOGY

## 2.1 INTRODUCTION

This chapter describes the Environmental Impact Assessment (EIA) approach undertaken for the proposed Project in accordance with the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017, the Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 and other relevant technical guidance documents[1].

## 2.2 STATUTORY REQUIREMENTS AND GUIDANCE

This EIA has also been conducted in accordance with the latest Scottish Government Regulations and relevant advice on good practice. A list of which can be found here PAN 1/2013 – Environmental Impact Assessment, August 2013[2]. It has also been carried out taking due consideration of non-statutory guidance where appropriate along with various guidance documents relating to the assessment of individual aspects of the environment (see individual assessment EIAR Chapters).

### 2.2.1 Requirements of the EIA Regulations

Table 2.1 provides a collated summary of the information required and where this information can be found within this EIAR.

**Table 2.1: EIA requirements**

| Requirement | Location |
|---|---|
| A description of the development including location, physical characteristics and expected residues and emissions | EIAR Chapter 1: Introduction<br><br>EIAR Chapter 3: Project Description<br><br>EIAR Chapter 5: Supporting Information and Assessments |
| A description of reasonable alternatives | EIAR Chapter 3: Project Description |
| A description of the baseline conditions | EIAR Chapters 5-14 |

[1] Specified within each technical chapter.
[2] http://www.gov.scot/Publications/2013/08/6471

| Requirement | Location |
|---|---|
| A description of the factors specified in regulation 4(3) likely to be significantly affected by the development: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape | EIAR Chapters 5-14 |
| A description of the likely significant effects of the proposed project on the environment resulting from:<br><br>(a) the construction and existence of the development, including, where relevant, demolition works.<br>(b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources.<br>(c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste.<br>(d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters).<br>(e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources.<br>(f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change.<br>(g) the technologies and the substances used. | EIAR Chapters 5-14 |
| Description of the methodology used | EIAR Chapter 2: Methodology & Chapters 5 - 14 |
| A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment | Described in each technical EIAR Chapter and summarised in EIAR Chapter 15: Schedule of Mitigation and Enhancements |

| Requirement | Location |
|---|---|
| A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned | EIAR Chapter 5: Supporting Information and Assessments |
| A non-technical summary of the information provided within the EIAR | Non-Technical Summary |
| A reference list detailing the sources used for the descriptions and assessments included in the EIAR | All EIAR Chapters via footnotes |

## 2.3 EIA PROCESS

### 2.3.1 Overview & Approach

The Environmental Impact Assessment (EIA) process is a way of considering the environment and identifying potential likely significant effects before a project goes ahead. It begins by deciding whether an EIA is required and, if so, which environmental topics should be studied (known as *screening* and *scoping*). The EIA team then collects information about the existing environment (*the baseline*) and predicts how the project might affect it (*potential effects*). This includes identifying possible problems (such as pollution or loss of habitat) as well as potential opportunities (such as increasing biodiversity, enhancing community facilities, or improving connectivity). Measures are then suggested to avoid or reduce negative effects, while highlighting positive effects.

EIA is an iterative process, with findings fed back into the project design to achieve a “best fit” with the environment. Further information on the iterative design process for this project is provided in EIAR Chapter 3 (Project Description).

The general approach to assessment is based on determining the significance of an effect, which combines the sensitivity or value of the baseline conditions (i.e. the current site and its surroundings, including the sensitivity or value of receptors) with the magnitude of potential impacts. To evaluate this significance, assessment criteria are agreed during the scoping stage of the EIA, drawing on relevant standards and guidance. These criteria, and the methodologies adopted to assess effects, are often matrix- or threshold-based and are described in detail within the individual assessment EIAR Chapters (EIAR Chapters 6–14).

Where it is not possible to reduce or eliminate an identified likely significant effect through sensitive design alone, the EIA process identifies whether mitigation is required and what measures are suitable. A further assessment is then undertaken to confirm the *residual effects* of the project — i.e. those effects that cannot be mitigated, reduced, or removed.

All information gathered during the EIA process is documented in the Environmental Impact Assessment Report (EIAR) (this document), which is submitted as part of the planning or marine licence application. This report is then reviewed by decision-makers, alongside public and stakeholder input, to determine whether the project can proceed and under what conditions. In short, the EIA process ensures that environmental considerations are fully considered before development happens.

This EIAR has followed the process outlined above. The technical methodologies used by each specialist team are provided within EIAR Chapters 6–14. The overall methodology and approach were first set out in the EIA Scoping Report (SCOP-0062) submitted in January 2025 to the Highland Council Planning and Building Standards Department and the Marine Directorate and circulated to key consultees. Further detail on how consultation responses have been incorporated into the assessment is provided in EIAR Chapter 4 (Consultation).

### 2.3.2 Other Considerations

There are also other specific requirements of the EIA Regs, including:

- considering 'cumulative' effects
- considering 'alternatives' for design

Further information on each is provide below. Best practice also recommends summarising all required mitigation into a Schedule of Mitigation and Enhancements (EIAR Chapter 15) so that anyone reading the EIAR can easily see what is required to manage the potential identified effects. This was also specifically requested by the Highland Council during the Scoping Process, and our approach is set out below.

#### Cumulative Effects

Cumulative effects occur when environmental impacts from multiple sources combine. These can be **inter-project cumulative effects**, where different projects in the same area contribute to combined impacts, or **intra-project cumulative effects**, where a single receptor is affected by multiple aspects of the same project. The significance of cumulative effects is assessed in a similar manner to individual effects but with additional consideration of potential combined or synergistic impacts on receptors.

The Cumulative Effects Assessment (CEA) is presented in EIAR Chapter 14 (Cumulative Effects), which summarises the inter-project cumulative assessments detailed in EIAR Chapters 6 to 14 and provides a detailed evaluation of intra-project effects. The list of developments considered was agreed with Highland Council and is provided in Appendix 14.3. This assessment also acknowledges that some effects may not be significant individually but could become significant when combined with effects from other projects.

#### Alternatives

In line with the EIA Regs, an assessment of alternatives must be included as part of the EIA and design process. It requires that reasonable options that were available to the project at different stages of its development were considered. This includes development design, technology, location, size and scale. (depending on the project and what is being proposed). The purpose of this exercise is not to examine every possible option but to demonstrate that the main alternatives have been considered in a proportionate way, and to explain the environmental factors that influenced the choices made. This process helps ensure that environmental considerations are integrated into decision-making from the outset, rather than applied only once a preferred option has been selected.

The methodology for assessing alternatives involves identifying the key environmental constraints and opportunities associated with each option, using the baseline information collected during the EIA process. These are then compared against the project's objectives and technical, economic, and operational requirements. Further information on the alternatives considered for this project are provided in EIAR Chapter 3 (Project Description).

#### Schedule of Mitigation and Enhancements

To provide a single reference point for all measures identified through the EIA, a Schedule of Mitigation is presented in EIAR Chapter 15 (Schedule of Mitigation and Enhancements) along with proposed

enhancements. This Schedule of Mitigation brings together the full range of mitigation commitments arising from the design process and the technical assessments across all environmental topics.

# ARDERSIER PORT ENERGY TRANSITION FACILITY PORT EXTENSION

Haventus

November 2025

# Chapter 3 Project Description

# Ardersier Port Extension

| | |
|---|---|
| Revision Number | FINAL |
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| Technical Reviewer | Campbell Fleming |

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# 3 PROJECT DESCRIPTION

## 3.1 INTRODUCTION

The proposed development ("Ardersier Port Extension") lies within the Inner Moray Firth as shown in Figure 1.1 and described in EIAR Chapter 1 (Introduction). Site history and Site constraints are also described in EIAR Chapter 1.

The proposed development comprises two key aspects, additional marine construction works, dredging and sea disposal, and terrestrial (on land) construction with extension of the extant consented activities. The extant consented site and proposed extension areas are shown in Figure 1.2 in EIAR Chapter 1 (Introduction).

With regards to high level timelines, the construction phase is expected to take place between mid 2026 and end 2028. This could take place in discrete phases within that overall time period.

## 3.2 NEED FOR THE PROPOSED DEVELOPMENT

The proposed development would transform Ardersier Energy Transition Facility (ETF) into one of Europe's largest facilities dedicated to offshore wind, expanding the developable land acreage of the site to around 500 acres.

The proposed extension (also referred to as expansion) of the Ardersier ETF will create a larger area for the logistics, manufacturing, and assembly needs of the offshore wind industry. Increasing the scale of the Ardersier ETF, supports the economic growth and net zero ambitions of both the Scottish and UK Governments.

Large land areas are needed to fulfil the requirements of offshore wind projects and the supply chain businesses that play a part in assembling and building the equipment needed for the offshore wind turbine. This is due primarily to the size of the components. The existing port and the proposed extension area would be developed and operated by the Applicant with parts of the site leased to tenants to further develop and utilise. The level of potential tenant interest in acreage at the site, both from offshore wind developers and the manufacturing and assembly supply chain, exceeds the existing acreage, therefore indicating that a larger area is required.

The availability of space at ports is recognised as a constraint to the future rollout of offshore wind, and the proposed development would extend an extant consented port to further support offshore wind activity and in turn play a part in supporting energy security, the journey to net zero and create the opportunity for new, high quality jobs at the site.

## 3.3 ALTERNATIVES

During the outline design of the proposed development and as part of the EIA process, alternatives have been considered with regards to development design, location, size, and scale.

With regards to development design, this application is seeking to create an extension area to the existing port and seeking consent to create an extension to the working platform. The design of this platform and the extended quay wall need to be similar to the ones already created and therefore there is a limit to the potential different designs that could be considered.

With regards to alternative locations (both in a different location or a different location on the same site), this was not possible for the following reasons:

- Different Location
  - The extension of the site is to provide more space to allow for activities such as import of materials, manufacturing, assembly and export. For this reason, the sites need to be connected and contiguous with each other.
  - Activities on the extension will also require access to the deep water quay; and
  - Separating the extension area from the current site logistically would not be practical, economically viable and could result in increased environmental impacts.
- Different Location on Site
  - To the north, west and east there are important environmental designations as described in EIAR Chapter 1 (Introduction) including Whiteness Spit, saltmarsh areas, and Whiteness Sands.
  - To the south-west lie the existing Ministry of Defence (MoD) training areas and firing ranges which are being retained long-term by the MoD; and
  - To the south is the existing Starlight Centre of Excellence facility.

The only areas therefore that were feasible to extend into with the space required are those proposed as shown in Figure 1.2 EIAR Chapter 1 (Introduction).

With regards to alternative sizes and scales, an economic study has been completed to assess what benefits could be generated by the proposed development. According to BIGGAR Economics, Ardersier ETF is forecast to make a nationally important contribution to the development of the offshore wind sector. It is predicted that Scottish organisations are expected to secure contracts worth £16 billion by 2040, based on the deployment that Ardersier ETF (including the proposed development) can support. These benefits are linked to the designed size and scale of the consented and proposed extension of the site.

The consideration of alternatives will continue as tenants come forward to take different areas of the site. Their detailed design process will consider the technology they require, the size, scale, and location of any buildings and associated infrastructure and will be submitted as part of their own planning submissions.

## 3.4 THE PROPOSED DEVELOPMENT

The proposed development will require construction activities to take place within the marine environment and the terrestrial environment. It is anticipated that construction methods required for all elements of the proposed development could have environmental impacts. As such, the construction phase for the project has been a key consideration in the EIA.

This chapter provides a description of the indicative construction methodologies, which are expected to be employed to build the proposed development. This has drawn from the existing construction process that has taken place for the consented port. The detail provided below covers the following.:

- Description of the works split into marine and terrestrial works.
- Site clearance and demolition requirements.
- Construction methods.
- Working Hours.
- Decommissioning.
- Embedded mitigation.

The proposed development will be constructed by a Contractor(s) who is yet to be appointed. When a Contractor or Contractors are appointed the Outline Construction Environmental Management Document (CEMD) will be finalised. The Contractor(s) and Client will also prepare detailed Construction

Environmental Management Plans (CEMPs) as required in accordance with Highland Council Guidance[1] identifying the techniques and technologies to be adopted. The CEMD will be approved by the planning authority and the relevant environmental bodies prior to works commencing on site.

For the purposes of the EIA, appropriate assumptions have been made regarding some potential aspects of construction where the final detail is not available at this stage. These assumptions are based upon professional experience and knowledge. Where assumptions have been made, these are clearly stated and where possible a reasonable 'worst case' approach has been taken.

Mitigation measures specified in this EIAR are presented in EIAR Chapter 15 (Schedule of Mitigation and Enhancement) and have been designed to avoid, prevent, reduce or, if possible, offset any construction effects on the environment including to people and property.

Further details on all construction activities are described separately below.

### 3.4.1 Marine Construction Activities

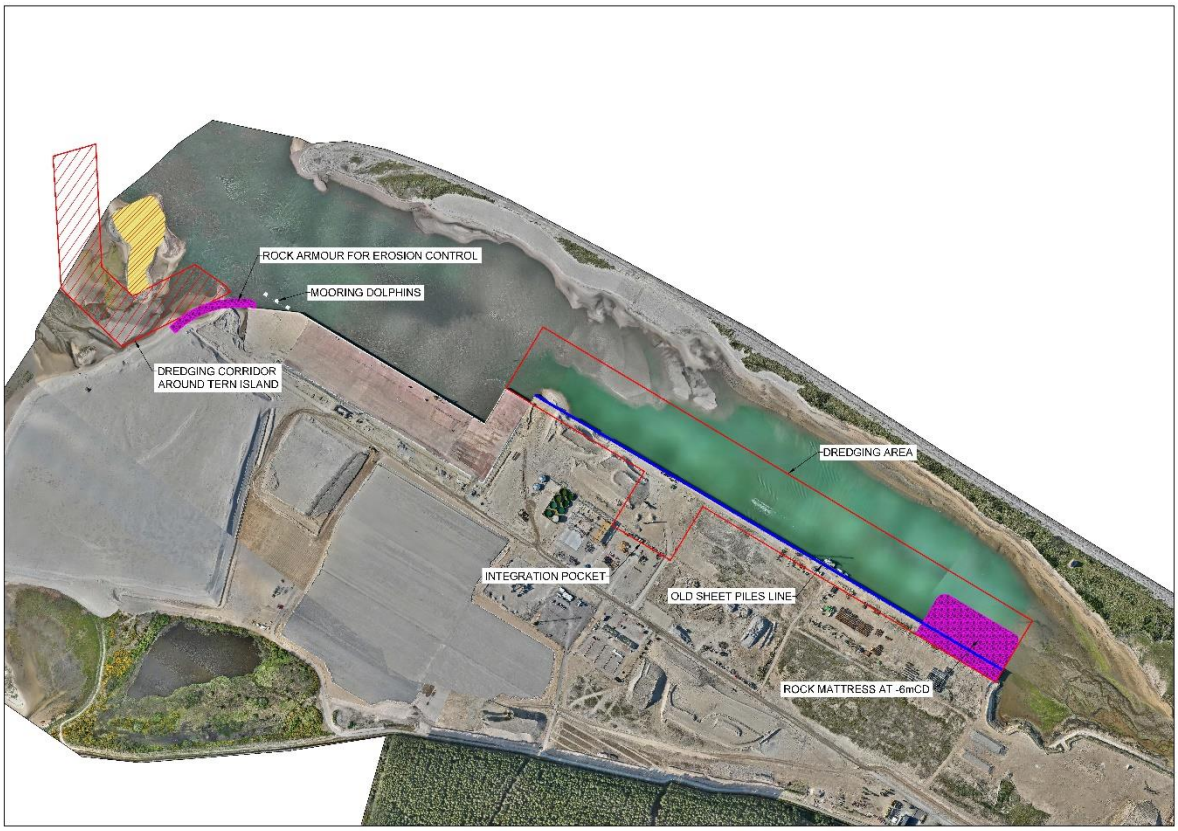
The proposed development will require the following marine infrastructure and construction works components:

- Construction of an integration pocket for wind turbine assembly
- Removal of old sheet piles with possible use of temporary sand berm.
- Dredging to deepen the harbour to generally -12.4m Chart Datum (CD) in the western harbour extension area and to up to -6mCD in the easternmost part of the harbour (up to 2,000,000m$^3$).
- Disposal of dredgings at licenced disposal ground if no beneficial re-use identified.
- Dredging to west of Tern Island.
- Rock armour for erosion control and rock mattress on seabed in -6mCD area.
- Installation of three mooring dolphins (piled berthing structures).

As a general sequence, a section of new quay wall needs to be completed first, followed by old sheet pile removal and finally dredging, although the construction process and dredging can be phased over time. Each of the above project activities are described in principle in the following sections and shown on Figure 3.1.

[1] General planning guidance | Construction environmental management process for large scale projects

**Figure 3.1: Marine Works Layout**




## New Quay Wall and Integration Pocket

A new quay wall construction is already consented under the Harbour Revision Order (HRO) and is located parallel to the existing old sheet piled wall. This does not require a Marine Licence as it is on land, but is described in this section as it is ultimately a marine structure. The same quay wall construction method will be used as previously to build the integration pocket walls.
The integration pocket would be approximately 150m deep by 150m wide. All excavations and installation works will be carried out through the existing platform without any exposure to the marine environment in the same manner as the previous quay wall construction. All arisings from the quay wall construction will be re-used on site.

The sequence of events to create new walls is as follows:

- Excavate down to 27m to 52m below ground using a specialised excavation rig (crane mounted), to install quay wall and anchor walls;
- Support the open excavation sides with bentonite fluid whilst reinforcing cages are installed.
- Pump concrete into the base of the excavation and fill to the top whilst siphoning off the bentonite fluid for re-use in the next excavation.
- Panels of the new quay wall of approximately 7m lengths are installed one at a time until the whole wall is complete.
- A concrete beam is then cast along the top of the new quay wall to tie the quay panels together.

- Excavations then take place between the anchor wall and quay wall to install tie-rods to join the two walls together.
- Excavations are then backfilled with arisings and capped with clean stone.

A representative image showing the anchor wall, quay wall and tie-rod installation is provided below Image 3.1.

**Image 3.1: View of Consented Port during Construction**

### Removal of Old Sheet Piles

The old sheet piles on the seaward side of the new quay wall needs to be removed to excavate back and expose the new quay wall to the sea. The general method for extraction of the old sheet pile wall would involve the following:

- Excavate a short section down to the tie-rods which hold the old sheet pile wall in place and cut the tie rods.
- This excavation would be to at least just below Mean High Water Springs.
- Re-use excavation arisings on site above MHWS.
- Pull the sheet piles out using a vibratory piling rig and lay on platform.
- Move to adjacent sections.

In areas where the water on the outside of the quay wall is deep, it may be necessary to place a temporary sand bund on the waterside of the quay wall. This is to prevent the piles bending outwards when the tie rods are cut which creates difficulties in extraction. Should a temporary berm be utilised, this would be removed by long reach excavator back onto land when pile removal works in that area were completed.

It is estimated that up to 150,000 $m^3$ of sand would be required to create temporary berms where needed. This sand would be reused in the construction of the platform when no longer needed for this purpose.

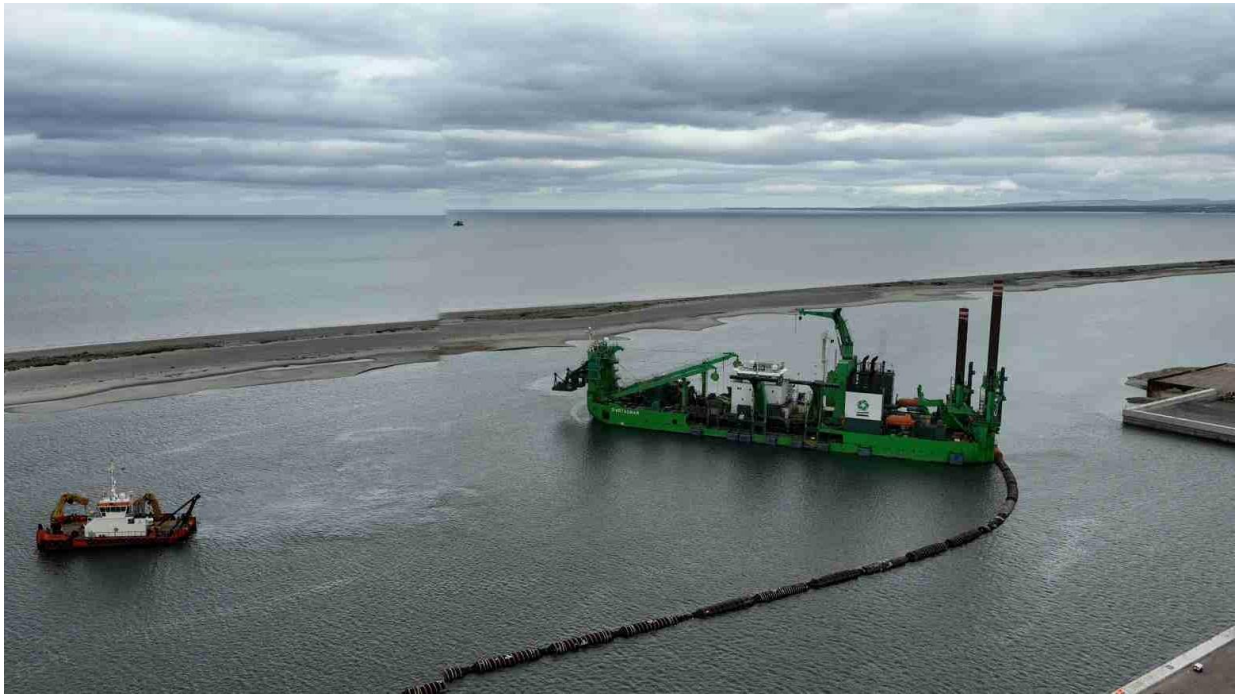
### Capital Dredging of Main Harbour Area

Capital dredging of the inner harbour will take place approximately 800m to 1800m inside the current harbour entrance. Up to 2,000,000$m^3$ of material is calculated to require to be dredged to provide the -12.4mCD and -6mCD water depths required. Dredge areas are shown in Figure 3.1.

It is envisaged that the following marine plant will be required to carry out the dredging:

- A Cutter Suction Dredger (CSD) would undertake the main dredge (Image 3.2).
- One or two Trailer Suction Hopper Dredgers (TSHD) would support the cutter initially acting as barges for disposal and once the CSD was largely complete a TSHD may then be used to fine tune the dredge shape.
- Two Split Hopper barges would also be expected to assist with disposal.
- Multicat (vessel of left side of Image 3.2) for general assistance.
- Survey vessel to check bathymetry as the dredge progresses

**Image 3.2: Picture of a Cutter Suction Dredger**



Currently disposal is anticipated as taking place at:

- Main disposal of arisings is planned for Burghead licenced disposal ground only (approximately 32km to the east of the Port).
- Other potential uses for sediment are being explored including enhancements local to the site (EIAR Chapter 15 (Schedule of Mitigations and Enhancements)).

Utilising the above marine plant the dredging works would be expected to be complete within approximately 12 weeks of commencement (subject to breakdown or bad weather delays). Dredging

would be scheduled to be mainly outside the wintering bird season, most likely taking place in the window of March to October.

Dredging arisings are not planned to be taken ashore for beneficial re-use on site, although potential beneficial re-use projects off-site are being explored and will be investigated should they arise.

It should be noted that boreholes have been sunk to assess the dredge material in terms of chemical suitability. This investigation information and risk assessments/method statements will be submitted as part of any marine licence application along with a Best Practicable Environmental Options (BPEO) Report which considers the various options for disposal or beneficial re-use. This BPEO is a separate document to the EIAR and is submitted with the Marine Licence application for disposal of dredgings.

### Potential Capital Dredge West of Tern Island

Dredging to the West of Tern Island is proposed as part of the overall proposed development, this is not part of the construction of the extension but to protect an ecological enhancement that has already been delivered. Tern Island has become a very successful breeding location for a variety of Tern species, and other birds. This is as a result of the formation of the main port access channel and prior site development providing an island feature that is cut off from potential predators for almost all states of the tide. It is a concern however that the current channel could potentially be at risk of partially filling in due to sand movement during storm events allowing predators greater access to the island. It is therefore proposed that should the current channel feature change significantly such that there became a land bridge at most states of the tide that a small channel be maintained between the current coastline in this area and the island.

Annotated Figure 3.1 shows the approximate location of the potential dredge.

In terms of volumes to be dredged a channel of a metre deep and two metres wide or greater is considered sufficient to provide a reasonable deterrent to most land-based predators. If it was required to dredge a 100m section of the channel which had infilled, this would involve removing approximately 200-500m$^3$ of sand. These are very small volumes in dredging terms. Sand removed could either be removed by conventional land-based plant (excavator and dumper) and taken ashore, or if in less readily accessible areas (further from shore) be excavated by barge mounted backhoe and disposed of at the sea disposal ground. Alternatively, this material could be used to create an extension to Tern Island (i.e. as part of a beneficial off-site re-use project) or be used to replenish it in the future. This “island extension” enhancement option is currently being explored and as an initial step to establish feasibility has been included in the coastal processes and geomorphology modelling and assessment presented in EIAR Chapter 10. Options, including the island extension, will continue to be explored and any necessary licences or permissions obtained as required. This potential enhancement is also noted in EIAR Chapter 15 (Schedule of Mitigation and Enhancements).

### Rock Armour and Rock Mattress Construction

The areas proposed for rock armour and rock mattress placement are shown in Figure 3.1.

Rock armour is required to protect the corner of the current harbour to the west of the new quay wall from erosion during northerly/north-easterly storm driven waves. Approximately 150m of rock armour length is required which will extend down to below MLWS. This would be placed in the following manner:

- Grade existing slope to required slope (approx. 1:2) using an excavator working from landside.
- Place crushed rock or recycled concrete founding layer.
- Install geotextile to limit loss of fines (will likely require divers).
- Place rock armour layer using excavator.

The rock mattress construction is a facility to allow barges to ground on the harbour bed without becoming suction bonded to it. This would comprise an approximately 300-500mm crushed rock layer to be placed at -6mCD. The rock mattress area will be approximately 180m by 80m in size located directly adjacent to the quay.

Placement of the rock mattress would take place either by lowering stone filled mats into place in sequence onto the seabed by long reach excavator/crane, or by placing the stone in a layer directly using a long reach excavator. This placement would partially take place from landside and further into the harbour from a barge.

The rock would be sourced from local quarries and delivered to site via lorries, as with the consented port.

#### Mooring Dolphin Installation

In order to berth two large vessels on the existing westernmost quay area additional mooring dolphins (piled berthing structures) will be required for the ships to tie up against. There are three mooring dolphin structures required in the area shown indicatively in Figure 3.1. The piles are to be installed from the deck of a Jack-Up Barge with a Project Crawler Crane on deck, also working in conjunction with a Flat-Top Barge holding materials.

The installation of these would be carried out as follows:

- Loading of barges (at Ardersier) with crane, piling rig, piles and other materials.
- Transit to site and position barges to install piles.
- Install piles through combination of vibro and impact piling.
- Lift jackets onto piles and install fenders and bollards.
- Lift walkways on to join the mooring dolphins to the quayside for access to assist berthing.

Installation is expected to take place over approximately 19 days with piling occurring for 12 days during that period.

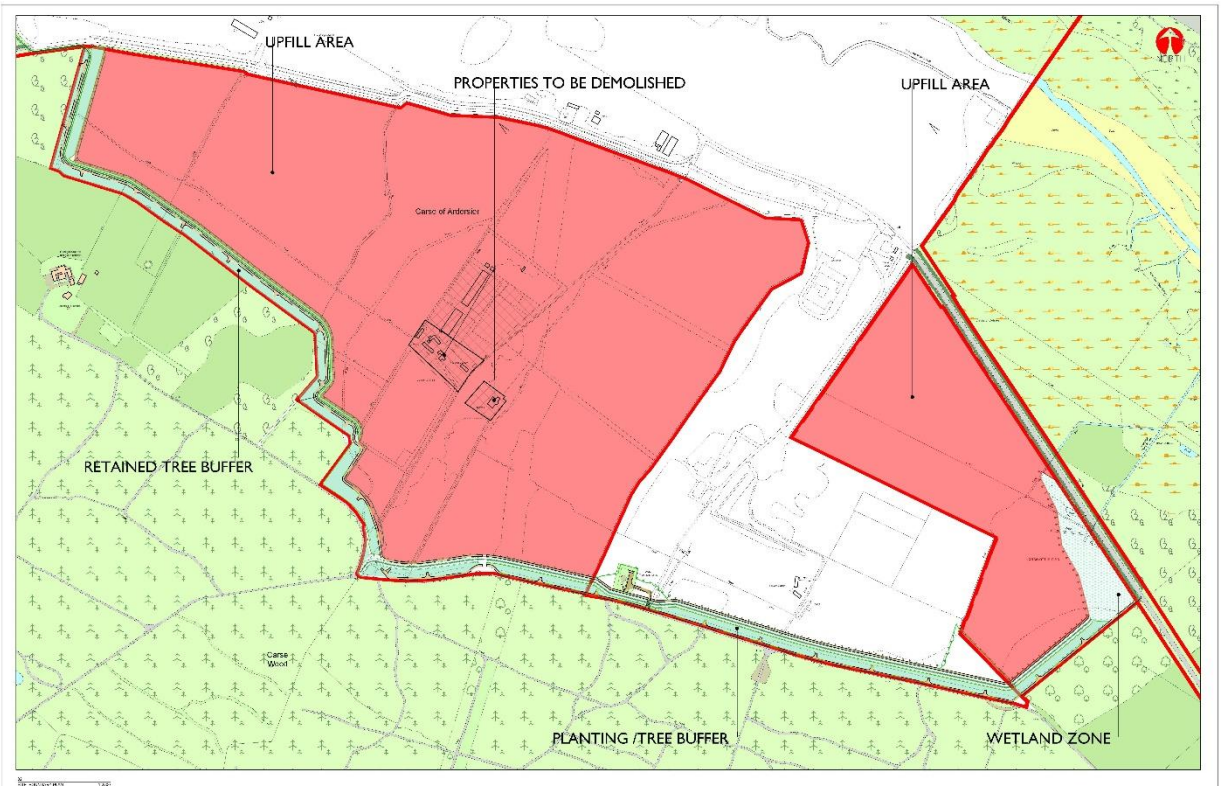
### 3.4.2 Terrestrial Construction Activities

Within the extension area the following construction activities will be required:

- Site clearance of extension area comprising tree felling and clearing.
- Demolition of existing buildings.
- Land raising (upfill) and levelling of extension area to suitable height with previously dredged sand.
- Creation of working platform through stone placement.
- Surface water management during construction; and
- Installation of new permanent watercourses to extension land southern perimeters.

Figure 3.2 shows the areas of commercial Scots Pine plantation clearance, building demolition locations, and tree buffers to be retained.

**Figure 3.2: Site Clearance Areas (West - Scots Pine plantation, East - Scrub and Birch) - Terrestrial Works**




### 3.4.3 Site Clearance (Commercial Plantation Felling and Vegetation Removal)

Within the extension areas the two main activities will be tree removal and demolition of the two existing buildings (Pine Trees, and Juniper Cottage and associated buildings, see Figure 3.2).

Removal of the Scots Pine Plantation will be undertaken as follows:

- Trees would be felled using an excavator mounted tree shear and moved to a handling facility within the existing site area.
- Roots would then be grubbed up and also moved for processing.
- A thin layer of soil would then be mulched, compacted and rolled (all by the mulching machine which includes a roller).
- At the handling facility (located away from the southern boundary to reduce noise impacts to residential receptors) the trees and stumps would be logged and chipped for export from site by either HGV or ship dependent on customer location.

If tree removal is undertaken as one campaign the tree felling is expected to take approximately six months. However, it is more likely that this will be done in phases over a longer time period to ensure sensitive areas and seasonal periods can be avoided. This also prevents a large area being left for a longer period of time, reducing the potential for windblown dust and material.

The phasing of the tree removal would be informed by an Ecological Clerk of Works) (ECoW) and/or site environment team, and pre-construction ecological surveys. Further information on this is provided in EIAR Chapter 12 (Terrestrial Ecology) and EIAR Chapter 13 (Ornithology) and will be a key part of the Habitat Management Plan (HMP).

Processing and export of the timber and roots etc would be undertaken over a longer time period to match with the demand of the purchasers. The material would be stored close to the handling area.

The Highland Council confirmed that off-site compensatory commercial woodland planting would be required to offset the loss of the commercial woodland. A suitable location and site for this planting is being identified currently and will be agreed with NatureScot and through approval with Scottish Forestry.

### Demolition

The two existing buildings within the extension area; Pine Trees and Juniper Cottage (and associated buildings) will be demolished during the site clearance. This work will be undertaken subject to the necessary ecological mitigation measures (described in EIAR Chapter 12 (Terrestrial Ecology) and EIAR Chapter 13 (Ornithology)).

The materials from the demolition will be sorted and reused on site where possible. Any waste that cannot be used will be segregated and removed from site by a licensed waste contractor. At this stage it is anticipated that the aggregate arising from crushed concrete (for example) would be used in the creation of the working platform.

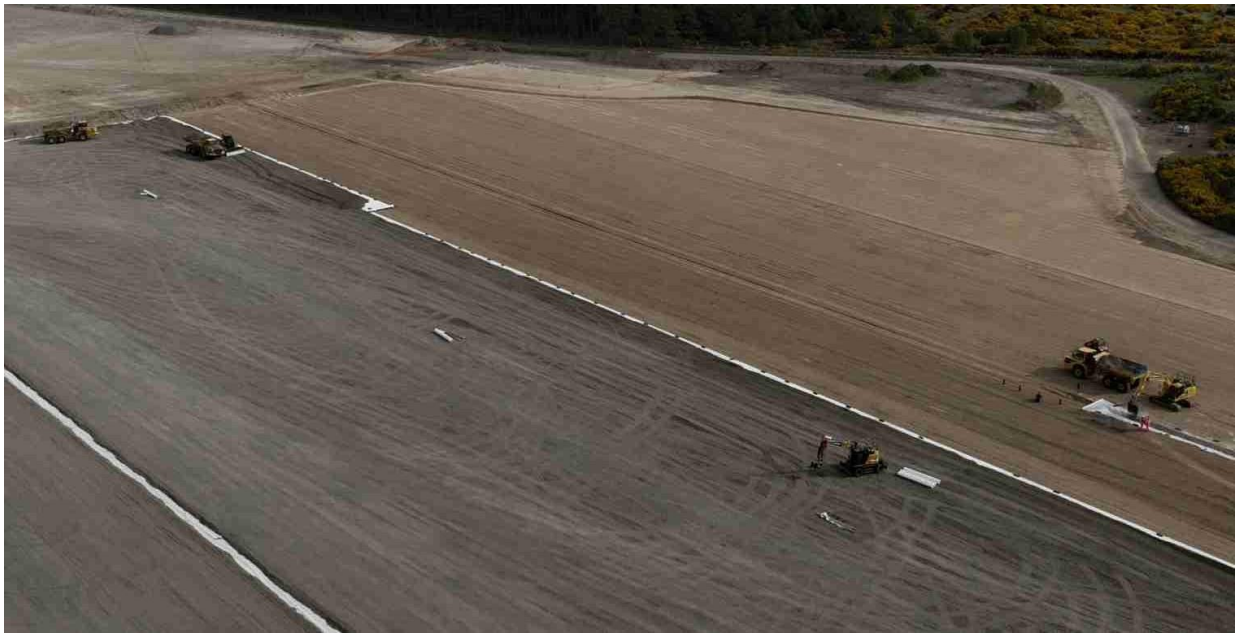
### Land Raising and Creation of Working Platform

When areas of the site have been cleared of trees and/or vegetation down to formation level, land raising and working platform creation will then take place. This will be carried out progressively in sections with ecological constraints considered. The steps in construction will be as follows:

- Placement of sand in compacted layers of around 250mm to build up the platform height.
- On the topmost sand layer, geogrid and/or terram matting would be laid.
- An approximately 300mm layer of clean crushed stone would be placed to form the working platform.

The platform will be constructed in the same manner at the working platform on the currently consented site. Image 3.3 shows broadly how the platform is constructed.

**Image 3.3 Land Raising and Creation of Working Platform**



The platform height will be the same or higher than the existing site (between approximately 6.4mCD and 7.3mCD). The platform will be graded down to tie into existing ground levels on the perimeter adjacent to the retained buffer strips of trees and planting (southern, western, and eastern boundaries of the overall new site area).

Indicative significant aspects of the construction works are summarised below, including construction working hours, compound locations, phasing / programme, and access.

### 3.4.4 Working Hours for Construction Activities

The capital dredge works in the main harbour area will be 24 hours and seven days a week, and quay wall construction is likely to have periods of time where 24-hour working is required although noise sensitive activities would be avoided at night time and on weekends whilst 24 hour working.

All other work which may generate significant noise, such as installation of mooring dolphins and tree felling would mainly be carried out during normal working hours of 08:00hrs and 19:00hrs Monday to Friday, 08:00hrs and 13:00hrs on Saturdays. There would be no noisy activity carried out on Bank Holidays.

### 3.4.5 Lighting

Adequate and appropriate lighting is essential for safe work, facility use, movement, and to minimise eye strain. The proposed lighting strategy for the construction works aims to help achieve a safe, energy efficient and environmentally conscious lighting solution. By proposing modern LED technology paired with shielding fixtures, and smart controls to minimise light pollution and protect local wildlife while enhancing the functionality and safety of the Port. Lighting is discussed further in EIAR Chapter 5 (Additional Information and Assessments).

### 3.4.6 Materials & Waste

The proposed development will adopt the principles of the waste hierarchy—prevent, reduce, reuse, recycle, and dispose—to minimise waste generation and maximise the efficient use of materials throughout the construction process. Wherever practicable, materials arising from site clearance and excavation will be retained on site for reuse in the works, such as for landscaping, backfilling, or construction aggregates. This approach will reduce the need for importing virgin materials and limit the environmental impact associated with material transport and disposal.

Any waste materials that cannot be reused on site will be segregated at source and managed in accordance with relevant waste management legislation and best practice guidance. Removal of waste from the site will be undertaken by a licensed waste contractor to ensure full compliance with the Duty of Care requirements under the Environmental Protection Act. All waste streams will be directed to appropriate licensed recycling or disposal facilities, with documentation maintained to demonstrate responsible waste handling and traceability.

### 3.4.7 Transport Movements & Management

The proposed numbers of workers during construction associated with the proposed extension are broadly similar to that which is already consented. All traffic will continue to access the site from the existing site main entrance.

The site access new roundabout onto the B9092 has been built and a roundabout on the A96 will be constructed as soon as practicable under the extant consent (expected to commence Autumn 2025).

There is no predicted significant increase in traffic volumes from what is already consented and with junction upgrades either already constructed or planned under the extant consent, there are no additional significant impacts predicted as a direct result of the proposed extension.

With regards to marine traffic, vessel numbers are generally not predicted to be significantly greater than the previously assessed volume. Possible slight increases in vessel traffic have been assessed with regards to potential impacts upon Marine Mammal, the result of that assessment is provided in EIAR Chapter 11 (Marine Mammals).

### 3.4.8 Construction Site Compounds and Storage Areas

The exact location of construction compounds and storage areas will be determined by the Contractor(s) who will construct the proposed development; however, it is likely that it will follow a similar approach to the consented port development, which will include a main construction compound (location to be on the extant consented port) with potentially further temporary storage areas for materials.

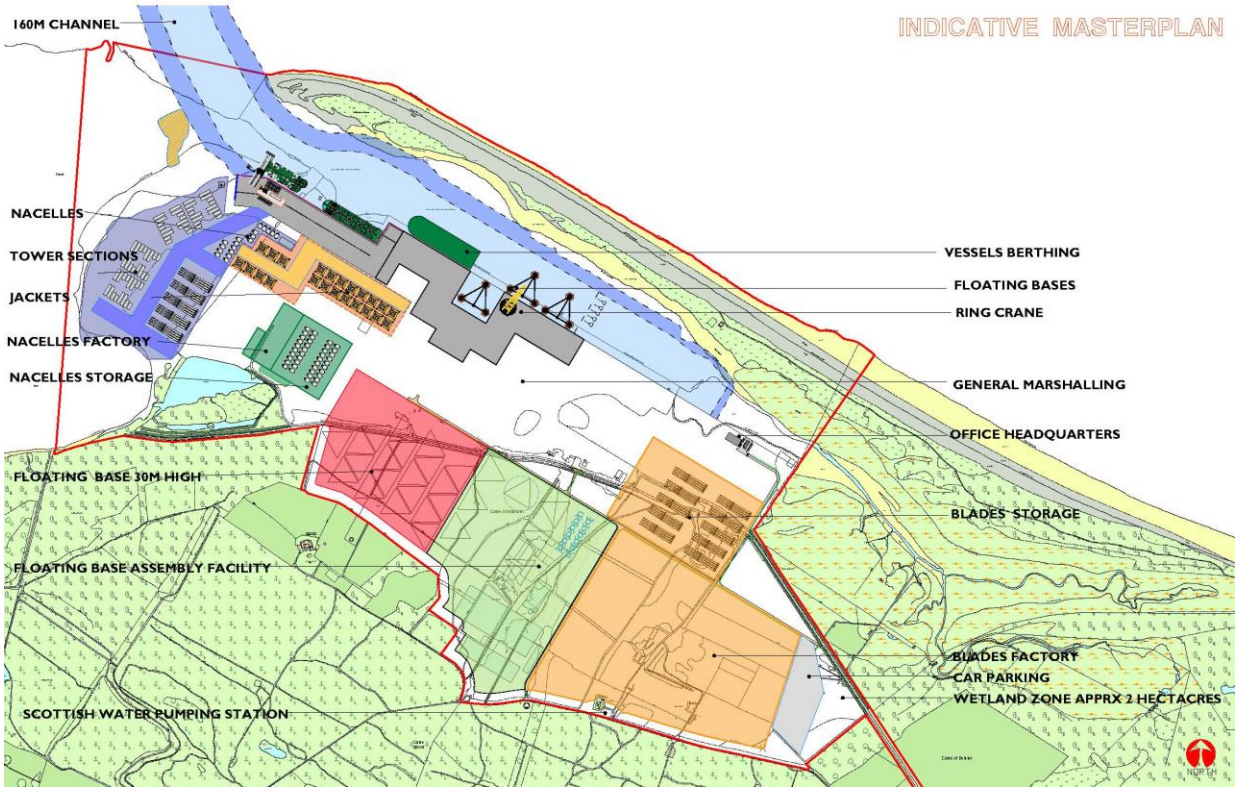
## 3.5 OPERATIONAL ACTIVITIES

The extension area uses will generally be the same as the extant consented port area, namely port and port related services for energy related uses, the overriding focus being servicing and support to offshore wind development.

Operational infrastructure will include the erection of offices, industrial and storage buildings, manufacturing infrastructure, boundary fencing, lighting and internal roads, assembly, storage, delivery, and export of port related cargo including use of cranes, parking, infrastructure, and provision of services. Vessel movements are of course also essential to the port operations.

A key activity expected to be required on site is full turbine integration. Turbine assembly would be sited in the harbour area within the boundary of the consented existing port. Turbines would not be assembled within the proposed extension area an indicative layout is provided in Figure 3.3 below.

**Figure 3.3: Indicative Layout of the Proposed Development**




Once constructed the site will require to be maintained, the principal activity in maintaining the port will be maintenance dredging as and when required which is being licenced separately and is not part of this EIA.

The above activities are described in the sections below along with the longer-term utilities strategy.

### 3.5.1 Turbine Integration

For Floating Offshore Wind (FLOW) developments it is possible that full assembly of turbines will take place either in the water at the quayside, or even on the quayside prior to lifting into the sea as a complete unit.

The process involves mounting tower sections on bases, placing the nacelle on top of the tower sections then attaching the blades. Assembly of one single turbine is expected to take less than a week. Once fully assembled the turbines would be towed out to their relevant destination by tugs. Towing out of the harbour will be at very slow speeds, likely 3-4 knots maximum.

It is envisaged that at any single point in time one turbine may be fully assembled with two further turbines in partial assembly.

Fully assembled turbines are expected to be around 310m tall (above quayside if on the quayside). For the purposes of our assessments, an envelope of 330m for turbines heights has been adopted. The tallest structures on site would generally be close to the quayside, with lower structures and buildings mostly on the southern and eastern boundaries.

### 3.5.2 Maintenance Dredging

Capital and maintenance dredging within the main access channel was already considered within the 2018 EIA carried out for the planning permission renewal in 2019. The potential environmental effects of maintenance dredging in this area were therefore already considered and is not part of the current application. A maintenance dredging licence application for the existing access channel has already been made separately to MDLOT and does not form part of the proposed development.

### 3.5.3 Vessel Movements

The current consent was based upon the 2018 EIA Report. This 2018 EIA indicated that approximately 340 vessels a year were anticipated to call at the Port during operations.

Although the extension area would give access to more land it is not expected to generate significantly more marine traffic. The vessel calls to the Port are anticipated to be between 250-350 per annum, comparable to the predicted 340 vessel calls per year in the 2018 application.

There could, in the short term, potentially be 400 vessel calls per year at peak (initial operations are expected be lower in number to the 2018 predictions). These vessels would be a mix of semi-submersible crane vessels, heavy lift vessels, barges, general cargo vessels, and various turbine installation vessels.

### 3.5.4 Utilities

The current site has sufficient electrical supply, water supply from Scottish Water, and foul drainage is tankered off site. Future development plots would be required to prepare their own wastewater, site specific surface water drainage, and foul water arrangements for approval. The pumping station on site is currently unused and is not formally connected to Scottish Water's system, but dialogue is ongoing about potential future use once site numbers reach a critical mass.

### 3.5.5 Working Hours for Operational Activities

The working hours will be determined by the future tenants of the site and their operational activities. These could potentially require working 24 hours or normal working hours of 08:00hrs and 19:00hrs Monday to Friday, 08:00hrs and 13:00hrs on Saturdays.

Any activities that would generate significant noise, would generally be carried out during normal working hours of 08:00hrs and 19:00hrs Monday to Friday, 08:00hrs and 13:00hrs on Saturdays. Likewise operational activities at height would generally not be carried out at nighttime for Health and Safety reasons.

Considerations regarding lighting would also be in place for any late night working particularly in the winter darker months.

### 3.5.6 Landscape Design

The functionality of the port means that there is limited scope to have landscape design features throughout the site, however the tree screening will be retained on the southern and western periphery of the site.

Further opportunities to enhance the wider landscape for local flora and fauna have been explored and incorporated where possible. Further details on the proposed enhancements are provided in EIAR Chapter 15 (Schedule of Mitigation and Enhancements).

### 3.5.7 Infrastructure, parking, EV charging

The main access road, security office and all other facilities that are already in place for the consented port will be used for the proposed development. In accordance with best practice, EV charging points are already available at the site office for the consented port and future tenants will also be expected to consider if the need to provide additional spaces as part of their operation if demand increases. Further detail is provided in EIAR Chapter 5 (Additional Information and Assessments) relating to the Travel Plan.

### 3.5.8 Fencing and Security

The existing site has boundary fencing and suitable security in place for health and safety reasons to protect the operational port and the public.

New security fencing will be installed on the western, southern and eastern boundaries. This will generally be on the site boundary except where the site faces towards the Starlight Wellness Centre where the security fence will be inside the tree buffer.

### 3.5.9 Wider Access

Parts of the proposed extension will include land over which access rights apply and which are not currently restricted by the Land Reform (Scotland) Act 2003. The proposed extension will exclude the public from areas where access rights apply but where little or no public access is exercised. No likely significant negative impacts predicted.

Access to Whiteness Head Fishing Bothy and Nairn Cove will remain and will not change as a result of the proposed extension.

The existing primary access route would continue to serve the site with the added benefit of the completion of the new roundabout junction on the A96 to be completed early in 2026.

## 3.6 DECOMMISSIONING

The prospect of decommissioning has two aspects. The first would relate to above ground infrastructure created on the site by tenants. The second the concept of decommissioning the port facility itself. The proposals for each are documented in turn below.

### 3.6.1 Transient Tenant Infrastructure

Various areas of the site, yet to be confirmed, will be leased to tenant occupiers over years or decades. These occupiers will have to prepare detailed proposals for their development which should include their proposals for decommissioning their infrastructure. On completion of any lease at the Site, the former tenants will be required to leave a clean, vacant site suitable for use by others in the future.

### 3.6.2 The Extension Areas

Once constructed the extension areas would become part of the Port. Port infrastructure is not a development type that has ever generally been decommissioned in the UK (for ports of any reasonable size). The Port at Ardersier has been in place for around 50 years and is anticipated to be in gainful use for a significant time period into the future. Even if decommissioning were ever to be considered it would be so far in the future that the Regulatory regime or policy will have changed significantly from the current day. Therefore, no decommissioning plans are in place or expected for the Port facility, which is of course a type of facility that in the UK is considered Critical National Infrastructure (CNI).

## 3.7 EMBEDDED MITIGATION

The design evolution has incorporated decisions to avoid, minimise or reduce potential perceived impacts. This is embedded mitigation incorporated into the proposed development. Three items of fundamental highest level embedded mitigation are described below. These were embedded before any technical assessments were undertaken. Embedded mitigation is also reported in the technical chapters where design has evolved as a result of their assessments.

The high-level design or management led mitigation comprises:

- Adoption of the approach described in The Highland Council Guidance Note on the Construction Environmental Management Process for Large Scale Projects, August 2010. To initiate this process, an Outline Construction Environmental Management Document (CEMD) has been prepared; and
- Designing a channel width and dredge pocket to avoid any encroachment into the intertidal area of the Whiteness Spit (described below).
- Compensatory planting of 120 acres of Scots Pine at an off site location (also described below).

### 3.7.1 Dredge Design

The Inner Moray Firth Ramsar site and Whiteness Head SSSI both lie to the north of the planned dredge area. Avoiding any direct impact on the intertidal sandflats on the south side of the Whiteness Spit (part of those designated sites) was therefore considered of paramount importance and design progressed on that basis.

Depth, width and stable side slope angles define the footprint of the dredge and where the side slopes will reach and therefore impact area. Each of these factors are described below:

- Depth, these are fixed due to the nature of craft that will require to utilise different parts of the quay. These are fixed at –12.4mCD and –6mCD;
- Stable side slopes were previously calculated (for previous applications) as being a 1:6 slope. Following the 2025 dredge campaign Fairhurst were commissioned to review existing ground investigation information, create a site-specific ground model and undertake a stability assessment of the dredge pocket and proposed side slopes to Whiteness Head. The full report is included as EIAR Appendix 3.1. The work by Fairhurst confirmed that a 1:6 side slope would be considered a stable slope in natural deposits.
- Width of channel, this was initially proposed to be 160m in width to be consistent with the approach channel.

When the above factors were applied there was identified the risk that the side slope could encroach onto the edge of the intertidal area of the designated sites. Given the side slope angle and depths are fixed the

design decision was made to reduce the channel width. By reducing the channel width to 140m instead of 160m width no direct impact on the intertidal areas to the north will arise.

### 3.7.2 Compensatory Planting

During early consultation with The Highland Council (EIAR Chapter 4 (Consultation)), it was advised that the 120 acres of Scots Pine plantation proposed to be felled should be compensated with an equivalent area of Scots Pine plantation offsite. A suitable site is being identified and legal agreements put in place to confirm this. This off-site compensatory planting is intended to be supplemented with approximately 10% broadleaf planting and other biodiversity enhancement measures such as:

- Badger gates in fencing if required.
- Pole (tall strainer post) mounted bat and bird boxes where existing trees are not present.
- Tall fence posts with raptor perches.
- Stone piles for reptile refugia.
- Log and brash piles where existing vegetation may need to be cleared for fencing.
- Glades in areas where tree establishment may not be likely (i.e. shallow soils); and
- Created depressions (similar to wader scrapes) to hold surface water and provide aquatic habitats or wet tolerant vegetation.

The final selection of enhancement measures within the compensatory planting area will be agreed with Forestry Scotland.

# ARDERSIER PORT ENERGY TRANSITION FACILITY PORT EXTENSION

Haventus

November 2025

## Chapter 4 Consultation

# Ardersier Port Extension

| | |
|---|---|
| Revision Number | FINAL |
| Date | November 2025 |
| Version: | 1 |
| Author | Becky Mclean |
| Technical Reviewer | Campbell Fleming |

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# 4 CONSULTATION

## 4.1 INTRODUCTION

This chapter sets out the consultation that has been undertaken in accordance with the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 and the Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 to scope this EIA.

It also provides information on the consultation that has been undertaken with the local community and key stakeholders, detailing how their thoughts and views have been considered in the design of the proposed development and the assessments in this EIAR. This is in accordance with the Town and Country Planning (Pre-Application Consultation) (Scotland) Amendment Regulations 2021 and the Marine Licensing (Pre-application Consultation) (Scotland) Regulations 2013. Full details are provided in the Pre-Application Consultation report that has been submitted in support of the planning application.

All consultation relevant to technical aspects of the EIA has been reported in the respective chapters (**EIAR Chapters 5-12**). This chapter has been prepared throughout the EIA process to keep a complete record of all relevant consultation that has been undertaken to inform the EIA and the design of the proposed development.

## 4.2 PURPOSE OF CONSULTATION

The consultation process has been undertaken to inform the Project team's understanding of the potential environmental sensitivities associated with the area of the proposed development. It has also:

- Sought feedback and comments from Statutory and Non-Statutory Consultees on environmental aspects of the proposed development.
- Provided Statutory Consultees, other non-statutory bodies and the public with information about the proposed development and provided them with an opportunity to comment on the proposals.
- Obtained information relevant to inform the environmental assessments.
- Agreed survey and assessment methodologies, where relevant.

## 4.3 PROPOSAL OF APPLICATION NOTICE (POAN)

Under the Town and Country Planning (Scotland) Act 1997 as amended by the Planning etc. (Scotland) Act 2006, all National developments, as designated within the revised National Planning Framework, require a formal PoAN). The purpose of the PoAN is to give notice that a planning application is intended to be submitted following a formal period of statutory Pre-Application Consultation and to set out what consultation is to be undertaken during that period.

In accordance with these regulations, a PoAN was submitted to The Highland Council on 16th May 2025. A copy of the PoAN is attached to the Pre-Application Consultation (PAC) Report in Appendix 1 and it was shared with the following parties by email on 16th May 2025: -

- Cllr Glynis Campbell Sinclair
- Cllr Morven Reid
- Cllr Trish Robertson
- Cllr Laurie Fraser
- Cllr Michael Green

- Cllr Barbara Jarvie
- Cllr Paul Oldham
- Fergus Ewing (MSP)
- Ariane Burgess (MSP)
- Tim Eagle (MSP)
- Rhoda Grant (MSP)
- Jamie Halcro Johnston (MSP)
- Edward Mountain (MSP)
- Emma Roddick (MSP)
- Douglas Ross (MSP)
- Graeme Leadbitter (MP)

A period of at least 12 weeks has elapsed between the submission of the PoAN to THC and the submission of the application for planning permission

In accordance with the regulations, two public exhibitions were held in June and August 2025 and were advertised in the Inverness Courier at least seven days beforehand.

## 4.4 PUBLIC EVENTS

The purpose of the first consultation event was to provide the public with a chance to view the plans, ask any questions and give their views on the design. The second exhibition provided an update on how the design had developed since the last consultation event following further discussions with key stakeholders (e.g. the Council's internal teams etc.), and taking on board feedback received at the first consultation event.

A public notice in relation to the first public consultation event appeared in the Inverness Courier on 3rd June 2025, confirming the details of the first consultation event. A public notice for the second consultation event appeared in the Inverness Courier on 19th August 2025.

Copies of the adverts are provided in Appendix 3 and 4 of the PAC Report that has been submitted as part of the wider planning application.

A free, publicly accessible project website was also created to host information relating to the proposals: https://www.montagu-evans.co.uk/public-consultation-haventus/. The website went live to coincide with the PAC advert appearing in the press and remained live to allow for sufficient time before and after the events for third parties to make comments.

The documents and materials associated with the public events are available on the project website (Public Consultation: Haventus - Montagu Evans). These were uploaded as soon as possible during and after each event to enable the public and stakeholder groups to view them at their leisure.

Following each public event the main questions and concerns were reviewed by the wider team and considered in terms of changes to design or approach. This resulted in a You Said/We Did table that was shared at the second event and can be found in Image 3.

### 4.4.1 Event 1 – June 2025

The first public consultation event (**Image 1**) took place on 11th June 2025 between 3pm and 7pm at Ardersier War Memorial Hall, Station Road, Ardersier, Inverness, IV2 7SU. During this time attendees were invited to view the presentation boards, which were displayed within the venue. The project team were also in attendance to answer any questions raised. The event was attended by 66 visitors.

**Image 4.1: Public Consultation Event 1**

### 4.4.2 Event 2 – August 2025

The second public consultation event (**Image 2**) took place on 27th August 2025 between 3pm and 7pm at Ardersier War Memorial Hall, Station Road, Ardersier, Inverness, IV2 7SU. During this time attendees were invited to view the presentation boards, which were displayed within the venue. The project team were also in attendance to answer any questions raised and specifically to feedback on the comments received from the first event which was summarised on one of the boards in a You Said/We Did approach (**Image 3**). The second event was attended by 41 visitors.

**Image 4.2: Public Consultation Event 2**

**Image 4.3: You Said / We Did**

# You said/We did

| YOUR FEEDBACK | OUR RESPONSE |
|---|---|
| Digital Interactive Map would be useful to understand the site location. | We have brought an interactive map to this event. |
| Concerned about lighting impacts from the site particularly during winter. | We have commissioned a lighting specialist to advise on lighting design and suitable mitigation. |
| Worried about noise impacts from the proposed extension. | We have undertaken a full noise assessment and the results will be included in the EIA. |
| Worried about the loss of woodland and the screening it provides. | We have designed a buffer strip of woodland along the southern boundary of the site where the woodland will be retained. |
| Worried about the junction interventions and traffic impacts. | • We have confirmed that traffic levels will not exceed that already consented in 2018.<br>• We are also preparing a Travel Framework to manage traffic from the site that will consider all modes of transport and also consider sustainable options.<br>• The roundabouts that are associated with the 2018 consent are designed and approved to meet current standards and are not a part of the proposed extension. |
| You wanted further information about the potential layout of the site. | We are developing an indicative layout for assessment purposes for the EIA. Important to note that this is indicative and future detailed proposals will undertake a full design process as required and further applications will come forward with the details on what is proposed. |
| You wanted confirmation of the proposed manufacturing that could take place on the site. | We confirmed that the extension site will provide additional space for laydown areas or renewables related manufacturing. This could potentially include turbine blade manufacturing, nacelle manufacturing, amongst other things. |

## 4.5 PRE-APPLICATION DISCUSSIONS

In addition to the PoAN and the public events, several pre-application meetings and discussions have taken place with relevant stakeholders and regulators.

### 4.5.1 Pre-application meeting

An initial Pre-Application meeting was held between the Applicant, their project team, and relevant Council officials on 13th March 2025. A formal Pre-Application Enquiry response was received from THC on 24th March 2025. This response concluded that the development was welcomed, “particularly given its potential for the realisation of the significant benefits anticipated to be delivered as part of the Inverness & Cromarty Firth Green Freeport consortium.” It also noted that the principle of development has “potential to be consistent with the development plan.” The Council noted several issues that the Applicant should

address in any future planning application, including flood risk, woodland removal, landscape and visual, and biodiversity.

The discussion within the Pre-Application Enquiry response includes the following topics: -

- Principle of Development
- Design and Sustainability
- Natural Heritage
- Amenity
- Transport and Wider Access
- Water Environment
- Marine Environment
- Built and Cultural Heritage

The formal response also provided further detail on the supporting documents required for the application of the proposed development.

### 4.5.2 Additional pre-application meetings

Following the receipt of the feedback response, a further four pre-application meetings were scheduled to cover various technical areas. These meetings were intended to provide a project update to the Council officials, and to discuss specific topics within the initial pre-application feedback. These meetings are outlined as below: -

- 9th April 2025 – Landscape and Visual
- 27th May 2025 – Flooding
- 28th May 2025 – Woodland Mitigation and Ecology
- 23rd July 2025 – Transport and Planning Policy

### 4.5.3 Community Liaison Group

In accordance with the terms of the existing planning permission, a Community Liaison Group (CLG) was established. This meets on a regular basis and provides an update on the current situation and proposed development opportunities. The most recent CLG meeting described the proposed extension area, its purpose and the scope of development it would involve. The comments from the CLG were supportive of the principle of the development, expressing an understanding of the need for the additional land and its long-term purpose for the development of the port.

Some concerns were expressed about the access to the site and attendees were reassured that the existing primary route would continue to serve the site with the added benefit of the completion of the new roundabout junction on the A96. It was explained this would commence construction in late autumn 2025 and would be completed early in 2026.

### 4.5.4 Higher Education / School Engagement

The details of the public event were shared with the University of Highlands and Islands (UHI), Inverness College, Culloden Academy and Ardersier Primary School.

The UHI noted that they had shared the information on their Student Portal so that all UHI Inverness staff and students would be able to view when logging into their systems.

This additional engagement helped inform the EIA and the design of the proposed development.

## 4.6 THE SCOPING PROCESS

The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 make provision for the Developer to write to a relevant competent authority (the Council's Planning Authority) and request a formal opinion, in writing, of the information to be provided in the EIAR. This is called a Scoping Opinion. A Scoping Request from the Developer, as a minimum, must include a description of the location of the development, a plan to identify the land, a description of the nature and purpose of the development and of its likely significant effects on the environment, and other information or representations that the Developer may wish to provide.

The principal aim of the EIA scoping exercise for the proposed development was to establish the key issues to be considered as part of the EIA. This exercise has also informed the evaluation of the significance of the predicted environmental effects of the proposals and has identified key issues for the assessment.

The scoping exercise formally opened the lines of communication with consultees on EIA and planning, however, there has been ongoing consultation throughout the outline design process (refer to the PAC Report submitted alongside this planning application for further information).

## 4.7 SCOPING OPINION

A Scoping Request was prepared by the EIA team to identify the proposed 'scope' and information requirements for the EIA and content of this EIAR.

A formal request for a Scoping Opinion was made to the Highland Council's Planning and Building Standards department and the Marine Directorate in January 2025.

The Highland Council's Planning Officer provided their Scoping Opinion on 24th March 2025 (EIAR Appendix 4.1) and the Marine Directorate in June 2025 (EIAR Appendix 4.2). A summary of the key points is provided in **Error! Reference source not found.**. These points have been included and assessed in this EIAR, and the table provides information on where further information on each can be found.

The requirements outlined in Table 4.1 were discussed within the relevant technical chapter authors and the key issues from the Scoping Opinion incorporated within the assessments and reporting.

**Table 4.1: Scoping Opinion Response**

| Ref (in Scoping Opinion) | Organisation | Response | Where can you find this information in the EIAR or other supporting documents? |
|---|---|---|---|
| **HIGHLAND COUNCIL RESPONSE** | | | |
| **1.1** | The Highland Council (THC) | Full description of physical characteristics of the site, the proposed development, the risks, residual effects, any predicted emissions and the cumulative impacts. . | Please refer to EIAR Chapter 3 (Project Description), the individual chapters and also EIAR Chapter 14 (Cumulative Effects). |
| **2.1** | THC | Provide a statement of alternatives – consider design evolution, site selection, technology, access. The alternatives assessment should also provide information on the different environment effects of the options and highlight sustainable development attributes including information on any carbon savings for example of choices made. | Please refer to Section 3.3 in EIAR Chapter 3. |
| **3.1–3.14** | THC Development Plans Team | Provide a land use and policy chapter – identify and summarise relevant national, regional, and local planning policies (NPF4, HwLDP, IMFLDP2).<br><br>Provide information separate to the EIA on what has been discussed and agreed with regards to community wealth building as per the relevant Highland Councils remit and the 'Social Values Charter for Renewable Investment' | The land use of the site is set out in the project description and the relevant planning policies are set out in detail in the Planning Support Statement. Those that are relevant to the individual chapters are also included in EIAR Chapters 5 – 14. |
| **3.15** | THC | The Council's Sustainable Design Guide SG provides advice and guidance on a range of sustainability topics, including design, building materials, and minimising environmental impacts of development. A Sustainable Design Statement is required, which may form part of a supporting Planning Statement, or Climate Change section of an EIA. | Please refer to the Sustainable Design Guide that has been submitted as part of the Planning Support Statement. |
| **3.16 – 3.22** | THC / NatureScot | The EIAR must address the likely impacts on the nature conservation interests of all the designated sites in the vicinity of the proposed development. It must provide proposals for any mitigation that is required to avoid these impacts or to reduce them to a level where they are not significant. | Please refer to EIAR Appendix 5.8, EIAR Chapter 11 (Marine Mammals), EIAR Appendix 11.6, EIAR Chapter 12 (Terrestrial Ecology), EIAR Chapter 13 (Ornithology) and EIAR Appendix 13.9. |
| **3.23** | THC / NatureScot | As part of an EIA, a full assessment of the ecology of the site and a suitable buffer around the site needs to be undertaken to determine if there are any ecological/environmental constraints associated with the proposed development. The Ecology Officer agreed with the list of proposed species to be considered as part of the assessment. | Please refer to EIAR Chapters 12 (Terrestrial Ecology) and EIAR Chapter 13 (Ornithology). |

| Ref (in Scoping Opinion) | Organisation | Response | Where can you find this information in the EIAR or other supporting documents? |
|---|---|---|---|
| **3.24** | THC / NatureScot | If applicable, any relevant Species Protection Plans (SPPs) should be made available as part of the EIAR. It is expected that all survey information submitted with the application will be up to date (as per NatureScot professional guidance) and will include all areas of proposed construction, including areas considered temporary (e.g. site compounds). | Details in EIAR Chapter 12 (Terrestrial Ecology) – Table 7. |
| **3.25** | THC / NatureScot | The EIAR should include a cumulative assessment for the proposal, taken into account any larger projects which may impact upon the same ecological receptors. | Please refer to EIAR Chapter 12 (Terrestrial Ecology), Section 12.10. |
| **3.29** | THC / NatureScot | It is expected that a full report, detailing methodologies, results, assessment and any mitigation/compensation measures for the identified ecological constraints. This should include any mapping. | Please refer to EIAR Chapters 11 (Marine Mammals), 12 (Terrestrial Ecology), and 13 (Ornithology) and accompanying appendices. |
| **3.30** | THC / NatureScot | The Council's Ecology Officer agrees with the species and impacts to be included within the EIA. It would be expected that any potential barriers to salmon migration to be considered. The cumulative impacts should be considered, particularly those within the Cromarty and Moray Firth. | Please refer to EIAR Chapter 5, Section 5.9 and EIAR Appendix 5.8. |
| **3.31** | THC / NatureScot | The EIA should demonstrate how the proposed development has met the requirements of NPF4 Policy 3. Guidance on the information required for fulfilling this policy can be found in Highland Council 'Biodiversity Enhancement Planning Guidance', May 2024.<br><br>Please provide details of the biodiversity enhancements within the application, with clear depiction of what is considered compensatory and what is enhancement. | Please refer to EIAR Chapter 15 (Schedule of Mitigation and Enhancements). |
| **3.33 – 3.41** | THC / Forestry Scotland | Forestry will need to be 'scoped in' to the EIA and the applicant will need to provide a Forestry Chapter in the EIAR prepared by a professional forester. The Forestry Chapter would need to include scope of assessment, methodology, baseline conditions (woodland location, type, condition, etc of all woodland areas on and around the site), mitigation, monitoring and assessment of effects. The EIA should provide a baseline survey of the trees and plants present on the site to determine the presence of any rare or threatened species. | Details on the proposed tree removal are provided in EIAR Chapter 3 (Project Description) Section 3.5.3 - Site Clearance (Commercial Plantation Felling and Vegetation Removal) and baseline survey information is provided in EIAR Chapter 12 (Terrestrial Ecology) - EIAR Appendix 12.13, EIAR Appendix 12.14, EIAR Appendix 12.15<br>.<br>Detail of the Tree Constraints Plan and buffer zones is provided in EIAR Chapter 5 (Supporting Information and Assessments) and EIAR Appendix 5.4. |

| Ref (in Scoping Opinion) | Organisation | Response | Where can you find this information in the EIAR or other supporting documents? |
|---|---|---|---|
| **3.42** | THC / Forestry Scotland | The EIA should include Tree Constraints Plans and Tree Protection Plans to BS 5837:2012 to show how retained trees/woodland would be safeguarded from construction activity as well as a tree/woodland removal drawing which shows the extent of woodland that would need to be removed to accommodate new development. Where woodland is proposed to be removed, compliance with the Scottish Government's Control of Woodland Removal policy is required to be demonstrated. The applicant will therefore need to submit the following in support of any application:<br>• what significant and clearly defined additional public benefits would be associated with the proposals.<br>• what area of tree cover would realistically need to be removed in order to accommodate all of the proposals.<br>• how the area of commercial woodland proposed to be removed could be adequately compensated for with an area of equivalent size and quality of commercial woodland. This would most likely need to be off-site | Detail of the Tree Constraints Plan, compensation and policy compliance is provided in EIAR Chapter 5 (Supporting Information and Assessments) and EIAR Appendix 5.4. |
| **3.46** | THC / Landscape | For all analysis of Seascape, Landscape and Visual Effects, the pattern of use of the site should be considered, and conclusions should make clear the degree to which such patterns may be variable. Pattern would include consideration of which parts of the site would be occupied by taller elements, how many turbines might be under partial construction at any given time and how seasonal the presence of taller elements may be, including any permanent structures such as ring cranes, and what effects such seasonality may have on the presence of working and aviation lights. | Please refer to EIAR Chapter 7 (Landscape, Seascape and Visual). |
| **3.47** | THC / Landscape | Please present the visual material used for the landscape and visual impact in different ways. In addition to panoramic images, the Council requires single frame images with different focal lengths of 50mm and 75mm taken with a 35mm format full frame sensor camera – not an 'equivalent'.<br><br>These images are specifically required to assist with the visual impact assessment of the proposal's visual effects whereby the 50mm focal length gives an indication of field of view and the 75mm focal length best represents the scale and distance in the landscape i.e. a most realistic impression of what we see from the viewpoint when assessing the proposed 'in the field'. | Please refer to EIAR Chapter 7 (Landscape, Seascape and Visual). |
| **3.48** | THC / Landscape | The applicant must provide visualisations prepared in accordance with both The Highland Council's Visualisation Standards (available at THC Visualisation Standards) and are subject to an independent verification check upon submission and comparison with NatureScot guidance. | Noted. Please refer to EIAR Chapter 7 (Landscape, Seascape and Visual) and an A3 lever arch folder of all visualisations will be provided. |

| Ref (in Scoping Opinion) | Organisation | Response | Where can you find this information in the EIAR or other supporting documents? |
|---|---|---|---|
| | | A request has also been made for an A3 lever arch folder hard copy set of visualisations for ease of reference and use by the Case Officer during site assessments. | |
| **3.49** | THC / Landscape | All elements of the proposed development must be rendered into photomontages, showing:<br>• The current baseline view,<br>• The proposed development on completion (Year 0), and<br>• The anticipated view at Year 5 and Year 10 post-completion, illustrating landscape establishment over time.<br>• Where no meaningful visual change is expected between Years 5 and 10, later photomontages may be omitted. | Please refer to EIAR Chapter 7 (Landscape, Seascape and Visual). |
| **3.50 – 3.52** | THC / Landscape | The final list of viewpoints and wireframes must be agreed with The Highland Council (THC) in advance, and each viewpoint's purpose (e.g. landscape, cumulative, or community assessment) must be clearly stated in the supporting information.<br>Where viewpoints are inaccessible or screened, visualisations should be supplemented by 3D renderings to demonstrate how the facility will sit within the site and surrounding landscape. | Viewpoints were agreed with THC – further information in EIAR Chapter 7 (Landscape, Seascape and Visual). |
| **3.53** | THC / Landscape | The LVIA should clearly set out the methodology of the assessment, which should include consideration of access roads, fencing, security measures including CCTV, lighting, along with the principal structures. | Please refer to EIAR Chapter 7 (Landscape, Seascape and Visual). |
| **3.54** | THC / Landscape | Although the proposal is understood to be for turbine component assembly and deployment, it is expected that the LVIA refers to the Council's Onshore Wind Energy Supplementary Guidance and takes account of the key views, gateways and identified sensitive receptors in the locality. | Please refer to EIAR Chapter 7 (Landscape, Seascape and Visual). |
| **3.57** | THC Historic Environment Team / Historic Environment Scotland (HES) | It is recommended that the applicant refers to the EIA Handbook for best practice advice on assessing cultural heritage impacts. Decisions that affect the historic environment should take the Historic Environment Policy for Scotland (HEPS) into account as a material consideration. HEPS is supported by HES's Managing Change guidance series. In this case, it is recommended that you consider the advice in the Managing Change in the Historic Environment: Setting guidance note. | Please refer to EIAR Chapter 8 (Historic Environment). |
| **3.58–3.62** | THC Historic Environment Team / Historic Environment Scotland (HES) | Cultural Heritage assessment following HEPS and Managing Change guidance. Include ZTV, walkover survey, setting assessment, mitigation for impacts on assets (e.g., Fort George). | Please refer to EIAR Chapter 7 (Landscape, Seascape and Visual) and EIAR Chapter 8 (Historic Environment). |

| Ref (in Scoping Opinion) | Organisation | Response | Where can you find this information in the EIAR or other supporting documents? |
|---|---|---|---|
| **3.63** | SEPA | SEPA have advised that they would welcome further pre-application engagement once initial habitat and water survey work has been completed and proposals for the development platform, related watercourse engineering and flood risk works have been undertaken. | Completed and reported in EIAR Chapter 9 (Hydrology and Hydrogeology). |
| **3.63–3.67** | SEPA / NatureScot | Water environment survey – map all water features, culverts, drainage, invasive species, rerouting proposals, and wetland compensation. | Please refer to EIAR Chapter 9 (Hydrology and Hydrogeology). |
| **3.68–3.77** | SEPA / THC Flood Risk Team | Flood Risk Assessment covering coastal and fluvial risk (inc. climate change), rerouted channels, 1-in-200-year design flow, FRA outputs integrated into design. | Please refer to EIAR Appendix 9.3. |
| **3.78–3.81** | SEPA | Groundwater Dependent Terrestrial Ecosystems (GWDTE) survey and assessment, NVC mapping, risk assessment, and mitigation/monitoring. | Please refer to EIAR Appendix 12.13, EIAR Appendix 12.14, EIAR Appendix 12.15 and<br>EIAR Chapter 9 (Hydrology and Hydrogeology), Section 9.4.7. |
| **3.82–3.83** | SEPA | Assessment of impacts on groundwater abstractions and outline of any new abstractions. | Please refer to EIAR Chapter 9, Section 9.4.6. |
| **3.84** | SEPA | The submission must include a schedule of mitigation, which includes reference to best practice pollution prevention and construction techniques (for example, limiting the maximum area to be stripped of soils and peat at any one time) and regulatory requirements. | Please refer to EIAR Chapter 15 (Schedule of Mitigation and Enhancements). |
| **3.85–3.86** | SEPA | Waste and materials management plan, including use of dredged sand, timber reuse, and compliance with forestry waste guidance. Include information on the approach to be taken to tree felling and forest waste. | Please refer to EIAR Chapter 3 (project Description) and EIAR Appendix 5.3. |
| **3.88** | Scottish Water | Identify potential conflicts with Scottish Water assets; consult Asset Impact Team. | No new Scottish Water assets needed on site or required by the proposed development. |
| **3.89–3.91** | THC Contaminated Land | Further information is required to demonstrate this area of the site is suitable for use. As a minimum a detailed site history and walkover survey, intrusive Phase 2 Investigation works may be deemed necessary. Early consultation with the Council Contaminated Land Team on the findings of the history/walkover survey and any proposed investigation strategy is recommended prior to undertaking any intrusive works onsite. | Please refer to EIAR Chapter 5, Section 5.5 and EIAR Appendix 5.4. |
| **3.93–3.98** | THC Environmental Health | Construction and operational noise assessments (BS5228, BS4142), dust risk assessment, inclusion in CEMP. | Please refer to EIAR Chapter 6 (Airborne Noise and Groundborne Vibration). |

| Ref (in Scoping Opinion) | Organisation | Response | Where can you find this information in the EIAR or other supporting documents? |
|---|---|---|---|
| **3.99** | THC Environmental Health | Air quality assessment required if manufacturing or processing activities generate significant emissions. | This application is not applying for manufacturing or processes activities – therefore air quality assessment not required. Construction Dust impacts considered in EIAR Chapter 5, Section 5.2 and EIAR Appendix 5.1. |
| **3.100–3.104** | THC Transport Planning | Updated Travel Plan required that incorporates previously suggested measures) and Operational Traffic Management Plan. Confirm new A96 junction still planned, parking, EV charging, and bus service measures. | Please refer to EIAR Chapter 5, Section 5.7 and EIAR Appendix 5.6. |
| **3.105–3.107** | THC Access Officer | Access management plan update, identifying changes to land where access rights will be restricted but that as set out in the scoping report - "*Proposed extension will exclude the public from areas where access rights apply but where little or no public access is exercised. No likely significant negative impacts predicted.*" | Please refer to EIAR Chapter 3 (Project Description). |
| **3.108–3.109** | THC / Socio-economics | Socio-economic statement required - The application should include relevant economic information connected with the project, including the potential number of jobs, and economic activity associated with the procurement, construction, operation and decommissioning of the development. This should set out the impact on the local, regional and national economy. Any mitigation proposed should also address impacts on the regional and local economy. | Please refer to EIAR Chapter 3 (Project Description) and EIAR Appendix 3.3. |
| **4.0** | THC | EIAR needs to describe the likely significant effects of the development on the environment (direct, indirect, secondary, cumulative, short, medium and long term, permanent and temporary, positive and negative). Methodology used to assess significance required. | Please refer to EIAR Chapter 2 for the Methodology and all technical chapters (5 – 14) that include specific sections on significance methodology supported by appendices. |
| **5.1–5.3** | THC / SEPA | Draft Schedule of Mitigation table to be included in EIAR; specify implementation and monitoring (CEMP, CMS, community liaison). | Please refer to EIAR Chapter 15 (Schedule of Mitigation and Enhancements). |
| **MARINE SCOTLAND RESPONSE** | | | |
| **2.4.1** | Marine Directorate (MD-LOT) | Provide full Best Practicable Environmental Option (BPEO) assessment for dredged material, including all disposal/reuse options and worst-case scenarios. | This is being prepared for all proposed Marine Works and has been submitted as a supporting document to the Marine Licence Application. |
| **2.4.2** | MD-LOT | Include clear timeframes for each work element. If exact timeframes are not known, then worst case scenarios should be provided "Design Envelope | Please refer to EIAR Chapter 3 (Project Description). |
| **2.4.3–2.4.6** | MD-LOT | Apply a Design Envelope approach – define parameters, justify flexibility, assess worst-case and most-likely scenarios, and ensure consistency between EIA and licence applications. | Please refer to EIAR Chapter 3 (Project Description). |

| Ref (in Scoping Opinion) | Organisation | Response | Where can you find this information in the EIAR or other supporting documents? |
|---|---|---|---|
| **2.4.7–2.4.8** | MD-LOT | Include a description of reasonable alternatives (design, technology, scale, location) and reasons for selection, comparing environmental effects. | Please refer to Section 3.3 in EIAR Chapter 3 (Project Description). |
| **3.2** | MD-LOT | Clearly list topics scoped in/out; justify exclusions and document in the EIA Report. | Please see section 4.8 below this table. |
| **3.3** | MD-LOT | Include an integrated Mitigation and Monitoring Table linked to each EIA topic. Explain efficacy and any monitoring/remedial actions. | Please refer to EIAR Chapter 15 (Schedule of Mitigation and Enhancements). |
| **5.2** | MD-LOT | Landscape, Seascape & Visual Effects scoped in for construction and operation. Prepare LVIA following NatureScot/THC standards. | Please refer to EIAR Chapter 7 (Landscape, Seascape and Visual). |
| **5.3 / MCA** | MCA | Update Navigational Risk Assessment (NRA) per Port Marine Safety Code. Scope out navigation only if covered in updated NRA. | The Port Navigational Risk Assessment is contonually updated as the port evolves, should the applications be successful this would be carried out prior to completion of quay and dredging. This is not part of the EIAR. |
| **5.3 / MOD** | MOD | Assess impacts of tall structures (≥50m) on military low flying and radar (RAF Lossiemouth). Include mitigation if needed. | In progress with Ministry of Defence |
| **5.4** | MD-LOT | Air Quality may be scoped out if Construction Dust Risk Assessment and Dust Management Plan are included in the CEMP. | Please refer to EIAR Chapter 5, Section 5.2 and EIAR Appendix 5.1. |
| **5.5** | MD-LOT | Airborne noise scoped in for both phases; assess impacts on residential and ecological receptors. | Please refer to EIAR Chapter 6 (Airborne Noise and Groundborne Vibration) for assessment of residential receptors and EIAR Chapter 12 (Terrestrial Ecology) for impacts on ecological receptors. |
| **5.6 / HES** | Historic Environment Scotland | Historic Environment scoped in; prepare ZTVs, setting assessments, and consult HES and Aberdeenshire Council Archaeology. | Please refer to EIAR Chapter 8 (Historic Environment). |
| **5.7** | MD-LOT | Population & Human Health scoped out if covered under cultural heritage, air, and hydrology chapters. | Covered under EIAR Chapters 8 (Historic Environment) and EIAR Chapter 9 (Hydrology and Hydrogeology) and EIAR Chapter 5 (Appendix 5.1). |
| **5.8** | MD-LOT / NatureScot | Climate and Resilience scoped in. Include full GHG Life Cycle Assessment (IEMA guidance) and assess long-term coastal change and sea-level rise. | Please refer to EIAR Chapter 5, Section 5.6 , Section 5.12 and also the Sustainability Design Statement that is part of the Planning Statement. |

| Ref (in Scoping Opinion) | Organisation | Response | Where can you find this information in the EIAR or other supporting documents? |
|---|---|---|---|
| **5.9** | MD-LOT | Hydrology & Hydrogeology scoped in; include flood risk, drainage, topography, water quality. | Please refer to EIAR Chapter 9 (Hydrology and Hydrogeology) including EIAR Appendix 9.3 and EIAR Appendix 9.4. |
| **5.10** | MD-LOT / NatureScot | Coastal Processes & Geomorphology scoped in. Assess impacts of rock armour, deeped dredge, sedimentation, hydrology, and tidal volume changes. Submit draft modelling method pre-application. | Please refer to EIAR Chapter 10 (Coastal Processes & Geomorphology). |
| **5.11** | MD-LOT | Geology, Soils & Contaminated Land may be scoped out if supported by a completed BPEO and ground investigation. | Please refer to EIAR Chapter 5, Section 5.5 and EIAR Appendix 5.4. |
| **5.12** | MD-LOT | Material Assets & Waste may be scoped out if a Site Waste Management Plan is submitted. | Please refer to EIAR Chapter 5, Section 5.4 and EIAR Appendix 5.3. |
| **5.13** | MD-LOT | Terrestrial Ecology scoped in for relevant marine-related effects; address invasive species and designated sites. | Please refer to EIAR Chapter 12 (Terrestrial Ecology). |
| **5.14 / NatureScot** | NatureScot | Marine Mammals scoped in; assess underwater noise, disturbance, displacement, vessel impacts, and indirect prey effects (bottlenose dolphin SAC). | Please refer to EIAR Chapter 11 (Marine Mammals). |
| **5.15** | MD-Lot | The Scottish Ministers agree that heat and radiation be scoped out of further assessment within the EIA for the construction and operational phases. | Noted. |
| **5.16** | MD-Lot | The Scottish Ministers agree with the Applicant's proposal to scope out major hazards and accidents provided the risk of flooding, storms and potential storm surges is assessed through the hydrology chapter in the EIA and the above plans are adhered to. | Flooding covered in EIAR Appendix 9.3. Major Accidents and Hazards is covered in EIAR Chapter 5, Section 5.11. |
| **5.17** | MD-Lot | The Scottish Ministers agree that electric and magnetic fields be scoped out of further assessment within the EIA Report for the construction and operational phases. | Noted. |
| **5.18** | MD-Lot | The Scottish Ministers agree that transboundary effects be scoped out of further assessment within the EIA Report for the construction and operational phases. | Noted. |
| **5.19** | MD-LOT | Cumulative Effects scoped in. Include combined impacts with licensed works and future offshore wind activity in Cromarty & Inverness Green Freeports. | Please refer to EIAR Chapter 14 (Cumulative Effects) and EIAR Chapters 5 to 13. |
| **5.20 / NatureScot** | NatureScot | Ornithology scoped in. Assess disturbance/displacement of SPA birds, timing of works, and potential for enhancement of Tern Island. | Please refer to EIAR Chapter 13 (Ornithology) and EIAR Appendix 13.9. |

| Ref (in Scoping Opinion) | Organisation | Response | Where can you find this information in the EIAR or other supporting documents? |
|---|---|---|---|
| **5.21 / NatureScot / MD-SEDD** | NatureScot & MD-SEDD | Coastal & Marine Ecology scoped in; include effects on SAC sandbanks, benthic habitats, invasive species (slipper limpet), and include Port Interim Biosecurity Plan. | Please refer to EIAR Chapter 11 (Marine Mammals), EIAR Appendix 5.8 and EIAR Appendix 5.9. |
| **5.22 / Nairn DSFB** | Nairn District Salmon Fisheries Board | Assessment of impacts upon Diadromous Fish scoped in; assess noise, dredging, and deposition impacts on salmonids; avoid smolt migration period; consult DSFBs. | Please refer to EIAR Chapter 5, Section 5.9 and EIAR Appendix 5.7. |
| **5.23 / MD-SEDD / SFF** | MD-SEDD & Scottish Fishermen's Federation | Assessment of impacts upon Commercial Fisheries scoped in; identify fishing grounds, engage with local fishers, include creel and shellfish species data. | Please refer to EIAR Chapter 5, Section 5.8 and EIAR Appendix 5.7. |
| **6.1.1** | MD-LOT | Ensure EIA Report complies with Marine Works (EIA) Regulations 2017 and aligns with this Scoping Opinion. | Noted and this table provides references to where each requirement has been addressed. |
| **6.1.2** | MD-LOT | Coordinate Habitats Regulations Assessment (HRA) with EIA. | Please refer to EIAR Chapter 11 (Marine Mammals) and EIAR Appendix 11.6. |
| **6.1.3** | MD-LOT | Complete and submit Gap Analysis Template (Appendix II) showing how Scoping Opinion issues are addressed. | This is this table. |

## 4.8 SCOPING CONCLUSION & ENVIRONMENTAL ASSESSMENTS REQUIRED

Following receipt of the formal scoping opinions from THC and MD-LOT, the following environmental assessments were **'scoped in' to** this EIA.

- EIAR Chapter 6 - Airborne Noise and Vibration
- EIAR Chapter 7 - Landscape, Seascape and Visual
- EIAR Chapter 8 - Historic Environment
- EIAR Chapter 9 - Hydrology and Hydrogeology
- EIAR Chapter 10 - Coastal Processes and Geomorphology
- EIAR Chapter 11 - Marine Mammals
- EIAR Chapter 12 - Terrestrial Ecology
- EIAR Chapter 13 - Ornithology
- EIAR Chapter 14 - Cumulative

In addition to the formally 'scoped in' assessments, EIAR Chapter 5 has also been included to provide information on other **key environmental considerations, that didn't require a formal EIA chapter** but that did require consideration with regards to strategies, plans and mitigation to remove or reduce impacts upon the environment. EIAR Chapter 5 therefore includes information on the following

- Section 5.2 – Dust
- Section 5.3 – Lighting Strategy
- Section 5.4 – Waste Management
- Section 5.5 – Tree Constraints Plan
- Section 5.6 – Carbon
- Section 5.7 – Travel Plan
- Section 5.8 – Commercial Fisheries
- Section 5.9 – Marine/Coastal Habitats & Diadromous Fish
- Section 5.10 – Interim Biosecurity Plan
- Section 5.11 – Major Accidents & Hazards
- Section 5.12 – Climate Resilience & Adaptation
- Section 5.13 – Contaminated Land

The following assessments were formally **'scoped out'** from the EIA

- Transport & Access – *revised travel plan provided in Section 5.7*
- Air Quality – r*evised dust management plan provided in Section 5.2*
- Population & Human Health – *elements covered under cultural heritage and hydrology chapters and the dust management plan*
- Climate & Resilience – *GHG Assessment based on a Life Cycle Assessment ("LCA") approach with reference to ISEP Guidance is provided in Section 5.6*
- Geology, Soils & Contaminated Land – *required information provided in Section 5.5*
- Material Assets & Waste - *waste management proposals provided in Section 5.4*
- Heat and radiation
- Major Hazards & Accidents – *covered in Section 5.11*
- Electric and magnetic fields
- Transboundary effects

# ARDERSIER PORT ENERGY TRANSITION FACILITY PORT EXTENSION

Haventus

November 2025

## Chapter 5 Supporting Information and Assessments

# Ardersier Port Extension

| | |
|---|---|
| Revision Number | Final |
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# 5 SUPPORTING INFORMATION & ASSESSMENTS

## 5.1 INTRODUCTION

This chapter presents a collection of supporting information and assessments for topics that didn't require a full environmental impact assessment to be undertaken but where further information or details had been requested either through the EIA scoping process, specific consultation with regulatory bodies or through the public consultation process.

Each topic has its own heading, and a proportionate approach has been taken to ensure that sufficient information is provided for each. Where required the supporting information and or the assessments maybe supported by a technical figure and or appendix, clear references to these are provided within each section. The topics covered within this chapter include the following

- Construction Dust
- Lighting Strategy
- Waste Management
- Forestry
- Carbon
- Travel Plan
- Commercial Fisheries
- Marine and Coastal Ecology
- Interim Biosecurity Plan
- Major accidents and hazards
- Climate resilience and adaptation
- Contaminated Land

The approach varies from topic-to-topic dependant on the information that has been included. Where an assessment has been carried out, information on any specific methodology or data used has been provided. For some of the topics, they may also include relevant information about consultation, policies/regulations or planning requirements. For some topics (e.g. Dust, Waste Management, Travel Plan etc), the main focus has been a review and update to an existing management plan that has been operating on the extant consented port during construction. A summary of the update undertaken and the revised plan is provided for these topics.

## 5.2 CONSTRUCTION DUST

The proposed development proposes large-scale earthworks involving excavation, movement and stockpiling of sands and aggregates to enable the extension of the former fabrication yard. Works are scheduled to run from March 2026 to July 2028 and have the potential to generate fugitive dust and particulate matter (PM) if suitable mitigation measures are not employed on site.

In paragraph 3.28 of the EIA Scoping Report, it stated "*Dust: The Scoping Report proposes to complete construction dust risk assessment to determine the appropriate construction phase dust mitigation measures, and this will be included in the draft CEMP with an update to the existing dust management plan. The Environmental Health Officer confirms that they have no objections to the proposal".*
The Construction Dust Management Plan that has been in place throughout the construction of the existing site has been reviewed. The Construction Dust Management Plan (DMP) includes a dust risk

assessment and outlines the control measures and monitoring protocols for mitigating construction dust emissions. The plan aligns with IAQM guidance and Scottish legislation, focusing on high-risk activities such as earthworks, aggregate stockpiling, and internal haulage. Key controls include water suppression, crusting agents, real-time PM monitoring, and strict work stoppage criteria. The plan also provides detail on how often it will be reviewed (quarterly or after 3 breaches of the limits in a week) and who any breaches need to be reported to (HSEQ manager).

A copy of this Construction Dust Management Plan is provided in EIAR Appendix 5.1.

## 5.3 LIGHTING STRATEGY

During public consultation, local residents requested further information be included on the proposed lighting strategy for the proposed development. They had concerns regarding impacts from operational during the winter months, when sunset can be as early as 3.30pm in December.

The proposed lighting strategy for the proposed development aims to help achieve a safe, energy efficient and environmentally conscious lighting solution. By proposing modern LED technology paired with shielding fixtures, and smart controls to minimise light pollution and protect local wildlife while enhancing the functionality and safety of the Port.

To achieve these aims this report sets out a clear set of design guidelines and relevant documentation and standards to follow to provide a compliant lighting design with suitable mitigation against the effects of obtrusive light.

It should be noted that specific lighting designs will be the responsibility of future tenants but this strategy provides guidance about how to minimise light pollution and limit impacts upon the surrounding residents but also biodiversity. With regards to potential impacts during the winter months, it is unlikely that the main construction of wind turbines will be taking place with regards to the weather during these months, which will also help to limit the potential light pollution effects.

A copy of the Lighting Strategy is provided in EIAR Appendix 5.2.

## 5.4 WASTE MANAGEMENT

With regards to waste management, the scoping response from Highland Council stated

> *"In view of the proposal to use dredged sand to raise the platform we presume that no site clearance materials (with the exception of wood material, more below) will need to be removed from the site. If this is not the case then the application should be supported by a site clearance materials balance so that the fate and use of clearance material is clearly understood and assessed.*
>
> *The submission should confirm the approach to be taken to tree felling and forest waste which should accordance with our Use of Trees Cleared to Facilitate Development on Afforested Land – Joint Guidance from SEPA, SNH and FCS. We note that the scoping report suggests that timber will be removed from the site as product and other forest waste will be chipped for use as biomass; we would support this approach. Details of general regulatory requirements and good practice advice, for example in relation to engineering works in the water environment and waste management, ca be found on the regulations section of SEPA's website."*

The proposed development has the potential to generate different types of waste including

- Forestry waste from the plantation woodland clearance

- Aggregate and other materials from the proposed demolition of the farmhouses and outbuildings
- Waste generated during the construction process.

Each potential waste stream has been considered individually and the proposals for their management is proposed below.

The trees would be felled using an excavator mounted tree shear and moved to a handling facility within the existing site area. Roots would then be grubbed up and also moved for processing. At the handling facility (located away from the southern boundary to reduce noise) the trees and stumps would be logged and chipped for export from site by either HGV or ship dependent on customer location.

The two existing buildings on site, Pine Trees and Juniper Cottage (and associated buildings) will be demolished during the site clearance. The material sourced from this demolition, will be crushed and also used in the construction of the working platform or as part of the wider construction. It is not proposed that any material from this demolition will be taken off site.

With regards to other waste that could be generated during the construction process, the waste management plan that has been in place for the extant consented port has been reviewed and updated for the proposed development. This Waste Management Plan (WMP) has been developed to ensure that waste generated is managed responsibly, sustainably, and in accordance with relevant legislation and best practices. The goal is to reduce environmental impact, promote resource efficiency, and maintain compliance with the Waste Framework Directive and national waste regulations. The plan considers three main waste types (inert waste, non-hazardous waste and hazardous waste) and works in conjunction with the CEMP and the construction phase plan.

A copy of the Waste Management Plan is available in EIAR Appendix 5.3.

## 5.5 FORESTRY

Within the THC scoping response the following was documented:

*"Forestry will need to be 'scoped in' to the EIA and the applicant will need to provide a Forestry Chapter in the EIAR prepared by a professional forester. The Forestry Chapter would need to include scope of assessment, methodology, baseline conditions (woodland location, type, condition, etc of all woodland areas on and around the site), mitigation, monitoring and assessment of effects. The EIA should provide a baseline survey of the trees and plants present on the site to determine the presence of any rare or threatened species."*

When commencing drafting of the EIAR and considering its structure, having a forestry chapter was considered to be inappropriate for the following reasons:

- Tree loss is predominantly commercial Scots Pine plantation;
- There is no opportunity for significant compensatory planting on site; and
- Advice from THC during the pre-application process was that the loss of Scots Pine plantation should be compensated off site to an equivalent scale.

Given the above a forestry chapter would have been very one dimensional and the mitigation required by THC for the plantation loss had already broadly been established. Notwithstanding that decision on structure, assessment of impacts on trees and plants is subsumed into EIAR Chapter 12 Terrestrial Ecology. Also within the THC scoping response was the following statement:

*"The EIA should include Tree Constraints Plans and Tree Protection Plans to BS 5837:2012 to show how retained trees/woodland would be safeguarded from construction activity as well as a tree/woodland removal drawing which shows the extent of woodland that would need to be removed to accommodate*

*new development. Where woodland is proposed to be removed, compliance with the Scottish Government's Control of Woodland Removal policy is required to be demonstrated. The applicant will therefore need to submit the following in support of any application:*

- *what significant and clearly defined additional public benefits would be associated with the proposals.*
- *what area of tree cover would realistically need to be removed in order to accommodate all of the proposals.*
- *how the area of commercial woodland proposed to be removed could be adequately compensated for with an area of equivalent size and quality of commercial woodland. This would most likely need to be off-site"*

To understand the nature of the woodland a tree survey of the extension areas was carried out in 2024 which generated a Tree Constraints Plan describing woodland type, location and condition. This is included in EIAR Appendix 5.4. Given the proposals are to remove all of the commercial woodland with the exception of a 20m southern buffer strip (Figures contained with EIAR Appendix 5.4), a Tree Protection Plan (TPP) has not be prepared at this time. However, TPP will be prepared specifically for the northern margin of the tree buffer prior to installation of security fencing and the perimeter security access track behind the tree buffer strips.

Over and above the retention of the southern tree buffer zones, the intention is to enhance the quality of these areas by, planting native broadleaf species, selective felling or deadwood creation to increase light, introduction of bird/bat boxes or bat barn amongst other initiatives (see EIAR Appendix 15.1 Proposed Enhancements). With regard to woodland removal, the response below is provided to demonstrate compliance with the Scottish Government's Control of Woodland Removal policy:

- what significant and clearly defined additional public benefits would be associated with the proposals.
- The primary public benefits associated with the extension relate to employment and the socio-economic impacts as described in EIAR Chapter 3 (Project Description).
- what area of tree cover would realistically need to be removed in order to accommodate all of the proposals.
- The extension is to provide the further industrial land needed by the Port. Offshore wind components and the facilities required to also manufacture them require a large amount of space. Therefore the space proposed for platform creation is the minimum required.
- how the area of commercial woodland proposed to be removed could be adequately compensated for with an area of equivalent size and quality of commercial woodland. This would most likely need to be off-site.

The total area of existing commercial woodland is 120 acres. These 120 acres includes the buffer strip which will be retained on site, however clearly the proposals are removing 120 acres of woodland available for felling. A compensatory site is being identified which will have 120 acres of commercial Scots Pine forestry, with an additional 10% (12 acres) of broadleaf woodland to enhance biodiversity.

Compensatory woodland planting is also discussed in section 3.7.2 (Compensatory Planting) of EIAR Chapter 3 (Project Description). Terrestrial ecology assessments are reported in EIAR Chapter 12 (Terrestrial Ecology) supported by appendices that identify any rare or threatened species.

## 5.6 CARBON MANAGEMENT

The EIA Scoping Response from the Marine Directorate stated:

*"an environmental effect that is approaching a scientifically defined environmental limit, as a such any GHG emissions or reductions from a project might be considered significant." The Scottish Ministers have considered this together with the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 and the requirement of the EIA Regulations to assess significant effects from the Proposed Works on climate. The Scottish Ministers therefore advise that the EIA Report must include a GHG Assessment which should be based on a Life Cycle Assessment ("LCA") approach and note that the IEMA GHG Guidance provides further insight on this matter. The Scottish Ministers highlight however that this should include the pre-construction, construction, operation and decommissioning phases, including consideration of the supply chain as well as benefits beyond the life cycle of the Proposed Works.*

The Estimated Greenhouse Gas (GHG) Emissions and Carbon Management Report presents a focused assessment of the project's GHG emissions: it sets the scope by defining assessment boundaries and the lifecycle stages considered (per PAS 2080). Data sources, emission sources and any exclusions are explained. The calculation approach and standards used include the PAS 2080 and GHG Protocol. Results are reported as GHG totals by lifecycle stage with commentary on key findings and the largest emission contributors, and the appendix concludes with proposed carbon reduction and mitigation opportunities for both the design and construction phases.

When assessing the significance of greenhouse gas (GHG) emissions, it is essential to evaluate how a project aligns with the UK's legally binding net zero commitments and science-based emission reduction trajectories. The level of potential effect—ranging from major adverse to beneficial—is determined by the extent to which a project contributes to, or diverges from, the 1.5°C-compatible transition pathway.

Projects that follow a 'business-as-usual' or 'do-minimum' approach are likely to result in significant adverse effects, while those that actively incorporate mitigation measures aligned with national and local decarbonisation policies can reduce these effects to a non-significant level. Conversely, projects that substantially exceed current policy and deliver genuine emissions removal or avoidance can achieve a beneficial effect, demonstrating leadership in climate action and supporting the UK's transition to net zero by 2050. For the avoidance of doubt, the overriding position in the guidance is that all emissions contribute to climate change. The guidance does however provide examples of how to distinguish different levels of significance. Major or moderate adverse effects and beneficial effects are considered to be significant. Minor adverse and negligible effects are not considered to be significant.

With regards to the Proposed Development, it is considered that the project's GHG impacts are partially mitigated, through design, integration with nature and green networks and that the development supports the economic growth and net zero ambitions of both the Scottish and UK Governments. Therefore, it will partially meet the applicable existing and emerging policy requirements but will generate some carbon emissions so would not fully contribute to decarbonisation in line with local and national policy goals for projects of this type. On balance, this would therefore result in a moderate adverse effect. During detailed design phase and for each of the future tenants, carbon will be a key consideration to try and reduce the baseline figures as far as possible.

A copy of the Estimated GHG Emissions and Carbon Management Report is available in EIAR Appendix 5.5 that presents all projected carbon figures.

## 5.7 TRAVEL PLAN

The EIA scoping response from the Highland Council stated that an updated Travel Plan is required that incorporates previously suggested measures and an Operational Traffic Management Plan.

The Travel Plan has been updated to reflect the proposed extension to the port. Although the overall site area will be larger than consented, the proposed numbers of workers during construction and operation associated with the proposed extension are broadly similar to that which is already consented.

Given the small number of employees currently on site in Phase 1A, no specific Travel Plan measures are currently in place. The Travel Plan therefore focuses on the provision of a comprehensive 'Framework' and recommended actions for later phases of development when the site is likely to be occupied by a number of different companies. It is recommended that each of these companies signs up to the overall site Travel Plan, which will contain 'collective' site-wide initiatives (such as a bus service), as well as measures which will need to be delivered by each specific company (e.g. changing facilities for cyclists). The Travel Plan will be reviewed on an annual basis and ahead of each major phase of development.

The revised Travel Plan Framework can be found in EIAR Appendix 5.6.

## 5.8 COMMERCIAL FISHERIES

This technical appendix assesses the potential impacts of the proposed development on commercial fisheries, as part of the wider EIAR. The assessment has been undertaken in response to consultation received during the scoping process and is informed by relevant legislation, policy and ecological guidance.

The assessment considers how construction and operation and maintenance (O&M) activities may affect local fishing operations, including static and mobile gear use, vessel transit routes and seasonal fishing patterns. The study area predominantly supports inshore fisheries comprised of vessels <15 m in length deploying creels, pots and demersal trawls to target whelk, brown crab, lobster and Nephrops with finfish representing a low proportion of average annual catch. Baseline conditions were established using a combination of Marine Management Organisation (MMO) landings statistics, Vessel Monitoring System (VMS) and Automatic Identification System (AIS) data.

Key findings indicate that activities associated with the construction phase of the proposed development are expected to cause minor, short-term disruption to nearby commercial fisheries receptors as fishing is already prohibited within the port limits and any spatial restrictions resulting in reduced access to fishing grounds and displacement are expected to be limited and temporary in nature. The overall impact is considered minor and not significant in EIA terms. O&M phase activities have been scoped out of the assessment.

Cumulative effects from nearby dredging and marine developments may temporarily restrict access to fishing grounds, particularly for small inshore vessels, resulting in displacement. However, due to the localised and short-term nature of these activities, combined with the spatial separation between projects, the overall impact is considered minor and not significant in EIA terms.

With the implementation of embedded mitigation measures, including advance notification to vessel operators through Notice to Mariners (NtMs), and the existing prohibition of fishing activity within the port limits, the proposed development is unlikely to result in significant adverse effects on the commercial fisheries fleet metiers identified during baseline characterisation. Ongoing stakeholder engagement will be key to ensuring adaptive management and minimising disruption throughout the Project lifecycle.

A copy of the Commercial Fisheries Report is available in EIAR Appendix 5.7.

## 5.9 MARINE AND COASTAL ECOLOGY

This technical appendix assesses the potential impacts of the proposed development on Marine and Coastal Ecology (including marine and coastal habitats, and diadromous fish), as part of the wider EIAR. The assessment has been undertaken in response to consultation received during the scoping process and is informed by relevant legislation, policy and ecological guidance.

The assessment considers both the construction and operation and maintenance (O&M) phases of the proposed development. Study areas were defined based on tidal ellipses (to encapsulate the greatest

potential range of influence from sediment plumes) and the greatest potential range of effect of UWN on sensitive diadromous fish. The assessment methodology follows guidance from the Chartered Institute of Ecology and Environmental Management (CIEEM) and the Marine Life Information Network (MarLIN), applying sensitivity and magnitude criteria to determine the significance of effects.

For marine and coastal habitats, the assessment concludes that all potential impacts during construction (including loss of habitat from capital dredging, temporary habitat loss/disturbance, temporary increases in suspended sediment concentration (SSC) and sediment deposition, seabed disturbance leading to release of sediment contaminants and increased risk of introduction and/or spread of marine Invasive Non-Native Species (INNS)), are not significant in Environmental Impact Assessment (EIA) terms. Similarly, potential impacts during the O&M phase (including permanent and/or long-term habitat loss/alteration, changes in physical processes and increased risk of introduction and/or spread of marine INNS), are also predicted to be not significant in EIA terms.

For diadromous fish, the assessment finds that impacts from temporary increases in SSC and sediment deposition, seabed disturbance leading to release of sediment contaminants and disturbance from UWN are not significant in EIA terms. O&M phase impacts on diadromous fish have been scoped out of the assessment.

The potential for cumulative effects from other developments within the region were also assessed including temporary increases in SSC and sediment deposition and UWN, which were found to be not significant in EIA terms, due to the lack of spatial and temporal interactions between the developments.
With the implementation of embedded mitigation measures, such as the development of a suitable dredge strategy/method to prevent the spread and disposal of elevated concentrations of contaminants, implementation of a marine INNS biosecurity management plan and the use of soft start piling procedures as secured in the Marine Mammal Mitigation Plan (MMMP); the proposed development is unlikely to result in significant adverse effects on marine and costal habitats, and diadromous fish.

A copy of the Marine and Coastal Ecology Report is available in EIAR Appendix 5.8

## 5.10 INTERIM BIOSECURITY PLAN

The marine Invasive Non-Native Species (INNS) Biosecurity Management Plan provides guidance for reducing the risk of introduction and spread of marine INNS. The plan covers operational activities and the proposed development project. The development of this plan constitutes an embedded mitigation measure within the broader EIAR.

The plan includes: a summary of marine INNS recorded in the Moray Firth; an overview of activities undertaken / to be undertaken at Ardersier Port; and an assessment of the risk of marine INNS introduction and spread via these activities. It provides best practice guidance in the form of practical and feasible measures for port users and development contractors. For completeness, it also includes recommendations for awareness raising, monitoring and reporting, and contingency planning.

A copy of the Interim Biosecurity Plan is available in EIAR Appendix 5.9.

## 5.11 MAJOR ACCIDENTS & HAZARDS

The proposed development has been designed with due consideration of potential risks associated with major accidents and natural disasters, in accordance with relevant UK legislation and guidance, including the Environmental Impact Assessment Regulations and the Control of Major Accident Hazards (COMAH) Regulations where applicable. The project will incorporate robust design standards, operational procedures, and emergency planning measures to minimise the likelihood and potential consequences of such events. Key risk factors considered include marine incidents, hazardous material spills, fire,

explosion, flooding, and extreme weather events. The potential for storm related flooding effects has been fully assessed and can be found in EIAR Chapter 9 (Hydrology and Hydrogeology).

During both construction and operational phases, the project will implement comprehensive risk management systems to ensure that all foreseeable hazards are identified, assessed, and appropriately mitigated. Infrastructure will be designed to withstand adverse climatic and coastal conditions, including storm surges and sea-level fluctuations, and emergency response protocols will be established in coordination with relevant statutory bodies, the local authority, and the port's emergency services.

In the unlikely event of a major accident or disaster, site-specific contingency and emergency response plans (the Port Facility Security Plan approved by the Department of Transport, and the Port Emergency Response Plan) will be in place to ensure a swift and coordinated response, minimising harm to people, property, and the environment. Regular training, drills, and reviews will be undertaken to ensure preparedness and continuous improvement of safety systems. These measures will collectively ensure that the port development is resilient, safe, and aligned with recognised best practice in risk prevention and disaster management.

## 5.12 CLIMATE RESILIENCE & ADAPTION

The resilience of the proposed development to climate change relates to the effects that climate change may have on the proposed development such as increased risk and severity of flooding, rainfall events and other extreme weather conditions.

The climate of the study area is projected to change significantly over the lifetime of the proposed development. Present day extreme weather events are increasing in frequency and there is a risk that the proposed development may be affected during construction and operation. A flood risk assessment has been produced (EIAR Appendix 9.3) and a drainage impact assessment (EIAR Appendix 9.4) which assess the impact of increased sea levels and precipitation on the site.

During construction, impacts can occur from increased precipitation, temperatures and wind. This can increase the risk to earthworks stability and ground stability such as through waterlogging. During construction, risks will be managed through daily weather checking, dynamic risk assessments and construction HSEQ procedures (such as signing up for flood warnings, coastal surge alerts/extreme weather warnings). Other measures include locating the construction compound away from flood risk areas but also have emergency pumps on site, sandbags, carefully programming works at risk of flooding in the summer/autumn months. These various measures have worked well for the existing site construction phase.

During operation increased precipitation and temperatures may affect directly impact structures, drainage and earthworks. Maintenance and mitigation planting may also be impacted by changes. During extreme weather maintenance activities may be affected. Prolonged and extreme heat can pose a risk to the workforce and damage to machinery during both construction and operation. Regular maintenance checks on structures and the environment that surrounds the site will be undertaken as part of the port operational processes to identify any specific risks and mitigate them.

Resilience to climate change has been built into the design of the extension areas with the design of the Sustainable Drainage and the designed height of the platform (to the height of the currently consented land platform). Further information on the assessment of the potential impacts from flooding and changes to the water environment are provided in Chapter 9 (Hydrology and Hydrogeology) and EIAR Appendix 9.3.

As the Statutory Harbour Authority (SHA) Ardersier Port Limited also has extensive HSEQ procedures which are regularly reviewed and updated and will incorporate operational adaptions for climate resilience

over the longer term. In the context of the vulnerability of the proposed development projected climate change is not anticipated to have a significant effect.

## 5.13 CONTAMINATED LAND

The EIA scoping response from the Highland Council stated

> *Contaminated land records indicate that part of the expansion area has an historic/current use as farm/agricultural buildings (approx. 3.5ha near Juniper Cottage, Lower Carse and surrounding area). Such land uses can include the storage and use of chemicals including sheep dip and hydrocarbon fuels, storage of (animal) waste, vehicle maintenance and buildings or structures containing asbestos, which can result in land contamination.*
>
> *Further information is required to demonstrate this area of the site is suitable for use. As a minimum a detailed site history and walkover survey, intrusive Phase 2 Investigation works may be deemed necessary. Early consultation with the Council Contaminated Land Team on the findings of the history/walkover survey and any proposed investigation strategy is recommended prior to undertaking any intrusive works onsite.*
>
> *It is noted that contaminated land is scoped out of the EIA which is accepted as the above survey requirement is localised and easily addressed. However, early action is recommended.*

To meet this requirement an initial geo-environmental desk study of the extension areas was carried out and submitted to the Highland Council. The content of the desk study was agreed in writing by the Contaminated Land Officer.

On the basis of the desk study a geo-environmental ground investigation has been designed and has been undertaken to assess the potential for land contamination at the areas described above.

# ARDERSIER PORT ENERGY TRANSITION FACILITY PORT EXTENSION

Haventus

November 2025

# Chapter 6 Airborne Noise and Groundborne Vibration

# Ardersier Port Extension

| | |
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# 6 AIRBORNE NOISE AND GROUNDBORNE VIBRATION

## 6.1 INTRODUCTION

This chapter presents information required by the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 and the Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 to be provided in the Environmental Impact Assessment Report (EIAR) to enable the identification and assessment of likely significant effects on airborne noise and groundborne vibration

The approach to this assessment follows the methodology set out in the EIA Scoping Report (SCOP-0062) and is in accordance with the Scoping Opinion (25/00226/SCOP) produced by The Highland Council. EIAR Chapter 4 (Consultation) contains further information on how each of the matters raised in the Scoping Opinion have been addressed.

The overarching legislation, policy and guidance relating to airborne noise and groundborne vibration (hereafter referred to as 'noise') in Scotland and relevant to this assessment of the proposed development are presented in EIAR Appendix 6.1.

The assessment has been undertaken in accordance with Planning Advice Note (PAN) 1/2011: Planning and Noise which includes references to:

- British Standard (BS) 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound (BS 4142)[1]
- British Standard (BS) 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise (BS 5228-1)[2]
- British Standard (BS) 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration (BS 5228-2)[3]

In addition to the above, the following guidance will be referenced for the assessment of changes in noise level due to road traffic noise:

- Design Manual for Roads and Bridges (DMRB) LA 111 Noise and vibration, Revision 2, 2020[4]
- Calculation of Road Traffic Noise (CRTN), 1988[5]

The methodology used in the assessment is presented in EIAR Appendix 6.2, which includes the study area, data sources used and the assumptions and limitations of the assessment. EIAR Chapter 3 (Project Description) contains a detailed description of the proposed development. This chapter is supported by the following EIAR Appendices:

- EIAR Appendix 6.1: Legislation, policy and guidance
- EIAR Appendix 6.2: Assessment Methodology
- EIAR Appendix 6.3: Construction Noise and Vibration Assessment
- EIAR Appendix 6.4: Road Traffic Noise Assessment

[1] British Standards Institution, 2019. BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound. BSI.
[2] British Standards Institution, 2014. BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise. BSI.
[3] British Standards Institution, 2014. BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration. BSI.
[4] Highways England, 2020. Design Manual for Roads and Bridges LA 111 Noise and Vibration Revision 2. Highways England
[5] Department of Transport, 1988. Calculation of Road Traffic Noise. HMSO

- EIAR Appendix 6.5: Noise Glossary of Terms

## 6.2 CONSULTATION

Responses in relation to the statutory consultation undertaken are presented in the EIAR Chapter 4 (Consultation). Following production of the EIA Scoping Report the following consultation has been undertaken.

Environmental Health Officers at The Highland Council (THC) were contacted to propose an adjustment to the noise survey methodology set out in the EIA Scoping Report. At the time of writing no response had been received.

## 6.3 METHODOLOGY

This section provides a summary of the assessment methodology. Further detail is provided in EIAR Appendix 6.2.

The assessment of potential significant noise and/or vibration impacts was undertaken based on the following steps:

- Identification of noise sensitive receptors in the vicinity of the proposed development and identify their level of sensitivity.
- Using noise measurements, establish the baseline noise conditions at the selected noise sensitive receptors.
- Assessment of potential noise impacts due to construction works or operational activities (including changes in traffic) associated with the development.
- Determination of design noise limits for external fixed plant associated with the development
- Recommendations for noise mitigation measures where appropriate
- Assessment of residual effects

Legislation and Guidance

In addition to the documents cited in Section 6.1, additional documents have been considered during the production of this technical chapter, a more detailed summary of all documents is presented in EIAR Appendix 6.1.

Assessment Limitations and Assumptions

The assessments presented within this technical chapter follow the methodologies of previous assessments undertaken to support the development of Ardersier Port [6] [7], this includes utilising the same source data. This approach has been undertaken to ensure consistency in approach and will enable easy comparison of the three assessments.

The assessment presented within the chapter has been undertaken based on indicative information regarding the proposed construction and operation of the extension of Ardersier Port and so considers a conservative 'worst-case' noise levels in regard to these phases.

It is anticipated that the final design and build of any permitted developments will incorporate the findings of this assessment to refine and reduce the likelihood of any potential impacts identified from occurring. Calculations have been undertaken based on areas of the site where the works are anticipated to occur and in the absence of mitigation – this approach to assessment is considered to be a conservative worst-

[6] EIA Volume 2 Chapter 9 Air Borne Noise and Ground Borne Vibration (October 2013) Planning Ref 13/01689/PIP
[7] EIA Volume 2 Chapter 9 Airborne Noise and Groundborne Vibration (September 2018) Document Ref KMcG/2017/11/0234 Planning Ref 18/04552/PIP

case. In reality, each of the identified activities will not occur simultaneously over the individual works areas and so noise levels would be lower due to differences in separation distance, local screening and plant working 'on-times'. Assessments will be undertaken by the developers of the various activities to ensure the outcomes indicated within this report are consistent with the final developed site.

## 6.4 BASELINE CONDITIONS

This section describes the noise baseline for the proposed development within the (600m) identified study area.

Existing Noise Sensitive Receptors

The Ardersier Port development site is located to the north of Ardersier in a largely rural area, the extension to the currently permitted site is approximately located centrally to grid reference NH808572.

In the previous noise assessments undertaken to support the Ardersier Port development[8] [9], the three closest noise receptors were identified and used in the assessments. Since those assessments, two of those receptors (B & C) are no longer occupied and will be demolished prior to proposed development commencement. Therefore the next closest receptor (D) has now been included in the assessments presented in this technical chapter. These location are listed in Table 6.1 and shown indicatively within Figure 6.1 below.

**Table 6.1: Receptor Sensitivity Criteria (Traffic Noise)**

| NSR Ref | NSR | Location | Description |
|---|---|---|---|
| A | Carse of Ardersier (Wellness Centre) | 280172, 857207 | Residential property approximately 190m from the site boundary |
| B | Carse of Ardersier | 280821, 857104 | Former residential property – scoped out of assessment |
| C | Carse of Ardersier | 280909, 857019 | Former residential property – scoped out of assessment |
| D | Carse of Ardersier | 280563, 855879 | Residential Property approximately 860m from the site boundary |

[8] EIA Volume 2 Chapter 9 Air Borne Noise and Ground Borne Vibration (October 2013) Planning Ref 13/01689/PIP
[9] EIA Volume 2 Chapter 9 Airborne Noise and Groundborne Vibration (September 2018) Document Ref KMcG/2017/11/0234 Planning Ref 18/04552/PIP

**Figure 6.1: Location of NSR and Monitoring Location in context of the Ardersier Port boundary (including the extension area)**

Table 2.1 of TAN indicates three levels of receptor sensitivity, 'High', 'Medium' and 'Low'. The ranking is primarily based on the relationship between the amenity associated with the individual noise sensitive receptor (NSR) and its susceptibility to noise based on factors including the measured noise level. The process by which sensitivities have been defined is set out in Table 5 and Table 7 of EIAR Appendix 6.2. The sensitivities of both receptors are defined in Table 6.2 below.

<u>Baseline Noise Survey</u>

Baseline noise data used to support the operational noise assessment was provided by the Applicant from a Casella Guardian noise meter that is installed within the site (indicated by the blue dot in Figure 6.1). The meter has been located in situ since late 2023.

As part of the response to the EIA Scoping report a baseline noise survey was required to be undertaken without the presence of construction works. As the works will not be complete until late 2025 it was not possible to wait, nor was a proxy location considered to be a reasonable alternative due to an anticipated existing low background noise levels and therefore potential propagation of construction noise over long distances. The use of the original survey data was also considered; however, as this was undertaken in 2013[10] it was not considered to be appropriate.

[10] EIA Volume 3 Appendix 9.2 Baseline Noise Monitoring – Planning Ref 13/01689/PIP

Survey data was provided for the period between 1st February 2024 and 28th February 2024, and any conditions considered to be unrepresentative due to high windspeed (>5m/s) or periods of precipitation[11] were removed. This date range was chosen as only minimal activities (vehicle movements) were being undertaken onsite as it was prior to any major onsite construction works for the consented proposed development being undertaken.

- $L_{Aeq,T}$ was calculated as the logarithmic average of all the results within the respective time period
- $L_{AMax,F,T}$ was determined through statistical analysis, which in line with guidance reports the value closest to 90% as the highest representative result.
- $L_{A90,T}$ was determined utilising statistical analysis that compared the mode, median and mean of each set of results
- $L_{A10,T}$ was determined as the average result of the values within the respective time period

Table 6.2 below sets out a summary of the overall data, Table 6.3 sets out the noise levels considered representative and used within the assessment.

**Table 6.2: Summary of the Measured Noise Levels**

| Time Period | | | | $L_{Aeq,T}$ (dB) | $L_{AMax,F}$ (dB) | $L_{A10,T}$ (dB) | $L_{A90,T}$ (dB) |
|---|---|---|---|---|---|---|---|
| Week 1 | 1st – 7th February 2024 | Weekday | Day | 54.2 (54) | 79 | 53.7 (54) | 47 |
| | | | Night | 49.5 (50) | 76 | 48.8 (49) | 44 |
| | | Weekend | Day | 50 (50) | 74 | 50.6 (51) | 46 |
| | | | Night | 50.9 (51) | 76 | 52.1 (52) | 47 |
| Week 2 | 8th – 14th February 2024 | Weekday | Day | 51 (51) | 78 | 49.9 (50) | 45 |
| | | | Night | 48.2 (48) | 76 | 47.9 (48) | 44 |
| | | Weekend | Day | 49 (49) | 74 | 49.4 (49) | 45.5 |
| | | | Night | 48.3 (48) | 74 | 48.7 (49) | 45 |
| Week 3 | 15th – 21st February 2024 | Weekday | Day | 49.9 (50) | 77 | 48.8(49) | 45 |
| | | | Night | 48.1 (48) | 73 | 48.0 (48) | 44 |
| | | Weekend | Day | 44.4 (44) | 68 | 45.4 (45) | 42 |
| | | | Night | 44.9 (45) | 66 | 45.9 (46) | 43 |
| Week 4 | 22nd – 28th February 2024 | Weekday | Day | 50 (50) | 77 | 49.5 (50) | 45 |
| | | | Night | 49.8 (50) | 74 | 49.6 (50) | 45 |
| | | Weekend | Day | 46.1 (46) | 69 | 46.9 (47) | 44 |
| | | | Night | 46.5 (47) | 66 | 46.7 (47) | 43 |

[11] Archived weather data from station IINVER493 was utilised via www.wunderground.com, this station is located in Ardersier approximately 3.7km south-west of the measurement location.

**Table 6.3: Noise Levels utilised within the Assessment presented below (assessment timebase indicated in brackets**

| Time Period | $L_{Aeq,T}$ (dB) | $L_{AMax,F}$ (dB) | $L_{A90,T}$ (dB) | $L_{A10,T}$ (dB) |
|---|---|---|---|---|
| Weekday Daytime (16h) | 51 | 78 | 45 | 50 |
| Weekday Night-time (8h) | 49 | 75 | 44 | 49 |
| Weekend Daytime (16h) | 48 | 71 | 45 | 48 |
| Weekend Night-time (8h) | 47.5 | 70 | 44 | 48 |

## 6.5 POTENTIAL IMPACTS

### 6.5.1 Construction

Construction stage impacts of the proposed development would include the following:

Noise
Noise levels generated as a result of construction activities have been predicted using the methodology set out within BS 5228-1. The calculations are provided in full in EIAR Appendix 6.3 and summarised in Table 6.4 below. It should be noted that the predicted impacts represent a worst-case scenario due to the use of the shortest distances between indicative works area and the identified receptors.

The 162 scenarios investigated, indicated below, represent the number of activities indicated to occur during the construction phase of the proposed development.

**Table 6.4: Summary of impact magnitude per indicative activity – without mitigation**

| Predicted Magnitude of Impact | NSR-A | | NSR-D | |
|---|---|---|---|---|
| | Day | Night | Day | Night |
| Negligible | 158 | N/A | 162 | N/A |
| Minor Adverse | 4 | | 0 | |
| Moderate Adverse | 0 | | 0 | |
| Major Adverse | 0 | | 0 | |

Based on the above assessment, predicted daytime noise impacts from the construction of the site will be of a magnitude no greater than **Minor Adverse** at either receptor. As a result, no specific mitigation measures above best practicable means (BPM) are proposed for the construction phase of the works.

Vibration
Based on the guidance within BS 5225-2 and as the distance between the receptor and the closest works area that could generate vibration is greater than 100m, it has been considered that, in accordance with Table 3 of EIAR Appendix 6.2, **no vibration impacts due to construction works will occur at the nearest receptors**.

Construction Traffic
In addition to construction plant operating on the site, there would be some movement of materials to and from the Site by road. Condition 9 of Planning Permission In Principle (13/01689/PIP) requires the submission of a Traffic Management Plan in relation to both construction and operation. It is anticipated that a similar conditional requirement would be attached to this application for an extension of the consented site.

In respect to potential noise impacts, as no changes to the alignment of the previously considered access roads are planned, due to the large separation distance between receptors and the access roads it is considered any impacts or resultant effects from traffic related to the construction phase of the development would be **Negligible**.

### 6.5.2 Operation

As this application is for the extension of the site with only minor changes to proposed activities, the assessments have been considered in context of the previous Planning In Principle applications made in 2013 and renewed in 2018.

Key operational stage impacts of the proposed development on airborne noise and groundborne vibration would include:

Noise

Noise levels have been calculated based upon an indicative layout and assessed against the guidance presented in BS 4142 and TAN. For consistency of approach, the source noise levels presented in the Ardersier Port September 2018 application have been used to support this assessment and are shown in Table 6.5.

**Table 6.5: Noise Sources Included in the Assessment**

| Source | Source Type/ Modelled As | Number of units /movements in assessment period (1 hour) | Description | Sound Power Level (dB(A)) per unit length or area |
|---|---|---|---|---|
| Concrete batching | Point | 1 | Noise level from representative measurement as detailed in Noise chapter of September 2018 EIAR | 102 |
| Stacking crane (heavy lifting gantry) | Point | 1 | | 99 |
| Heavy barge crane (slipway) | Point | 1 | | 93 |
| Cable spooling | Point | 3 | | 103 |
| Pumping station | Point | 1 | | 97 |
| Concrete pump | Point | 1 | 120mm diameter / 50 bar (BS 5228-1) | 88.4 |
| Barge crane | Point | 2 | Noise level from representative measurement as detailed in Noise chapter of September 2018 EIAR | 70.9 |

| Source | Source Type/ Modelled As | Number of units /movements in assessment period (1 hour) | Description | Sound Power Level (dB(A)) per unit length or area |
|---|---|---|---|---|
| Readymix conveyor motor | Point | 1 | Noise level from representative measurement as detailed in Noise chapter of September 2018 EIAR | 84 |
| Readymix lorries | Line | 10 movements | Along central access road to indicative concrete batching area | 84 |
| Heavy forklifts | Line | 10 movements each | Various locations within site | 84 |
| Forklift | Line | 10 movements | Movement around existing quay area | 75 |
| Loading Area | Area | 1 | Noise level from representative measurement as detailed in Noise chapter of September 2018 EIAR | 66.8 |
| Workshop Roof | Area | 1 (per building) | From internal noise level of 85dB(A) assuming trapezoidal steel sheet roof | 61 |
| Workshop | Vertical area | 4 (per building) | Walls of workshop – 85dB internal noise level, trapezoidal steel sheet walls | 61 |
| Car park | Area | 1 | Noise level from representative measurement as detailed in Noise chapter of September 2018 EIAR | 105.1 |

The noise sources indicated in Table 6.5 above have been used within the Cadna/A noise prediction model software. This software incorporates guidance from a range of documents (including ISO 9613-2[12] and BS 5228-1) to calculate the propagation of noise from source to receiver. The model also considers local topography, ground absorption and screening in its calculations where the information is available.

Noise levels were calculated at NSR A and NSR D for a worst-case scenario over a one-hour period, which considers every noise source within the site is operational simultaneously during this period. In reality, although some simultaneous activity might occur, it is unlikely to occur to this extent.

The noise levels have been calculated based on an indicative layout (Figure 3.1 in EIAR Chapter 3 Project Description) which considers potential activities in the main site as well as within the extension area, the assessment has been carried out in accordance with BS 4142 and TAN. The results of this assessment are presented in Table 6.6 and noise contours showing the propagation of noise are presented in Figure 6.2. As stated in the September 2018 report given the potential intermittent and tonal nature of the noise sources a +6 dB acoustic character correction has been applied to all predicted noise levels in line with the guidance provided in BS 4142. The noise model also includes embedded mitigation in the form of an acoustic bund along the site boundary closest to NSR-A, this is shown as a pale blue line within Figure 6.2.

It is understood that the site could operate 24 hours a day, seven days a week. It should be noted that as there is limited information regarding specific operations occurring onsite the same operations have been considered for both the daytime and night-time assessments.

Similar to the presentation of a ‘worst-case’ assessment due to all activities operating simultaneously, it is considered that utilising the same for the daytime and night-time periods is also worst-case as it is expected that the site would run reduced operations overnight. This would include activities such as the movement of heavy outdoor machinery which are unlikely to be undertaken at night.

[12] British Standard ISO 9613-2:2014, Acoustics – Attenuation of sound during propagation outdoors, Part 2: Engineering method for the prediction of sound pressure levels

**Figure 6.2: Operational Noise Levels**

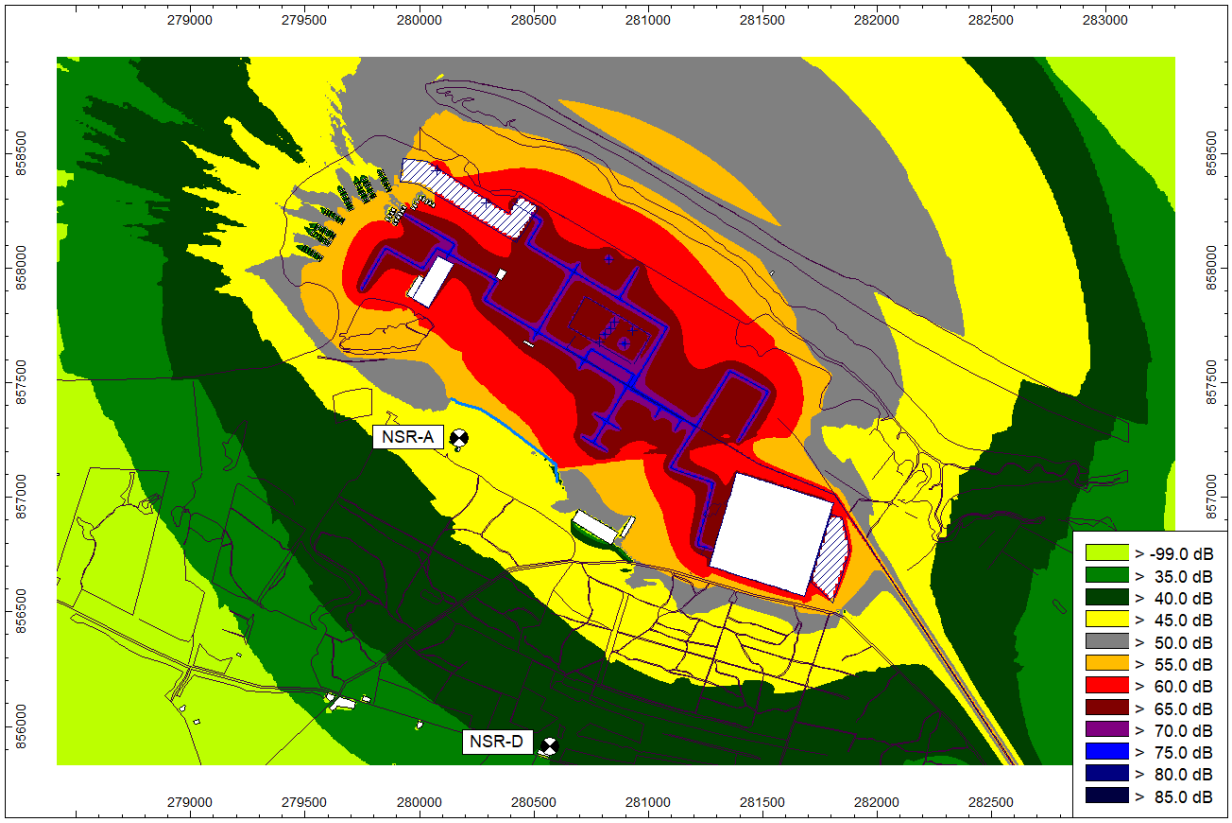


**Table 6.6: Derivation of Receptor Sensitivity**

| | NSR-A | | NSR-D | |
|---|---|---|---|---|
| | Day | Night | Day | Night |
| Source (Specific) Noise Level (Calculated from Cadna-A model) ($L_{Aeq,T}$) | 47.6 | 47.6 | 40.2 | 40.2 |
| Acoustic Character Correction (dB) | 6 | 6 | 6 | 6 |
| Rating Noise Level ($L_{Ar,T}$) | 53.6 | 53.6 | 46.2 | 46.2 |
| Background Noise Level ($L_{A90,T}$) | 45 | 44 | 45 | 44 |
| Difference (rating - background dB) | 8.6 | 9.6 | 1.2 | 2.2 |
| Sensitivity of Receptor (based on EIAR Appendix 6.2, Table 1.4) | Medium | Medium | Low | Low |

The results in Table 6.6 indicates that NSR-A should be considered as having medium sensitivity and NSR-D low sensitivity. This allows for a quantitative assessment to be carried out based on the estimated change in noise level, $L_{Aeq,T}$ before and after the proposed development is operational.

As in previous assessments, the noise change assessment will be considered externally to receptors. The ambient noise level $L_{Aeq,T}$, (Table 6.3) calculated from the noise measurements will be utilised as the existing noise level as it is considered a reasonable representation of the noise climate that could be affected by the proposed development.

**Table 6.7: Assessment of Noise Impact Magnitude**

| | NSR-A | | NSR-D | |
|---|---|---|---|---|
| | Day | Night | Day | Night |
| Source Noise Level (calculated from Cadna-A model) | 47.6 | 47.6 | 40.2 | 40.2 |
| Prevailing Noise Level ($L_{Aeq,T}$) | 48 | 49 | 48 | 49 |
| Predicted + Ambient Noise Level ($L_{Total}$) | 50.8 | 51.4 | 48.7 | 49.5 |
| Predicted Change in Noise Level (dB) | 2.8 | 2.4 | 0.7 | 0.5 |
| Magnitude of Impact (from EIAR Appendix 6.2, Table 1.5) | Minor Adverse | Minor Adverse | Negligible | Negligible |

The assessment shown in Table 6.7 predicts that impact magnitudes of **Negligible** (NSR-A) and **Minor Adverse** (NSR-D) could be experienced at the two closest receptors to the site. Although this is an increase in magnitude from the previous assessments, given the indicative changes to the potential site layout and increase in overall site area it is considered a proportional change.

At this stage in the design process where layouts are still indicative and early enough that suitably quiet and non-tonal plant can be procured it is considered that the predicted magnitudes of impact can be reduced further through design interventions or careful plant choices. Additionally, when considered in line with previous noise assessments undertaken to support the initial Ardersier Port application, the outcome of this operational noise assessment is considered to be in proportion to previous assessments.

As previously stated, it is understood that the operational use of the port site will be determined by a number of individual operators and each of them will need to submit their own noise assessment to ensure their proposed operations are at least inline if not better than the findings of this noise assessment.

Vibration

As with potential construction impacts, due to the distance between the operational areas and the receptors no vibration impacts are anticipated and therefore no assessment has been undertaken.

Operational Road Traffic Noise

As the extension of the site is proposed only to provide more space for the increasing size of offshore windfarm components and not an increase in any previously considered activities[13], any changes to the road traffic noise assessment presented in the September 2018 report are considered to be negligible.

The majority of operational components will be brought to site via ship which will ensure minimal heavy traffic associated with the site.

Details of the operational road traffic assessment undertaken to support the September 2018 application can be viewed in EIAR Appendix 6.4.

[13] As part of the original Ardersier Port application.

## 6.6 MITIGATION AND ENHANCEMENT

### 6.6.1 Embedded mitigation

The development of the design has been an iterative process. The environment team has worked in close collaboration with the infrastructure design team to avoid or reduce environmental impacts through the design. This is referred to as embedded mitigation (or design interventions). The principles of the design and mitigation hierarchy outlined in EIAR Chapter 2 (Methodology) have been followed. The first principle being to avoid potential adverse effects, if at all practicable, before seeking to minimise or mitigate for any unavoidable impacts. Embedded mitigation for the proposed development is reported in EIAR Chapter 3 (Project Description) which also includes a description of the design alternatives that have been considered, including the environmental factors which have influenced the decision-making. Mitigation measures will seek to reduce impacts during both construction and operation phases. Any effects which cannot be mitigated or reduced are referred to as residual effects.

As detailed in the operational noise assessment, to attenuate noise from onsite operational activities screening in the form of a bund will be located between the site and the nearest noise sensitive receptor (NSR-A). Further detail is provided in EIAR Chapter 3 (Project Description).

### 6.6.2 Mitigation

Mitigation is included in the Outline Construction Environmental Management Document (CEMD). The Outline CEMD will be developed into the Construction Environmental Management Plan (CEMP) for implementation during construction. Further information on the Outline CEMD is provided within EIAR Chapter 3 (Project Description). EIAR Chapter 15 (Schedule of Mitigation and Enhancements) provides a summary of the mitigations identified within this EIAR.

### 6.6.3 Construction Mitigation Measures

This section summarises the mitigation required during the construction of the proposed development. Unless stated all mitigation is considered to be embedded as it follows best practice measures and/or is required to achieve compliance with legislation. Mitigation measures of relevance during construction are included within the Outline CEMD.

Introduction of measures to control noise and vibration during the construction phases of the proposed development is recommended, even where negligible impacts are predicted. Disturbance from construction activities can normally be defined as a temporary nuisance to people in the area that can occur at any time between the start of construction works and the opening of the development.

Construction will be carried out using industry best practice and in accordance with implementation of the requirements identified in the Outline CEMD and CEMP. Construction information is presented in EIAR Chapter 3 (Project Description).

In accordance with standard working practices the principles of ‘best practicable means’ (BPM) as defined in the Control of Pollution Act 1974, would be used to reduce emissions throughout the construction period. This would incorporate the use of measures to control noise and vibration that do not unreasonably inhibit the work and the use of working methods that result in minimum impacts compatible with best working practices.

These control measures would include means of noise control such as the siting of fixed plant away from NSRs, the use of properly silenced plant, and screening / enclosures where appropriate, should ensure that any imposed daytime construction noise limit is not exceeded at NSRs.

The assessment of construction noise presents a reasonable worst-case scenario. When inherent noise attenuating measures such as screening, distance and limited working hours are considered the noise levels could be up to 10dB lower. Based on this its anticipated that actual noise levels from the construction works will be lower than indicated in the above assessment.

Appropriate conditions to minimise noise and vibration would be imposed on the Contractor as part of their contract requirements. Noise control measures incorporated into the CEMP include (but are not limited to) the following:

- Selecting inherently quiet plant;
- Using, where necessary and practicable, enclosures and screens around any noisy fixed plant;
- Limiting site work hours, where possible; and
- Adhering to relevant British Standards.

### 6.6.4 Operation Mitigation Measures

Section 6.5.2 sets out the details of the operational noise assessment and the outline details of the proposed screening bund to be positioned along the boundary between the closest noise sensitive receptor (NSR-A) and the site. Based on the outcome of the noise assessment no additional noise mitigation was identified as necessary.

Review of the previous applications for the 'in-principal' permitted Ardersier Port site reveals an existing condition (19) which states

*'all plant, machinery and equipment associated with ventilation, air-conditioning, heating and refrigeration or similar mechanical services within the application site, including fans, ducting and external openings shall be installed, maintained and operated such that any operating noise complies with Noise Rating Curve 20 and details of a noise assessment for each installation shall be submitted alongside the relevant application for the AMSIC…'.*

As this is an outline application the specific information needed to satisfy the condition is not yet available, nor does it currently apply to the extension site. It is however, considered likely that a similar condition will be applied to the extension area.

To ensure that this would be met, any noise assessment reports produced by individual operators to operate within the Ardersir Port site will be required to comply with this condition as appropriate.

The measures set out below are examples of what could be incorporated as operational onsite noise control measures.

<u>Building Services and Fixed Plant</u>

Mitigation for building services and fixed plant include the following measures, which are not exhaustive:

- Procurement of 'quiet' non-tonal plant.
- Locate plant and air vents away from NSRs.
- Acoustic enclosures.
- In-duct attenuators.
- Acoustic louvres.
- Using, where necessary and practicable, enclosures and screens around any noisy fixed plant;
- Plant to be located, as far as is reasonably practicable, away from adjacent occupied buildings or as close as possible to noise barriers/bunds or site hoardings where these are located between the plant and the buildings.
- Isolation of plant from building structure.

On-site Vehicle Movements

As minimal information is available at this stage on vehicle movements within the proposed development, some generic advice can be provided to ensure that noise levels do not adversely affect NSRs.

- Only vehicles conforming to relevant national or international standards, directives and recommendations on noise and vibration emissions will be used.
- Site hoarding and screens will provide acoustic screening where necessary where vehicle movements are in close proximity to NSRs.
- Personnel will be instructed on BPM to reduce noise and vibration as part of their induction including training as required prior to specific work activities.
- When transporter engines are not required to be running, i.e. other than unloading, engines should be turned off so they do not contribute unnecessarily to the prevailing noise climate.
- Where possible, vehicles should be fitted with broadband reversing alarms rather than tonal types.

### 6.6.5 Enhancements

No specific enhancement measures are proposed.

### 6.6.6 Monitoring

No specific need for monitoring of noise or vibration has been identified, however it is proposed that the monitoring equipment identified in Section 1.4 of this report will remain on site throughout the construction period of the development.

## 6.7 ASSESSMENT OF SIGNIFICANT EFFECTS

This section assesses the level and significance of the residual effects of the proposed development on airborne noise and groundborne vibration receptors during both construction and operation with the mitigation described in section 6.6 in place. The residual effects are presented in Table 6.8.

Table 6.8 summarises the assessment of significance of effect of the proposed development upon airborne noise and groundborne vibration receptors during construction. Due to distance, vibration effects due to construction have been scoped out.

**Table 6.8: Summary of assessment of significance of effect during construction**

| Receptor | Value/ Sensitivity/ Importance | Potential impact (in the absence of mitigation) | Mitigation | Residual effect |
|---|---|---|---|---|
| NSR-A | Category A (Daytime) | Changes in noise level for noisiest activity predicted to be less than 5dB above threshold level | None required other than Best Practicable Means | Minor Adverse, Not Significant |
| NSR-D | Category A (Daytime) | Changes in noise level for noisiest activity predicted to be less than 0dB above threshold level. | None required other than Best Practicable Means | Negligible Adverse, Not Significant |

Table 6.9 summarises the assessment of significance of effect of the proposed development upon airborne noise and groundborne vibration receptors during operation. Due to distance, vibration effects due to operational vibration have been scoped out.

**Table 6.9: Summary of assessment of significance of effect during operation**

| Receptor | Value/ Sensitivity/ Importance | Potential impact (in the absence of mitigation) | Mitigation | Residual effect |
|---|---|---|---|---|
| NSR-A | Medium (Operational Noise) | Increase in noise levels due to operational works | Screening in the form of a bund between NSR-A and site. (Embedded mitigation) | Minor Adverse magnitude<br><br>Slight significance of effect<br><br>Overall effect, Not Significant |
| NSR-D | Low (Operational Noise) | Increase in noise levels due to operational works | No additional measures of noise control identified | Negligible Adverse magnitude<br><br>Neutral/Slight significance of effect<br><br>Overall effect, Not Significant |

As stated in Section 6.5 an additional operational road traffic assessment was not undertaken, however as set out in EIAR Appendix 6.4 the impact of the change in vehicle flows is predicted to result in a **neutral / slight significance** of effects on receptors 10m from the respective carriageways and so are not deemed to be of significance in the decision-making process for the proposed development.

## 6.8 STATEMENT OF SIGNIFICANCE

Based on the results of the above assessment, **no significant** noise or vibration effects have been identified.

## 6.9 CUMULATIVE EFFECTS

A review of planning applications within 15km of the Ardersier Port extension site was undertaken which considered the potential for cumulative effects either as a result of the construction or operational phases of the development

Of all the applications reviewed, only 08/00080/OUTNA (Mixed use development of 300 houses; tourism and heritage, equestrian and ecological centres; hotel and conference facilities; championship golf course, clubhouse and golf academy; community woodland and country park with associated infrastructure) has potential to have a cumulative effect. It is noted however that none of the environmental assessments that would have been undertaken to support this application are seemingly available. Therefore no determination of possible cumulative noise impact on nearby noise sensitive receptors due to either the construction or operational noise from 08/00080/OUTNA or vice versa has been possible. This development progress will be monitored and should the development go ahead management plans at the site will be reviewed and adapted if necessary.

# ARDERSIER PORT ENERGY TRANSITION FACILITY PORT EXTENSION

Haventus

November 2025

# Chapter 7 Landscape Seascape and Visual

# Ardersier Port Extension

| | |
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# 7 LANDSCAPE, SEASCAPE & VISUAL

## 7.1 INTRODUCTION

### 7.1.1 The assessment of the proposed development

This chapter presents information required by the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 and the Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 to be provided in the Environmental Impact Assessment Report (EIAR) to enable the identification and assessment of likely significant effects on landscape, seascape and visual.

The approach to this assessment follows the methodology set out in the EIA Scoping Report (SCOP-0062) and is in accordance with the Scoping Opinion (25/00226/SCOP) produced by The Highland Council (THC) and subsequent pre-application meeting with a focus on landscape and visual matters, held between the applicant and THC on 9th April 2025. EIAR Chapter 4 (Consultation) and EIAR Appendix 7.1 contain further information on how each of the matters raised in the Scoping Opinion and subsequent pre-application meeting have been addressed.

The overarching policy relating to landscape, seascape and visual effects in Scotland and relevant to this assessment of the proposed development are presented in EIAR Appendix 7.2.

The assessment has been undertaken using a methodology which is in accordance with the principles contained in the Landscape Institute and the Institute of Environmental Management and Assessment (2013) Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA 3[1]); and The Landscape Institute (2019) Technical Guidance Note 06/19[2], visual representation of Development Proposals. The detailed methodology and criteria used in the assessment is presented in EIAR Appendix 7.3 which includes the study area, data sources, the criteria used to determine levels of effect, and the assumptions and limitations of the assessment. EIAR Chapter 3 (Project Description) contains a detailed description of the proposed development. This chapter is supported by the following EIAR Appendices:

- EIAR Appendix 7.1: Landscape and Visual Assessment – statement of agreed scope
- EIAR Appendix 7.2: Policy
- EIAR Appendix 7.3: Assessment Methodology
- EIAR Appendix 7.4: Representative Viewpoint Assessment
- EIAR Appendix 7.5: Figures, Representative Viewpoint Photographs and Visualisations

For this assessment it has been important to acknowledge the current and historic position relative to this site and the extent of development and consenting activity over a period extending to five decades and more. As a large-scale brownfield site (one of the largest in Scotland) the site has a long history of industrial activity including the presence of large-scale industrial structures, buildings and operational activities. The site has operated at various times over the last 30-40 years as a major industrial manufacturing and port operation with the regular presence over many decades of significant structures including cranes.

[1] Landscape Institute and IEMA (2013). Guidelines for Landscape and Visual Impact Assessment (GLVIA3), Abingdon, Routledge
[2] Landscape Institue (2019) TGN 06/19 Visual Representation of development proposals, https://www.landscapeinstitute.org/wp-content/uploads/2019/09/LI_TGN-06-19_Visual_Representation-1.pdf (Accessed 02/10/2025)

### 7.1.2 The planning background

The planning history of the site is relevant to the assessment of the landscape, seascape and visual effects of the extension area now proposed. It is important to note at the outset that this proposal, while identifying the existing and proposed site, is concerned with the principle of the change of use of the extended area only. This area will support the development and function of the existing port.

Planning permission for the site was initially granted in 2013 (13/01689/PIP). That application was supported by a detailed Environmental Impact Assessment that included a comprehensive assessment of its landscape and visual effects.

The assessment of the landscape and visual effects included within the original 2013 application included consideration of many of the viewpoints assessed in this chapter for the current proposal. The overall impact of the development proposed in 2013 was assessed as 'significant adverse'. The application was then determined positively by The Highland Council (THC) in the context of the historical use and existing structures that remained on site at that time and the intended operational development on site.

In this regard, the planning assessment in 2013 referenced that turbines would not be stored in the Firth and reinforced that there were no concerns about the siting or storage of turbines on site, noting that these, together with the potential for 'large purpose-built sheds, cranes and storage areas' would introduce prominent new features to what was a relatively quiet area. The impact was read in the context of other industrial and built development within the area including Norbord and Dalcross, both sites which have expanded in the intervening years.

Whilst the most important visual receptors were identified within the 2013 assessment as Fort George/Chanonry, South Sutor, Ardersier and Nairn West beach, evidence of the historical use of the site (McDermotts yard) existed in many of these views and was relevant in the context of the assessment. As a result, the planning assessment of the 2013 proposal considered that the proposal was 'unlikely to directly affect the appreciation of the most important features of the area.'

The subsequent and most recent planning permission was granted in 2019 (18/04552/PIP) and renewed the previous permission. THC confirmed that the assessment of landscape and visual effects should be scoped out of the EIA in 2019 on the basis that it had been fully assessed by the previous application (13/01689/PIP). As there had been no change in policy and taking into consideration any impact of development on the landscape resulting from the original use, while there would undoubtedly be an impact on the landscape, in the assessment of the overall planning balance it was judged to be acceptable.

It is against this background that planning permission was granted for the energy related port facility that now exists on site and continues to develop and expand. There are no height restrictions on buildings or other structure included within the extant permission subject to a requirement to consult with Highlands and Islands Airports Ltd. This underlines that the detailed assessment of landscape and visual effects previously undertaken for the two preceding planning permissions was fully taken into account when it was determined in the overall planning balance that the scale of development proposed was acceptable within the context of the historical use of the site and existing visual impacts.

### 7.1.3 The approach to the assessment of the extension

This assessment of the landscape, seascape and visual effects of the proposed extension of the site has been cognisant of the existing planning permission for a port and port related services on part of the site (application reference: 18/04552/PIP, 4 February 2019) and has also acknowledged the permitted development rights afforded to the port area through its Harbour Revision Order. As of Summer 2025, (when this assessment of the proposed extension was carried out) construction of the permitted port development had begun, with the replacement harbour wall and extended platform area complete, but its

full landscape and visual effects had yet to substantially manifest. Furthermore, it is not possible to predict with certainty what the exact appearance of the development will eventually be under the current consent, and how this would differ to that of the extension. The effects of the first phase of the port development on the landscape, seascape and views were assessed at the time of the previous application. The approach taken in this assessment of the proposed extension has therefore been to:

- Initially assess the landscape, seascape and visual effects of the proposed extended development against the landscape, seascape and visual baseline as observed on the ground during Summer 2025; and then
- Consider the implications of the extant consent on the level of effects identified.

The approach to the assessment of the extension is based on a worst-case assumption on maximum heights of structures and components likely to be on the site. It should, however, be noted that the presence of the majority of the larger structures anticipated to be associated with future operations will be transient in nature, with their assembly also influenced by seasonal constraints. By way of example, the approach to the assembly and integration of turbines will be based on up to three turbines being assembled, and at any one time a maximum of two would be fully integrated and complete with blades attached. The fully assembled turbines would have the blades locked and in a 'Y' configuration prior to being towed out to their final destination. The approach is predicated on minimising the time when turbines would be fully assembled prior to installation at sea. The integration activities would only be undertaken when there are clear weather windows for installation at sea, resulting in these activities typically taking place for only six to eight months each year.

It should also be noted that with the exception of the introduction of any structures or components on the extension land, the larger scale structures and components identified in this current assessment have previously been assessed and consented through the previous permissions or can be considered under permitted development rights conferred through the HRO. For example, fully assembled turbines will only be sited within the harbour area and boundary of the existing port, and it is not intended that assembly of turbines will occur within the proposed extension area.

## 7.2 CONSULTATION

Responses in relation to the statutory consultation undertaken are presented in EIAR Chapter 4 (Consultation). Following production of the EIA Scoping Report the following consultation has been undertaken.

Pre-application meeting with a focus on landscape and visual matters, held between the applicant and THC on 9th April 2025. The outcome of this meeting is recorded in EIAR Appendix 7.1.

## 7.3 METHODOLOGY

This section provides a summary of the assessment methodology. Further detail is provided in EIAR Appendix 7.3.

### 7.3.1 Scope of the assessment

The assessment considers the effects on landscape and seascape character (the effect on the landscape and seascape resource) and on visual amenity (the effect on people's visual amenity in specific locations).

The assessment also considers the effects of the proposed development during both the construction and operational phases. The assessment considers the operational effects in year 0 immediately after completion of construction. Separate consideration of effects over the longer term (typically residual effects in year 15 after any mitigation planting has begun to mature) has not been undertaken for this

proposed development because, due to the considerable height of the proposed port activities, most potential effects would not be materially reduced by areas of proposed new tree planting to screen the proposed development (proposed new planting is limited to the retention and strengthening of a woodland buffer around the landward side of the site to contain views of ground level activity from close vantage points, none of which were selected as representative viewpoints). An assessment of residual effects in year 15 is not therefore required as there is no proposed planting that will reduce potentially significant landscape and visual effects to not significant.

Cumulative effects are also considered.

### 7.3.2 Study area

The following study areas have been adopted for the assessment of effects:

- A primary study area encompassing a 15km radius around the proposed development. This reflects the study area used in a previous assessment of the now consented port activity at the site and is considered to capture all areas where potentially significant landscape effects could occur.
- An extended 35km radius for the consideration of visual effects which may occur at greater distances. This responds to a specific request from THC at the pre-application meeting on 9 April 2025 to include consideration of a small number of longer distance viewpoints at nominated position up to 35km from the site (this meeting is recorded by EIAR Appendix 7.1.

### 7.3.3 Data sources

The desk-based review involved the interrogation of published information (see EIAR Appendix 7.3 for the list of referenced sources). Field surveys, including representative viewpoint photography, were undertaken in December 2024 and July 2025 from public highways, core paths and other publicly accessible areas.

### 7.3.4 Zone of Theoretical Visibility

A Zone of Theoretical Visibility (ZTV) was generated for the 35km study area to provide an indication of potential visibility. Further detail is provided in EIAR Appendix 7.3.

### 7.3.5 Representative viewpoints, photography and visualisations

Twenty-four representative viewpoints have been selected and agreed through pre-application discussion with THC (see EIAR Appendix 7.1 and EIAR Appendix 7.3 for further information). The visualisations are consistent with THC's visualisation standards for wind energy development.

### 7.3.6 Assessment process

This section provides a brief outline of the assessment process. The assessment is based on the principles set out in the Guidelines for Landscape and Visual Impact Assessment (3rd Edition). Detailed assessment criteria are provided in EIAR Appendix 7.3

<u>Landscape and Seascape</u>

The **value** or importance understood to be attached to landscape or seascape areas is combined with the **susceptibility** of the key characteristics of these areas to the type of changes likely to be associated with the proposed development to establish the **sensitivity** of the landscape or seascape receptor. The sensitivity of the landscape or seascape receptor is categorised as either *High, Medium,* or *Low* using professional judgement with reference to the criteria set out in EIAR Appendix 7.3.

Assessment of the **magnitude of landscape change** takes account of several factors, and professional judgement is used to determine the relevance and appropriate weighting to be attributed to each factor. The degree of likely change is categorised as either *High, Medium, Low* or *No Change* with reference to the criteria set out in EIAR Appendix 7.3.

A final judgement on the **overall level of landscape effect** is then made by combining the **sensitivity** with the **magnitude of change** and described using a four-point scale of *Major, Moderate, Minor* or *Negligible*. The nature of effect will be judged as *Adverse* or *Beneficial*.

Major and moderate landscape and seascape effects are considered to be significant.

Visual

The visual assessment is based on 24 representative viewpoints. The outcome of the visual assessment of these representative viewpoints is then used to inform a more general discussion regarding wider visual receptors.

The **sensitivity** of the representative viewpoints is assessed by combining consideration of visual **susceptibility** of the visual receptors represented by the viewpoint with the **value**, or importance, likely to be attributed to the view. The sensitivity is categorised as either *High, Medium*, or *Low* using professional judgement with reference to the criteria set out in EIAR Appendix 7.3.

Assessment of the **magnitude of visual change** takes account of several factors, and professional judgement is used to determine the relevance and appropriate weighting to be attributed to each factor. The degree of likely change is categorised as *High, Medium, Low* or *Negligible* with reference to the criteria set out in EIAR Appendix 7.3.

A final judgement on the **overall level of visual effect** is then made by combining the **sensitivity** with the **magnitude of change** and described using a four-point scale of *Major, Moderate, Minor* or *Negligible*. The nature of effect will be judged as *Adverse* or *Beneficial*.

Major and moderate visual effects are considered to be significant.

### 7.3.7 Criteria tables

The assessment of landscape, seascape and visual effects rests on reasoned professional judgement. The detailed assessment criteria that underpin this professional judgement are provided in in EIAR Appendix 7.3.

### 7.3.8 Assumptions and limitations

There are no significant assumptions within, or identified limitations to, the assessments of landscape, seascape and visual effects other than the absence of certainty regarding the likely appearance of the port under the extant consent.

## 7.4 BASELINE CONDITIONS

This section describes the landscape, seascape and visual baseline for the proposed development. As explained in the introduction to this chapter of the EIAR, whilst cognisant of extant consent 18/04552/PIP, the following baseline description initially reflects conditions as observed on the ground in Summer 2025 when implementation of the permitted port development was only in its early stages. For example, whilst cranes associated with construction of the permitted port development were widely visible from surrounding areas while site work was being undertaken, the full landscape, seascape and visual implications of the consented port were not yet apparent. This matter, and its implications for the levels

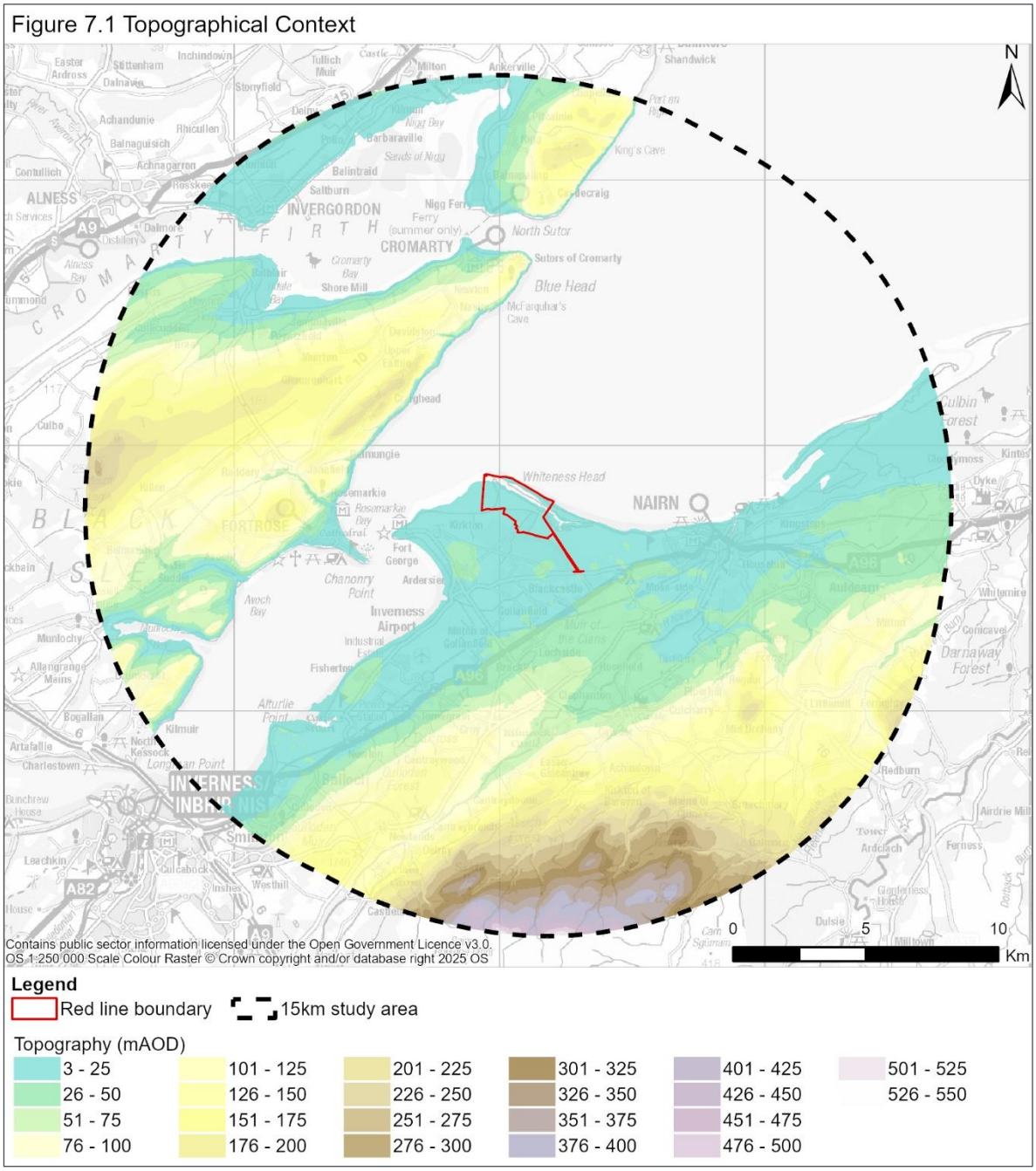
of effect specifically associated with the application to extend, is considered further later in the assessment.

### 7.4.1 Site Description

Ardersier Port is located on the Moray Firth. The site is bordered by the Moray Firth to the north, Carse of Delnies to the east, Carse Wood to the south, and the sand dunes and tidal sandflats of Whiteness Sands to the west. Fort George's live firing range is to the southwest, and Whiteness Head Spit, which shelters a harbour. The site has an industrial history, having previously been used for the fabrication and construction of oil and gas off-shore platforms until the early 2000s.

The topographical context within 15km is illustrated in Figure 7.1 below and within 35km is illustrated on EIAR Appendix 7.5 Figure 1. Within the site, topographical variation is minimal, and the ground is broadly level except for localised earthwork mounds in the western site extent. Within the main site area (not the access track), ground levels range from approximately 0m above ordnance datum (AOD) at the water's edge to 15m AOD where there are earthwork mounds. The majority of the site is 5m AOD or less. The proposed access road rises in elevation from 5m AOD where it joins the main site to 24m AOD, over a distance of 1.7km, at a junction with the B9092.

**Figure 7.1: Topographical Context**




Within 15km of the site, elevation ranges from approximately 1m AOD at the shoreline up to 530m AOD within the upland area south of the site. The site is located within a band of 50m AOD or lower, predominantly flat, coastal farmland south of the Moray Firth. There are areas where the land gently undulates and there is a notable increase in elevation at Kirkton between the site and the village of Ardersier. South of the low lying coastal band, the varied landform of rolling, north-facing hill slopes and plateaux rises in elevation from around 100m AOD up to 200m AOD before becoming open rolling upland with rounded, broad, gently sloping hills up to 530m AOD. Beinn Bhuidhe Mhor, at 548m AOD is located approximately 16km south of the site. West of the site, the Black Isle between the Moray Firth and the

Cromarty Firth increases in elevation over a relatively short distance in from the Moray Firth shore line, plateaus, and reaches a high point of 256m AOD at Mount Eagle which is approximately 14km west of the site. North of the site, there is a high point of 205m AOD near the Hill of Nigg approximately 12km north of the site. Between 15km and 35km, the landscape continues to rise in elevation north, west and south of the site up to around 700m AOD south of the site and a high point of 1,046, AOD at Ben Wyvis summit, Glas Leathad Mòr northwest of the site.

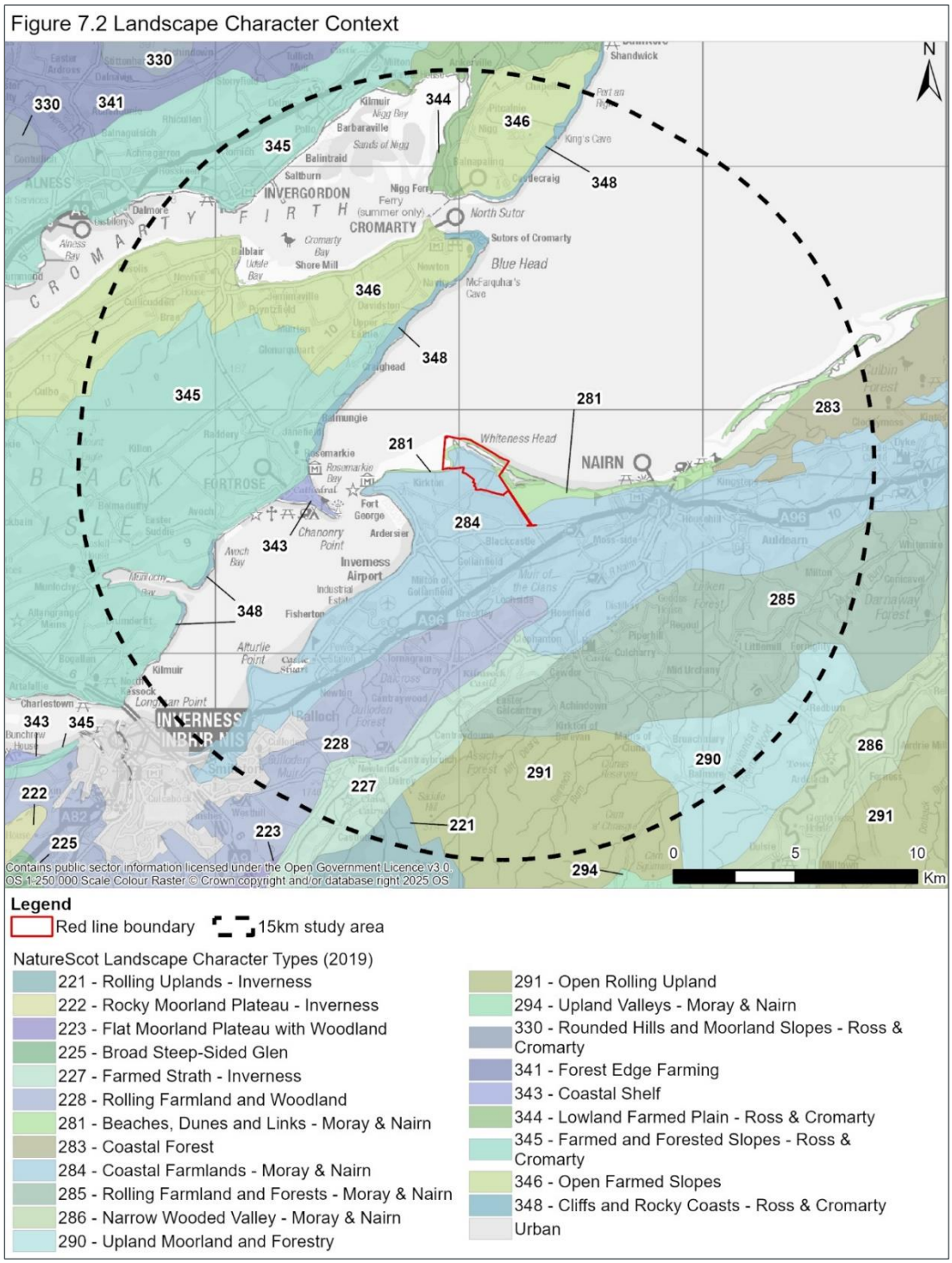
Inland landcover within the site comprises hardstanding, bare earth, trees and shrubs and on the coast, landcover includes littoral rock and sediment, supra-littoral rock and sediment, and saltmarsh. Land use within the site includes industrial activity within the current operational extent of Ardersier port and, outside of this, plantation woodland with stands of mature Scots Pine. Within 15km, the inland landcover is predominantly improved grassland, arable, coniferous woodland and broadleaf woodland. Other inland landcover includes urban areas, waterbodies and upland areas of heather, heather grassland and bog. Coastal landcover includes littoral rock and sediment, supra-littoral rock and sediment, and saltmarsh. Much of the land within 15km of the site is used for farming, both arable and pastoral, other land uses include large to small areas of settlement such a Balloch, Culloden, Nairn, Fortrose, Cromarty and Invergordon and transportation hubs such as Inverness Airport. Coastal areas include areas used for recreational activity such as beaches and golf links, and industrial activity such as the ports at Nigg and Invergordon. Between 15km and 35km the proportions of upland landcover types increase in line with the increase in land elevations at these greater distances from the site and there is a greater number of inland waterbodies which include Loch Ness (eastern extent), Loch Ashie, Loch Duntelchaig, Loch Glass and Loch Morie. Land use between 15km and 35km is similar to land use within 15km but with the addition of windfarms in the uplands.

The site is located on the edge of a relatively well settled rural landscape. Settlement within proximity of the site is predominantly farms and rural houses. The closest area of settlement is Ardersier village, which is located approximately 3km south west of the site. Nairn (5km east) and Rosemarkie (5km west) are relatively close coastal settlements with views towards the site. Other villages and towns within 15km of the site include Fortrose (5.5km west), Cromarty (8.5km north), and Invergordon (13km north west). Between 15km and 35km, settlement is predominately located at elevations below 200m AOD, leaving the uplands relatively remote and unpopulated. Within the lowlands, the city of Inverness is located approximately 18km south west of the site, Forres is located approximately 20km east of the site, and Dingwall is located approximately 24km west of the site. The A96 trunk road is the main road through the area. Other larger roads include the A9 (west of Inverness), the A939 (east of the site), and several B roads in addition to the network of rural lane and tracks which connect individual properties and farmsteads with the main road network. There are three train routes within the study area: the Far North Line, The Highland Main Line, and the Aberdeen–Inverness Line. Inverness Airport is approximately 5km south west of the site.

The large scale landscape associated with the site is informed by the high degree of openness, both inland over the port area and seaward over the Moray Firth. Beyond the site, the sense of scale is variable depending on the position in the landscape, but the overall perception is one of a large-scale landscape, informed by the open views over the coastal plains and long range views towards the uplands north, west and south of the site. Field pattern is variable, lowland fields range in size from small to large and are generally irregular south of the Moray firth. Linear field patterns are found in relation to field drain networks such as the area of land between the Moray Firth and the Cromarty Firth. The intermixing of wooded parcels (woodland and forestry) with the pastoral and arable fields results in a patchwork effect. In the uplands, the large swathes of heather, grassland and bog within few defining boundaries on the whole relatively simple but at a localised level the network of watercourses across the moorland add intricacy and complexity.

### 7.4.2 Landscape character context

**Figure 7.2: Landscape Character Context**




NatureScot Scottish Landscape Character Types (2019)

The Scotland-wide digital map-based landscape character assessment (LCA) Landscape Character Type (LCT) boundaries demarcate areas of consistent and recognisable character and is applicable at the local

landscape level. The proposed development is located across two LCTs (See Figure 7.2 above). There is potential for the proposed development to directly impact these host LCTs.

- 281 Beaches, Dunes and Links – Moray & Nairn. Northern, coastal site extent.
- 284 Coastal Farmlands – Moray & Nairn. Central and southern site extents

The LCT dataset was overlaid with the ZTV (see EIAR Appendix 7.5 Figure 2) to assist with identifying the LCT areas most likely to be subject to an effect for inclusion in the assessment. There is potential for the proposed development to alter the setting of the following LCTs where open views across the Moray Firth inform the character of the LCTs.

- 228 Rolling Farmland and Woodland
- 343 Coastal Shelf
- 345 Farmed and Forested Slopes – Ross & Cromarty
- 346 Open Farmed Slopes
- 348 Cliffs and Rocky Coasts – Ross & Cromarty

The following provides a baseline description of each of these areas.

**Table 7.1: NatureScot LCTs key characteristics.**

| Landscape Character Type | Key Characteristics |
|---|---|
| 281 Beaches, Dunes and Links – Moray & Nairn[3] | • Low-lying, long, curving sand and pebble beaches, usually backed by low dunes or shingle ridges, and expansive sand and mudflats at low tide.<br>• Large scale, mainly natural landscape dominated by coastal processes, with few sea-defence structures and a low proportion of built coastal development.<br>• Diversity of coastal land forms, including distinctive shifting sand bars, and shingle beach ridges with their sparse, low-level vegetation, that provide evidence of the coastline's recent geological history and transient nature.<br>• Complex, natural patterns of intertidal mudflats and salt marshes.<br>• Infrequent and contained coastal settlements, with historic architectural cores including fishing villages and harbours.<br>• Distance from the area's main arterial road, and lack of a coastal road, combined with the visual inland barrier of coastal forests and dunes, giving a sense of isolation away from settlements.<br>• Contrast of a natural setting with the historical defence structures at Fort George, and the remnants of World War II concrete defences.<br>• Pronounced contrast between the light and openness of the wide horizons, dominance of sky and reflection of light off the sea, light-coloured sand, pebbles and dune vegetation, and the shelter and enclosure provided by adjacent forests.<br>• Long distance views to the outer firth and the firth's north coast, and views along the coast to prominent headlands, settlements and hills, giving an increased perception of scale and the overriding horizontal landform.<br>• Occasional inland views of hills from dune and ridge tops, in places where they are not blocked by coastal forest. |
| 284 Coastal Farmlands – Moray & Nairn[4] | • Expansive, open, flat to undulating coastal plain landscape with frequent, small landforms of fluvio-glacial sands and gravels, often topped with forests, gorse or rougher grasslands.<br>• Predominantly simple agricultural landscape, punctuated by stone built farms and villages which are connected by an extensive network of rural roads.<br>• Mainly light, sandy soils and yellow seasonal flowers of gorse and broom. |

[3] NatureScot (2019) SNH National Landscape Character Assessment Landscape Character Type 281 BEACHES DUNES AND LINKS – MORAY & NAIRN, https://www.nature.scot/sites/default/files/LCA/LCT%20281%20-%20Beaches,%20Dunes%20and%20Links%20-%20Moray%20&%20Nairn%20-%20Final%20pdf.pdf (Accessed 02/10/2025)

[4] NatureScot (2019) SNH National Landscape Character Assessment Landscape Character Type 284 COASTAL FARMLANDS – MORAY & NAIRN, https://www.nature.scot/sites/default/files/LCA/LCT%20284%20-%20Coastal%20Farmlands%20-%20Moray%20&%20Nairn%20-%20Final%20pdf.pdf (Accessed 02/10/2025)

| Landscape Character Type | Key Characteristics |
|---|---|
| | • Broadly meandering burns and the lower reaches of rivers, often associated with native woodland and wetlands, providing relatively natural features in a highly modified landscape.<br>• Variation in field pattern, forms of enclosure, tree cover, settlement, road patterns and water bodies which illustrate distinctive differences between the flat former wetland and the more undulating, drier soils.<br>• Patchwork of mixed arable and pasture fields, yellow flowering gorse and broom, with shelter belts and plantations on drier land.<br>• Conifer plantations which coalesce to create elongated bands of dark colour contrasting strongly with the paler colours of arable land.<br>• Broadleaf woodlands and shelterbelts associated with gardens and designed landscapes.<br>• Established main communication routes of rail and trunk roads linking the larger settlements, off which run the network of minor rural roads.<br>• Prominence of occasional built elements in a relatively flat, open landscape, particularly large or vertical structures, including grain silos and single and small groups of commercial turbines associated with larger farms.<br>• Expansive, open long-distance views along the farmland belt, up to the moorland hills, and occasional views to the sea, mixed with more intimate views, foreshortened by undulations and folds in the landform, tree groups, small forests and coastal forests. |
| 228 Rolling Farmland and Woodland[5] | • Varied landform of rolling, north-facing hill slopes and plateaux.<br>• Gently sloping, simple coastal edge with the firths, falling to well-defined raised beaches in places.<br>• Diverse mix of landcover and fairly even balance of open agricultural land and woodlands.<br>• Varying patterns of openness and enclosure created by woodlands and hedgerows mixed with open fields and dense conifer forests with dark linear edges.<br>• Diversity added by open broadleaf woodlands along stream gorges, river banks, small woodlands, trees, hedgerows and designed landscapes.<br>• Settled landscape, mostly of small farms and isolated houses, interconnected by a network of major and minor roads.<br>• Other scattered settlements of old buildings in traditional layout, associated with road junctions and bridging points.<br>• Clusters of farm buildings and open fields are generally set against a wooded backdrop.<br>• Minor roads follow the geometric edges of field enclosures and conifer forests.<br>• Large number of relic prehistoric settlements and burial cairns indicating a continuing focal point of settlement.<br>• Sense of history and tradition around estates, due to stone walls, beech hedging, parkland and wooded policies.<br>• Limited visibility in wooded areas, focusing attention upon foreground detail.<br>• Distant views northwards over the firths in open areas on the upper slopes.<br>• An active, busy landscape, particularly in the vicinity of adjoining urban areas and major transport routes. |
| 343 Coastal Shelf[6] | • Mainly natural coastal edge consisting of a variety of soft coastal features including dunes, wetlands, salt marshes, grasslands, raised beaches and beaches, demonstrating different geological processes of accretion and erosion.<br>• Range of habitats in stages of natural succession.<br>• General absence of development except where occasionally found on the more stable land.<br>• Variable width of the shelf, from very narrow grassed strips to broad beaches and dunes.<br>• Proximity of some areas of coastal shelf to steeply rising hills, creating a sharp transition in landform from a horizontal to near vertical emphasis. |

[5] NatureScot (2019) SNH National Landscape Character Assessment Landscape Character Type 228 ROLLING FARMLAND AND WOODLAND, https://www.nature.scot/sites/default/files/LCA/LCT%20228%20-%20Rolling%20Farmland%20and%20Woodland%20-%20Final%20pdf.pdf (Accessed 02/10/2025)
[6] NatureScot (2019) SNH National Landscape Character Assessment Landscape Character Type 343 COASTAL SHELF, https://www.nature.scot/sites/default/files/LCA/LCT%20343%20-%20Coastal%20Shelf%20-%20final%20pdf.pdf (Accessed 02/10/2025)

| Landscape Character Type | Key Characteristics |
|---|---|
| | • Presence of coastal transport routes, from where the coastal shelf is usually in the foreground of sea views, with historic train stations, distilleries, lighthouses and RAF airfields connected to these routes.<br>• Clear, physical definition of the shelf and edges of raised beaches, rarely masked by forests or development.<br>• Dynamic, wide and sweeping sandy beaches, spits and salt marshes with natural vegetation and extensive views.<br>• Wet grassland and usually unenclosed or occasionally fenced, rough pastures on the broader coastal shelf in close proximity to the sea, often separated by a very narrow, often pebbly beach.<br>• Open views across the inner and outer Firths, and the interplay of light on water.<br>• Ever-changing line of views along the coast and firths.<br>• Sense of exposure in outer firth areas from near-constant wind, lack of trees and expansiveness of the landscape. |
| 345 Farmed and Forested Slopes – Ross & Cromarty[7] | • Complex pattern of farmland, tree cover, forests and woodland on sloped, often terraced land rising from firths or river plains to mid-elevations and often backed by large scale forest plantations where there are adjacent hills.<br>• Overall impression of a well-treed landscape, but within which farming is the dominant land use.<br>• Generally higher proportion of trees, woodland and forest plantations in upper slopes, forming a well-connected network within which fields are located.<br>• Terraces of open land, interspersed with forest plantations and woodlands on mid slopes.<br>• Gradual change to more open landscapes at lower levels.<br>• Wide range and distribution of archaeological sites indicating a long history of human settlement.<br>• Occasional large settlements in a predominantly rural landscape.<br>• Views from more open, terraced areas across lowlands or firth to hills or out to sea. |
| 346 Open Farmed Slopes[8] | • Open, convex, generally north-east facing farmed slopes.<br>• Smooth slopes of arable and pasture fields forming a regular pattern, lined with occasional small trees, fences or gorse hedges.<br>• Mix of crofting, small holdings and large farms giving rise to a patchwork of rectangular fields of different sizes.<br>• Areas of distinctive crofting patterns with generally smaller fields and regularly scattered croft buildings.<br>• Areas of distinctive, large, regular fields of large farms, with occasional small patches of birch woodland and conifer plantations and lines of trees descending the slopes.<br>• Scattered settlement patterns and network of minor roads running along contour lines, with few groupings in villages or towns.<br>• Ever present views which are open, expansive and outward looking. |
| 348 Cliffs and Rocky Coasts – Ross & Cromarty[9] | • Mainly natural, narrow, rugged coastline of angular rocky cliffs and partially submerged rocky shores, interspersed with pebbly beaches, and steeply eroded glacial till cliffs.<br>• Straight, almost uninterrupted alignment of the rocks signifying the location of the Great Glen Fault.<br>• Abrupt transition to adjacent farmed slopes. |

[7] NatureScot (2019) SNH National Landscape Character Assessment Landscape Character Type 345 FARMED AND FORESTED SLOPES – ROSS & CROMARTY, https://www.nature.scot/sites/default/files/LCA/LCT%20345%20-%20Farmed%20and%20Forested%20Slopes%20-%20Ross%20&%20Cromarty%20-%20final%20pdf.pdf (Accessed 02/10/2025)
[8] NatureScot (2019) SNH National Landscape Character Assessment Landscape Character Type 346 OPEN FARMED SLOPES, https://www.nature.scot/sites/default/files/LCA/LCT%20346%20-%20Open%20Farmed%20Slopes%20-%20final%20pdf.pdf (Accessed 02/10/2025)
[9] NatureScot (2019) SNH National Landscape Character Assessment Landscape Character Type 348 CLIFFS AND ROCKY COASTS - ROSS & CROMARTY, https://www.nature.scot/sites/default/files/LCA/LCT%20348%20-%20Cliffs%20and%20Rocky%20Coasts%20-%20Ross%20&%20Cromarty%20-%20final%20pdf.pdf (Accessed 02/10/2025)

| Landscape Character Type | Key Characteristics |
|---|---|
| | • Sharp contrast between the smooth, managed farmland to the north-west and the rough, angular, vertical lines of the cliffs.<br>• Lack of roads, general inaccessibility and low levels of built development, creating a sense of isolation.<br>• Very infrequent, compact, linear settlements of small scale traditional buildings, overlooking inlets or pebble beaches.<br>• Coastal vegetation of grasses, heather and gorse, with characteristic seasonal flowers.<br>• Airy, open cliff tops and summits, with long distance, 360 degree views.<br>• Enclosed sheltered backdrop of cliffs at sea level, contrasting with the dynamic movements and sounds of the sea, and focusing views sea-ward. |

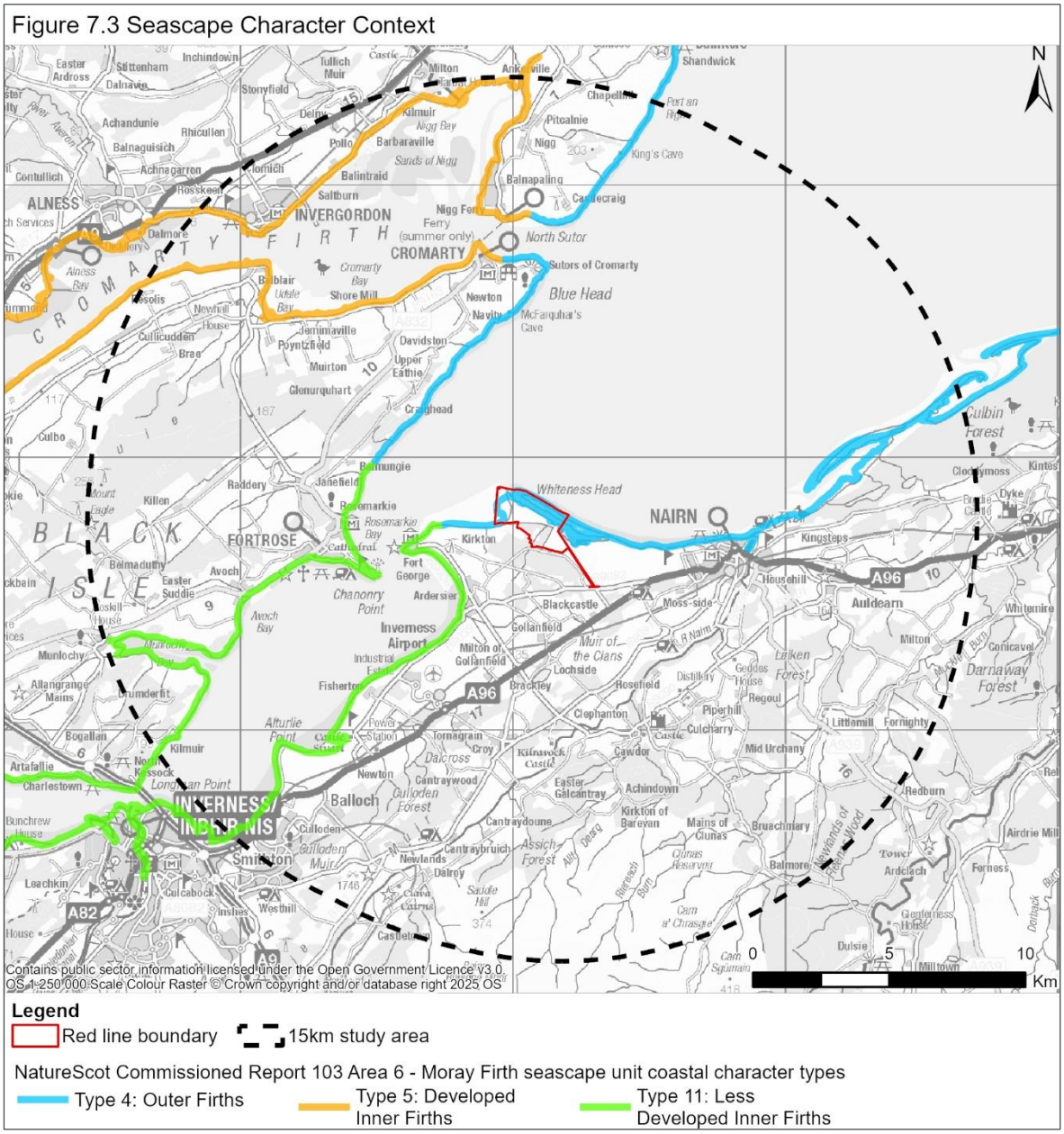
### 7.4.3 Seascape character context

In 2005 NatureScot commissioned a study to assess the seascape issues surrounding offshore wind energy developments "NatureScot Commissioned Report 103 – An assessment of the sensitivity and capacity of the Scottish Seascape in relation to windfarms"[10]. The seascape character information in this report has been used within this baseline as part of the desktop establishment of the seascape character context.

The site is located within the Area 6: Moray Firth seascape unit (See embedded Figure 7.3 and EIAR Appendix 7.5 Figure 2). There is potential for the proposed development to directly impact the host coastal character type "Type 4: Outer Firths" and alter the setting of the adjacent "Type 11: Less Developed Inner Firths". Coastal character type "Type 5: Developed Inner Firths" does not fall substantially within the ZTV and therefore has not been included in the assessment.

[10] NatureScot (2005) SNH Commissioned Report 103: An assessment of the sensitivity and capacity of the Scottish seascape in relation to windfarms, https://www.nature.scot/sites/default/files/2017-07/Publication%202005%20-%20SNH%20Commissioned%20Report%20103%20-%20An%20assessment%20of%20the%20sensitivity%20and%20capacity%20of%20the%20Scottish%20seascape%20in%20relation%20to%20windfarms.pdf (Accessed 02/10/2025)

**Figure 7.3: Seascape Character Context**




The following provides a baseline description of each of these areas.

**Table 7.2: Coastal character type characteristics and qualities**

| Costal Character Type | Characteristics and Qualities[11] |
|---|---|
| Type 4:<br>Outer Firths | *as relevant to the Type 4 location "Moray Firth"*<br><br>Physical Characteristics<br><br>• Sandy beaches are interspersed with low rocky headlands.<br>• Backed by a farmed plain of varying width with viewshed contained by the Black Isle which considerably restricted by the coastal edge. Broader agricultural plains are present against the coast in Morayshire, although views are often restricted by coastal forestry located on dune systems.<br>• Relatively well populated with small towns and villages set out along the coast, some comprising small holiday resorts. Internationally renowned golf courses on links and dunes backing the coast.<br>• Occasional industry, roads and railways are aligned parallel to the coast. The Outer Firths are major shipping routes.<br>• Focus onto the shores on each side of the Firth, with settlements, and often masts and other infrastructure located on ridges forming significant features in views.<br>• The profile of land on the opposite Firth shore tends to flatten due to both the distance and often subtle topography.<br><br>Experiential Qualities<br><br>• The containment of the Firths where land is visible and provides shelter, generally give a less exposed and dramatic seascape.<br>• Sense of enclosure weakens further eastwards in the Moray Firth where the firth suddenly broadens and flattens thereby creating a more open seascape.<br>• The presence of ships, rigs, settlements (particularly visible at night) and other built features and well farmed hinterland given this type a developed character. |
| Type 11:<br>Less Developed Inner Firths | *as relevant to the Type 11 location "Beauly Firth"*<br><br>Physical Characteristics<br><br>• Generally flat, fertile carselands or coastal deltas contained within 'U' shaped valley and semi-enclosed by steep hills or mountains further inland.<br>• The valley form creates a strong physical and visual connection with surrounding landscape character types and the Firth is therefore less of a dominant feature than in Outer Firth types.<br>• Farmed with large rectangular fields producing a distinct landscape pattern seen against a simple backdrop of rough grazing/moorland on hills and foreground of water.<br>• Estuarine reed beds and mud flats occur and there is a narrow intertidal zone; tides bring dynamic qualities to this type.<br>• A well settled landscape. Roads and railways are aligned along the shore and bridging points and causeways often provide distinctive views.<br>• Historic features create distinct landscape foci.<br><br>Experiential Qualities<br><br>• A calm landscape with less marine influence as the firth narrows, with land and landuse dominating views. |

[11] NatureScot (2005) Description of Coastal Character Types Including Caithness, https://www.nature.scot/doc/description-coastal-character-types-including-caithness (Accessed 02/10/2025)

| Costal Character Type | Characteristics and Qualities[11] |
|---|---|
| | • The proximity of opposing sides of the firth give clear finite horizons and a feeling of enclosure and shelter. |

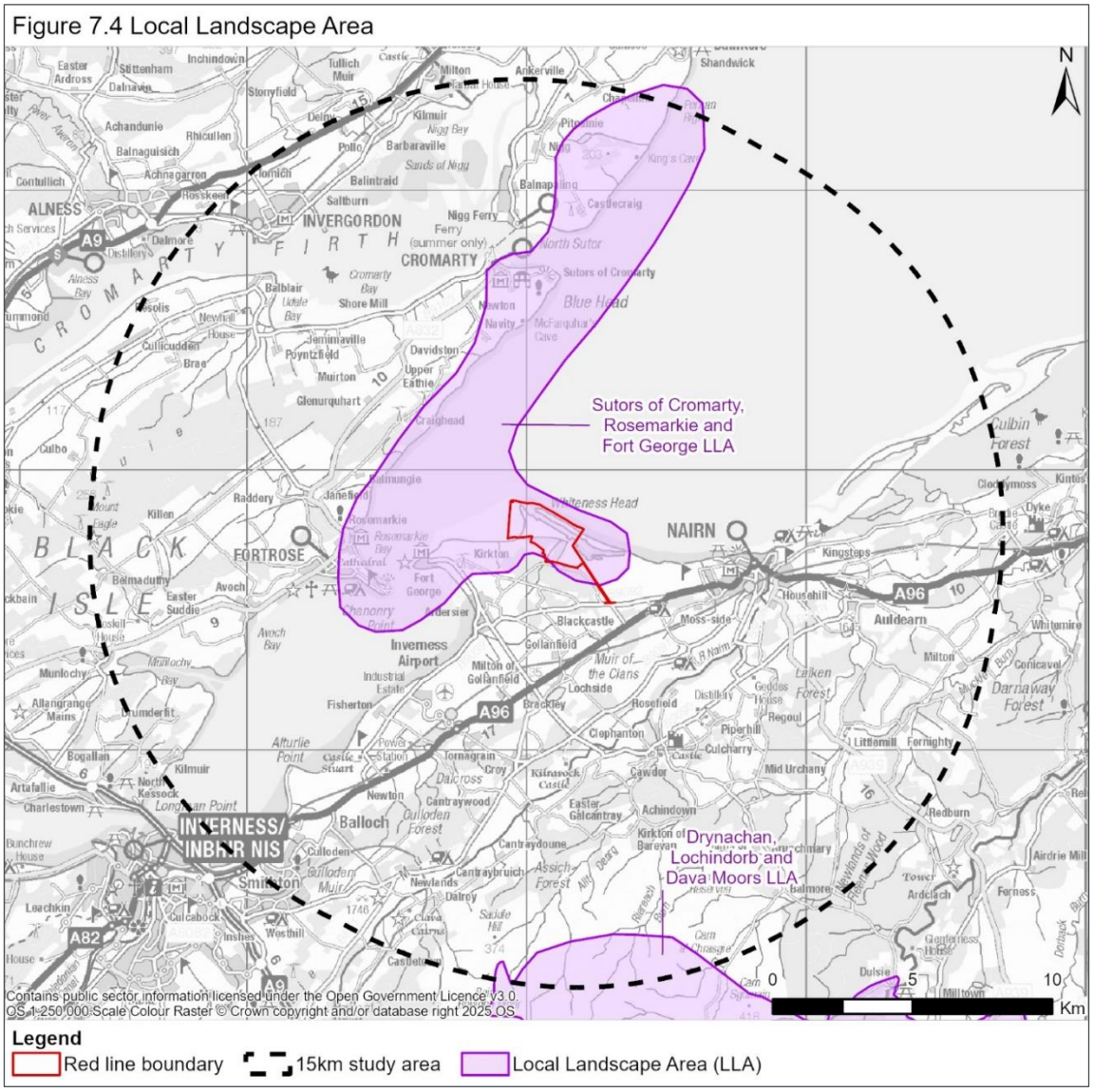
### 7.4.4 Landscape designations

Sutors of Cromarty, Rosemarkie and Fort George Local Landscape Area

The site is located within the Sutors of Cromarty, Rosemarkie and Fort George locally designated Local Landscape Area (LLA) (formerly Special Landscape Area)[12] (See Figure 7.4 below and EIAR Appendix 7.5 Figure 2). There is potential for the proposed development to directly impact the LLA.

[12] Highland Council (2011) Special Landscape Area Citation: Sutors of Cromarty, Rosemarkie, and Fort George SLA, https://www.highland.gov.uk/download/downloads/id/4790/sutors_of_cromarty_rosemarkie_and_fort_george.pdf (Accessed 02/10/2025)

**Figure 7.4: Local Landscape Area**




Sutors of Cromarty, Rosemarkie and Fort George LLA key landscape and visual characteristics[13]:

- The diverse coastal edge includes straight and indented geometry, soft shingle bars and hard cliffs, developed and undeveloped land uses and distinctive coastal landforms (including the spits at Chanonry Point, Fort George, and Whiteness, and the headlands of the Cromarty Sutors).
- Contrasting and distinctive visual experiences are provided by the juxtaposition of elevated and sea level viewpoints and views across enclosed and open firths. Contrasting perceptions of exposure and shelter are associated with the open coast and enclosed firth.
- The dominant undeveloped coastal edge is punctuated by the occurrence of settlements, and isolated dwellings and farmsteads dot the higher ground above the cliff tops. Huddled close to the shoreline, and densely packed, settlements retain core historical and cultural integrity and strongly and distinctively reflect their exposed coastal position.

[13] Highland Council (2011.) Assessment of Highland Special Landscape Areas, https://www.highland.gov.uk/downloads/file/2937/assessment_of_highland_special_landscape_areas (Accessed 02/10/2025)

- Most of the coastline in this LLA – the stretch between Rosemarkie and Port an Righ - is however steep and undeveloped, punctuated only by the occurrence of isolated dwellings and farmsteads dotting the higher ground above the cliff top
- The distant mountain backdrop in many views gives distinctive Highland context to the interplay of views back and forth across the firth.
- The regular pattern of farmland on inland slopes provides an attractive contrast to the more natural shorelines of cliffs, shingle banks and mudflats.
- Unusual contrasts in scale are experienced where huge oil-rigs or large ships are viewed within the enclosed firths in the context of small scale settlement and in contrast to the horizontal arrangement of sea, land and sky.
- The citadel of Fort George is a substantial and distinctive man-made feature in the landscape, which itself offers views of the LLA from a historical 'defended' position. The fort is linked to Ardersier by the B9006, a road that follows the line of the original military road.
- The remains at the South Sutor form part of what is probably one of the most complete coastal batteries surviving in Scotland.
- Some sense of remoteness and tranquillity is obtained in the less accessible areas and the cliffs and thickly wooded gullies on the steep outer edge of the Black Isle are local havens for wildlife. However, with the presence nearby of coastal settlements, ports and an airport, human activity is usually noticeable in this area – on the land, in the sea, or overhead.

Sutors of Cromarty, Rosemarkie and Fort George LLA special qualities:

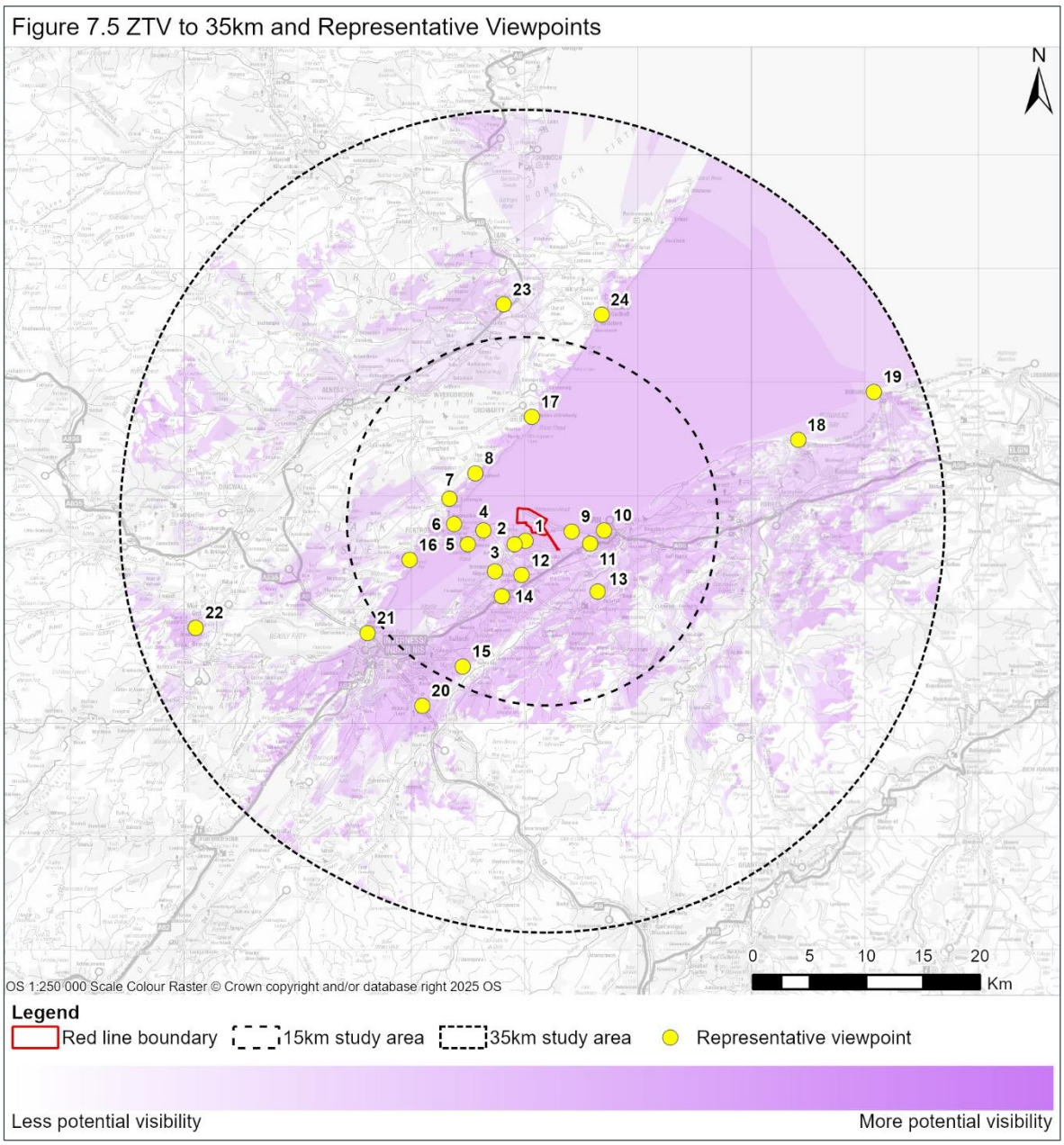
- Distinctive variety of costal scenery
- Expanse and containment
- Strong cultural and military landscape links

### 7.4.5 Visual Context

Zone of Theoretical Visibility

The ZTV (Figure 7.5 below) run to 35km indicates how topography would typically limit potential visibility beyond 15km. In addition to the influence of topography, areas of plantation woodland would result in localised reductions in potential visibility.

**Figure 7.5: ZTV to 35km and Representative Viewpoints**



### 7.4.6 Visual receptors and Selected Viewpoints

Visual receptors were identified through desktop ZTV and site work, and 24 representative viewpoints have been selected for the visual assessment and agreed with THC. Baseline descriptions are included in EIAR Appendix 7.4.

*Residents*

Scattered residential locations lie nearby to the south of the site, though many residential properties are screened from the site by intervening plantations of scots pine woodland. The waterfront village of Ardersier lies approximately 4 km to the south west but intervening topography reduces the potential for views from this closest settlement. There is potential for views from residential properties with open views across the Moray Firth, such as those on the headline north of Rosemarkie and the shoreline at Avoch. Beyond 15km, the ZTV also indicates properties with potential visibility at Aultvaich, west of Beauly Firth and properties at Pitmaduthy, north of Nigg Bay.

Representative viewpoints have been selected at the following residential locations.

- Easter / Wester Bog, south of Carse Wood (1)
- Headland north of Rosemarkie (7)
- Avoch (16)
- Aultvaich (22)
- Pitmaduthy (23)

*Visitor locations and recreational routes*

The natural environment and historic sites attract visitors to the Moray Firth and adjacent inland areas. Along the coast, beachfront areas, promontories and elevated headlands with potential visibility, include Rosemarkie, Avoch, the Secret beach (Hilton of Delnies), Nairn, Sutors of Cromarty, Findhorn and Burghead. Historic sites include Fort George on the coast and Culloden Battlefield inland. Chanonry Point attracts both nature watchers, for Dolphin spotting, and heritage visitors to the light house. Another site with potential visibility includes Ardersier Cemetery. Walking and cycling routes (see EIAR Appendix 7.5 Figure 3) in the area include Core Paths, the Moray Coast Trail which is a Scotland Great Trail (named on OS 1:25,000 with a green hexagon with thistle), and National Cycle Network Route 1.

Representative viewpoints have been selected at the following visitor locations or points on recreational routes.

- Ardersier Cemetery (2)
- Fort George (4)
- Chanonry Point (5)
- Rosemarkie beachfront (6)
- Learnie Red Rocks (8)
- The Secret Beach, Hilton of Delnies (9)
- Nairn beach (10)
- Culloden Battlefield (15)
- Sutors of Cromarty (South Sutor) (17)
- Moray Coast Trail at Findhorn (18)
- Burghead visitor centre (19)
- Kessock Bridge Cycleway (21)
- Balintore (24)

*Roads and rail*

The A96 and the mainline railway between Aberdeen and Inverness pass approximately 4 km to the south east of the site. There are currently limited opportunities for open views towards the site to the north west from the A96 due to the intervening plantation woodlands. The B9039 follows the coastline west of Ardersier and, whilst topography screens views of the site, there is potential for the taller elements of the proposals (e.g. turbines and cranes) to be visible over the intervening topographical form. Road users within the wider area with potential visibility include those using the Old Military Road at the rail crossing near Flemington, the B9090 near Royal Brackla Distillery and the A9 south of inverness.

Representative viewpoints have been selected at the following road-side locations.

- B9039 Old Military Road west of Ardersier (3)
- A96 at Delnies (11)
- Rail crossing near Flemington (12)
- B9090, near Royal Brackla Distillery (13)
- A96 layby near Culblair (14)
- A9 south of Inverness (20)

## 7.5 POTENTIAL IMPACTS

### 7.5.1 Landscape, seascape and visual receptor sensitivity

The following tables identify the sensitivity of the receptors identified for assessment of the landscape, seascape and visual effects of the proposed port extension. Overall sensitivity is derived by combining consideration of their value and susceptibility. The assessment of sensitivity contained within these tables does not, at this stage, take account of the changed baseline implied by the extant consent.

**Table 7.3: Sensitivity of the potentially affected landscape, seascape and visual receptors.**

| Receptor | Sensitivity | Reasoning |
|---|---|---|
| Landscape character areas | | |
| LCT 281 Beaches, Dunes and Links – Moray & Nairn | High | High Value<br>• Western extents of LCT 281 are located within the Sutors of Cromarty, Rosemarkie and Fort George LLA boundary;<br>• Particularly distinctive, unusual, prominent, or valuable landscape components include, Fort George promontory, Whiteness Head spit, and Culbin Sands spits and bars;<br>• Extensive areas recognised as ecologically important through several national and international ecological designations;<br>• Time depth is indicated by the presence of Fort George and Nairn Conservation Areas;<br>• Likely to be generally perceived by most people as unusually scenic and tranquil; and<br>• Important recreation resources include Nairn beach and Culbin Nature Reserve, and the Core path network within proximity of settled areas.<br><br>High Susceptibility<br>• Distinctive characteristics which would be vulnerable to the types of changes proposed;<br>• The type of development proposed is largely absent from the baseline conditions;<br>• A simple, distinct, and uniform landscape;<br>• Visually open landscape with low levels of tree cover, with the exception of Culbin Forest;<br>• Generally free of built development. Where there is built development, it is not visually prominent; and<br>• Absence of non-domestic large scale or tall buildings and built structures. |
| LCT 284 Coastal Farmlands – Moray & Nairn | Medium | Medium Value<br>• Majority of LCT 284 is outside the Sutors of Cromarty, Rosemarkie and Fort George LLA designation boundary. Fort George, Kirton, Carse of Ardersier and Carse of Delnies are located within the LLA boundary;<br>• No Particularly distinctive, unusual, prominent or valuable landscape components;<br>• National-level ecological designations limited;<br>• Time depth is indicated by Fort George and Ardersier and Cawdor Conservation Areas;<br>• May be perceived by some people to display a moderate degree of scenic value with potentially greater degrees of scenic value experienced within proximity |

| Receptor | Sensitivity | Reasoning |
|---|---|---|
| | | of the coast, away from areas subject to modification through intensive farming practices; and<br>• Recreational resources include National Cycle Network Route 1, Core Paths and local attractions such as Distilleries.<br><br>Medium Susceptibility<br><br>• Presence of characteristics with some vulnerability to the type of changes proposed;<br>• The type of development proposed, or similar land uses, are largely absent from the baseline conditions and make only a limited contribution to existing character;<br>• Moderate levels of complexity and variety of features and land uses;<br>• Moderate levels of visual openness;<br>• Moderate contribution by existing built development; and<br>• Occasional presence of non-domestic large scale buildings or built structures includes Inverness Airport, Dalcross Industrial Estate and a factory and anaerobic power station at Morayhill. |
| LCT 228<br>Rolling Farmland and Woodland | Medium | Medium Value<br><br>• No areas subject to LLA designation;<br>• No Particularly distinctive, unusual, prominent or valuable landscape components;<br>• National-level ecological designations limited;<br>• Time depth is indicated by the presence of Culloden Battlefield visitor centre (east of Inverness), Dalcross Castle Garden and Designed Landscape, and Culloden Muir Conservation Area;<br>• May be perceived by some people to display a moderate degree of scenic value with potentially greater degrees of scenic value where open areas on upper slopes afford open views towards the firths; and<br>• Opportunities for recreation include t National Cycle Network Route 1 near Culloden, the Core Path network and woodland trails such as those in Culloden Wood.<br><br>Medium Susceptibility<br><br>• Presence of characteristics with some vulnerability to the type of changes proposed;<br>• The type of development proposed is absent from the baseline conditions;<br>• Moderate levels of complexity and variety of features and land uses;<br>• Moderate levels of visual openness, reduced in well-wooded areas;<br>• Moderate contribution by existing built development; and<br>• Occasional presence of non-domestic large scale buildings or built structures includes electricity transmission pylons and lines and a radio tower. |
| LCT 343<br>Coastal Shelf | High | High Value<br><br>• Most of LCT 343 at Rosemarkie falls within the Sutors of Cromarty, Rosemarkie and Fort George LLA designation boundary;<br>• The coastal shelf promontory is a distinctive, unusual, prominent feature in adjacent firth;<br>• National-level ecological designations do not extend over LCT 343 at Rosemarkie; |

| Receptor | Sensitivity | Reasoning |
|---|---|---|
| | | • Time depth of LCT at Rosemarkie is indicated by Chanonry lighthouse which is recognised for its heritage value, and Fortrose Conservation Area designation;<br>• Likely to be generally perceived by most people as unusually scenic and tranquil; and<br>• Opportunities for recreation include Fortrose and Rosemarkie Golf Course and dolphin spotting at Chanonry point. Core Paths follow the coastline around the promontory.<br><br>High Susceptibility<br><br>• Presence of distinctive characteristics which would be vulnerable to the types of changes proposed;<br>• The type of development proposed is absent from the baseline conditions;<br>• Simple, distinct, and uniform landscape;<br>• Visually open landscape with an absence of a strong landscape framework and low levels of tree cover;<br>• Generally free of built development and where there is built development, it is not visually prominent (with the exception of Chanonry lighthouse); and<br>• Absence of non-domestic large scale or tall buildings and built structures. |
| LCT 345 Farmed and Forested Slopes – Ross & Cromarty | Medium | Medium Value<br><br>• Eastern fringes only of LCT 345 on the Black Isle skirt the Sutors of Cromarty, Rosemarkie and Fort George LLA designation boundary;<br>• No Particularly distinctive, unusual, prominent or valuable landscape components;<br>• National-level ecological designations limited;<br>• Time depth is indicated by Rosehaugh and Fairy Glen Gardens and Designed Landscapes and Avoch, Fortrose and Rosemarkie Conservation Areas;<br>• May be perceived by some people to display a moderate degree of scenic value with potentially greater degrees of scenic value where open areas on upper slopes afford open views towards the firths; and<br>• Opportunities for recreation include National Cycle Network Route 1, Learnie Red Rocks mountain biking trails, woodland walking trails, and Core Paths.<br><br>Medium Susceptibility<br><br>• Presence of characteristics with some vulnerability to the type of changes proposed;<br>• The type of development proposed is visible at Invergordon and Nigg from open north facing views, but the type of development proposed is absent from open south facing views;<br>• Moderate levels of complexity and variety of features and land uses;<br>• Moderate levels of visual openness;<br>• Moderate contribution by existing built development; and<br>• Occasional presence of non-domestic large scale buildings or built structures includes transmission masts dotted along the central elevated ridge of the Black Isle. |
| LCT 346 Open Farmed Slopes | Medium | Medium Value<br><br>• The eastern edges, within the vicinity of the Sutors of Cromarty, fall within the Sutors of Cromarty, Rosemarkie and Fort George LLA designation boundary;<br>• The Sutors of Cromarty are prominent, valued landscape components;<br>• National-level ecological designations limited; |

| Receptor | Sensitivity | Reasoning |
|---|---|---|
| | | • Time depth is indicated by the presence of Cromarty House Garden and Designed Landscape and Cromarty Conservation Aea;<br>• Likely to be generally perceived by most people as unusually scenic and tranquil within the vicinity of the Sutors of Cromarty. West of this, the landscape may be perceived by some people to display a moderate degree of scenic value or relative tranquillity; and<br>• Opportunities for recreation include National Cycle Network Route 1 and Core Paths.<br><br>Medium Susceptibility<br><br>• Presence of characteristics with some vulnerability to the type of changes proposed;<br>• The type of development proposed is visible at Invergordon and Nigg from open north facing views;<br>• Moderate levels of complexity and variety of features and land uses;<br>• Moderate levels of visual openness;<br>• Moderate contribution by existing built development; and<br>• Occasional presence of non-domestic large scale buildings or built structures includes visibility of the buildings associated with the ports across the firth. |
| LCT 348 Cliffs and Rocky Coasts – Ross & Cromarty | High | High Value<br><br>• LCT 348 coastline between Rosemarkie and South Sutor and Norh Sutor and Shandwick falls within the Sutors of Cromarty, Rosemarkie and Fort George LLA boundary;<br>• The Sutors of Cromarty are prominent, valued landscape components and the cliffs include interesting coastal features such as natural arches and waterfalls;<br>• The Rosemarkie to Shandwick Coast Site of Special Scientific Interest designation recognises the cliff geology and biology as nationally important.<br>• Time depth is indicated by the remains of WWI and WWII coastal defences.<br>• Likely to be generally perceived by most people as unusually scenic and tranquil; and<br>• Opportunities for recreation include South Sutor View Point which provides panoramic views out over the Moray Firth and Cromarty Firth and Core Paths which include sections along the coastline.<br><br>High Susceptibility<br><br>• Presence of distinctive characteristics which would be vulnerable to the types of changes proposed;<br>• The type of development proposed is largely absent from the baseline conditions, the exception being views of similar development at Invergordon and Nigg;<br>• Simple, distinct, and uniform landscape;<br>• Visually open landscape with an absence of a strong landscape framework and low levels of tree cover;<br>• Generally free of built development, the exception being views of Invergordon and Nigg; and<br>• General absence of non-domestic large scale or tall buildings and built structures, the exception being views of Invergordon and Nigg. |
| Seascape character areas | | |

| Receptor | Sensitivity | Reasoning |
|---|---|---|
| Area 6 Moray Firth Type 4 Outer Firth | High | High Value<br><br>• The western extents of Type 4 fall within the Sutors of Cromarty, Rosemarkie and Fort George LLA boundary within the vicinity of the Sutors of Cromarty and Whiteness Head spit.<br>• The coastline is notably distinct and unusual. The Sutors of Cromarty are prominent, valued landscape components and the cliffs include interesting coastal features such as natural arches and waterfalls. Whiteness Head spit and Culbin Sand bars are also notable coastline features;<br>• Extensive areas recognised as ecologically important through several national and international ecological designations;<br>• Time depth is indicated by the presence of Nairn Conservation Area and remains of WWI and WWII coastal defences.<br>• Likely to be generally perceived by most people as unusually scenic and tranquil; and<br>• Opportunities for recreation include South Sutor View Point, Rosemarkie beachfront, Nairn beach, Secret Beach, Culbin Nature Reserve, and the Core Path network.<br><br>High Susceptibility<br><br>• Presence of distinctive characteristics which would be vulnerable to the types of changes proposed;<br>• The type of development proposed is largely absent from the baseline conditions, the exception being views of similar development at Invergordon and Nigg west of the Sutors of Cromarty;<br>• Simple, distinct, and uniform landscape;<br>• Visually open landscape with an absence of a strong landscape framework and low levels of tree cover, with the exception of Culbin Forest;<br>• Generally free of built development, the exception being where there are views of Invergordon and Nigg west of the Sutors of Cromarty; and<br>• General absence of non-domestic large scale or tall buildings and built structures, the exception being where there are views of Invergordon and Nigg west of the Sutors of Cromarty. |
| Area 6 Mory Firth Type 11 Less Developed Inner Firths | High | High Value<br><br>• The eastern extents of Type 11 fall within the Sutors of Cromarty, Rosemarkie and Fort George LLA boundary within the vicinity of the, Rosemarkie, Chanonry Point and Fort George area of the designation;<br>• The coastline is notably distinct and unusual. The Chanonry Point and Fort George promontories are notably distinct, unusual and valued coastal components;<br>• Extensive areas recognised as ecologically important through several national and international ecological designations;<br>• Time depth is indicated by the presence of Conservation Areas which include Rosemarkie, Fortrose and Avoch, Fort George, and remains of WWI and WWII coastal defences;<br>• Likely to be generally perceived by most people as unusually scenic and tranquil; and<br>• Opportunities for recreation include dolphin spotting at Chanonry Point, Fort George visitor centre, and the Core Path network.<br><br>Medium Susceptibility |

| Receptor | Sensitivity | Reasoning |
|---|---|---|
| | | • Presence of distinctive characteristics which would be vulnerable to the types of changes proposed;<br>• The type of development proposed is absent from the baseline conditions;<br>• Moderate levels of complexity and variety of features and land uses;<br>• Moderate levels of visual openness, with greater levels of visual openness experienced from promontory locations;<br>• Moderate contribution by existing built development, particularly within proximity of Inverness; and<br>• Occasional presence of non-domestic large scale buildings or built structures includes visibility of Inverness Airport and Dalcross Industrial Estate. |
| Landscape designations | | |
| Sutors of Cromarty, Rosemarkie and Fort George Local Landscape Area | High | High Value<br><br>• The Sutors of Cromarty, Rosemarkie and Fort George Special Landscape Area is a local designation recognised nationally under the umbrella term of Local Landscape Area;<br>• Notably distinct, unusual and valued coastal components include the spits at Chanonry Point, Fort George, and Whiteness, and the headlands of the Cromarty Sutors;<br>• Extensive areas recognised as ecologically important through several national and international ecological designations<br>• Time depth is indicated by the presence of Rosemarkie and Cromarty Areas, Chanonry Point Lighthouse, Fort George, and remains of WWI and WWII coastal defences;<br>• It is likely to be generally perceived by most people as unusually scenic and tranquil.<br>• Opportunities for recreation include dolphin spotting at Chanonry Point, Fortrose and Rosemarkie Golf Course, Fort George visitor centre, South Sutor View Point, Rosemarkie beachfront, Secret Beach and the Core Path network<br><br>High Susceptibility<br><br>• Presence of distinctive characteristics which would be vulnerable to the types of changes proposed;<br>• The type of development proposed is largely absent from the baseline conditions, the exception being views of similar development at Invergordon and Nigg, west of the Sutors of Cromarty;<br>• Simple, distinct, and uniform landscape;<br>• Visually open landscape with an absence of a strong landscape framework and low levels of tree cover, with the exception of Carse Wood;<br>• Generally free of built development and where there is built development, it is not visually prominent (with the exception of Chanonry lighthouse); and<br>• Absence of non-domestic large scale or tall buildings and built structures. |
| Representative viewpoints | | |
| 1 Easter / Wester Bog | High | Residents take an interest in the view around them and have prolonged viewing opportunities. |
| 2 Ardersier Cemetery | High | Cemetery visitors take an interest in the views around the cemetery |

| Receptor | Sensitivity | Reasoning |
|---|---|---|
| 3 B9039 Old Military Road west of Ardersier | Medium | The focus of vehicular drivers is on the road, but passengers take an interest in the views along this coastal road when travelling through the area. |
| 4 Fort George – north east bastion | High | Fort George visitors take an interest in the views around the fort. |
| 5 Chanonry Point | High | Chanonry point visitors take an interest in the view across the firth |
| 6 Rosemarkie beachfront | High | Rosemarkie beachfront visitors take an interest in the view across the firth |
| 7 Headland north of Rosemarkie | High | Residents take an interest in the view south across the firth |
| 8 Learnie Red Rocks | High | Cyclists following Sustrans National Cycle Route 1 take an interest in the views from the cycle route |
| 9 Hilton of Delnies / The Secret Beach | High | Hilton of Delnies / The Secret Beach visitors take an interest in the views across the firth and inland landscape. |
| 10 Nairn Beach | High | Nairn beach visitors take an interest in the views across the firth and along the shoreline. |
| 11 A96 at Delnies | Medium | The focus of vehicular drivers is on the road, but passengers take an interest in the views from the A96 when travelling through the area |
| 12 Rail crossing near Flemington | Medium | The focus of vehicular drivers is on the road, but passengers take an interest in the views from Old Military Road when travelling through the area. |
| 13 B9090 Near Royal Brackla Distillery | Medium | The focus of vehicular drivers is on the road, but passengers take an interest in the views from B9090 when travelling through the area. |
| 14 A96 layby near Culblair | Medium | The focus of vehicular drivers is on the road, but passengers take an interest in the views from A96 when travelling through the area. |
| 15 Culloden battlefield | High | Culloden Battlefield and Visitor Centre visitors take an interest in the view from the centre |
| 16 Avoch | High | Residents are interested in the view across the water and have prolonged viewing opportunities. |
| 17 Sutors of Cromarty (South Sutor) | High | Sutors Of Cromarty (South Sutor) visitors take an interest in the view from the South Sutor. |
| 18 Findhorn | High | Users of the Moray Coast Trail take an interest in the view along the trail. |
| 19 Burghead visitor centre | High | Burghead Visitor Centre visitors take an interest in the view across the Moray Firth |
| 20 A9 south of Inverness | Medium | The focus of vehicular drivers is on the road, but passengers take an interest in the views from A9 when travelling through the area. |
| 21 Kessock Bridge Cycleway | High | Cyclists take an interest in the views from the cycle route |

| Receptor | Sensitivity | Reasoning |
|---|---|---|
| 22 Aultvaich | High | Residents take an interest in the view around them and have prolonged viewing opportunities. |
| 23 Pitmaduthy | High | Residents take an interest in the view around them and have prolonged viewing opportunities. |
| 24 Balintore | High | Balintore seafront visitors take an interest in the view across the Moray Firth |

### 7.5.2 Construction

Key construction stage impacts of the proposed development on landscape, seascape and visual receptors would include:

- The removal of woodland; and
- The effect on character and views of construction activity associated with the permanent port infrastructure.

### 7.5.3 Operation

Key operational stage impacts of the proposed development on landscape, seascape and visual receptors would include:

- The effect on character and views of the proposed permanent port infrastructure over a wider area including the extended quayside and permanent buildings; and
- The effect on character and views of the activities likely to take place across the extended port including the presence of stored components; partly and fully assembled floating off-shore wind turbines; and associated cranes and craft.

The transient presence of fully assembled floating off-shore wind turbines prior to tow-out would principally be associated with summer months.

## 7.6 MITIGATION AND ENHANCEMENT

### 7.6.1 Embedded mitigation

The design of the proposed development has been an iterative process. The environment team has worked in close collaboration with the infrastructure design team to avoid or reduce environmental impacts through the proposed development design. This is referred to as embedded mitigation (or design interventions). The principles of the design and mitigation hierarchy outlined in EIAR Chapter 2 (Methodology) have been followed. The first principle being to avoid potential adverse effects, if at all practicable, before seeking to minimise or mitigate for any unavoidable impacts. Embedded mitigation for the proposed development is reported in EIAR Chapter 3 (Project Description) which also includes a description of the design alternatives that have been considered, including the environmental factors which have influenced the decision-making. Mitigation measures will seek to reduce impacts during both construction and operation phases. Any effects which cannot be mitigated or reduced are referred to as residual effects.

Embedded landscape and visual mitigation has included the retention of a buffer of existing woodland cover around the south western edges of the proposed extension. This will provide visual containment of the site at ground level in local views from adjacent areas.

### 7.6.2 Mitigation

Mitigation is included in the Outline Construction Environmental Management Document (CEMD). The Outline CEMD will be developed into the Construction Environmental Management Plan (CEMP) for implementation during construction. Further information on the Outline CEMD is provided within EIAR Chapter 3 (Project Description). EIAR Chapter 15 (Schedule of Mitigation and Enhancements) provides a summary of the mitigations identified within this EIAR.

A suitably qualified Environmental Clerk of Works (EnvCoW) will monitor as appropriate the construction works to ensure that the CEMP and associated mitigation measures are being implemented effectively.

### 7.6.3 Construction Mitigation Measures

This section summarises the mitigation required during the construction of the proposed development. Unless stated all mitigation is considered to be embedded as it follows best practice measures and/or is required to achieve compliance with legislation. Mitigation measures of relevance during construction are included within the Outline CEMD and EIAR Chapter 15 (Schedule of Mitigation and Enhancements).

Construction will be carried out using industry best practice and in accordance with implementation of the requirements identified in the Outline CEMD. Construction information is presented in EIAR Chapter 3 (Project Description).

### 7.6.4 Operation Mitigation Measures

Due to the nature of the proposed development and the large-scale activities likely to take place over the extended port, no operational phase landscape, seascape or visual mitigation measures are proposed.

### 7.6.5 Enhancements

No landscape, seascape or visual enhancement measures are proposed.

### 7.6.6 Monitoring

No landscape, seascape or visual monitoring is proposed.

## 7.7 ASSESSMENT OF SIGNIFICANT EFFECTS

This section assesses the level and significance of the residual effects of the proposed development on landscape, seascape and visual receptors during both construction and operation. The residual effects are presented below.

The assessment does not at this stage take account of the changed baseline implied by the extant consent. Furthermore, at this stage, the operational stage assessment focuses on the ‘worst case’ landscape, seascape and visual conditions more likely to be associated with the transient port related activities likely to be prevalent over summer months.

### 7.7.1 Construction

EIAR Chapter 3 (Project Description) provides information about the activities to be undertaken during the construction phase of the proposed development. Construction activities with the potential to give rise

to landscape, seascape and visual effects comprise the removal of woodland; and the effect on character and views of construction activity associated with the permanent port infrastructure, particularly buildings.

Construction activities would take place within the existing baseline context of the on-going construction activities associated with the extant consent. The proposed development construction activities would be comparable to the existing construction activities in terms of scale and type, but the proposed site clearance would result in a localised extension to the extent of the construction activities taking place within the local area. Within this additional extent, the landscape alterations due to construction would constitute tree loss and based on the indicative proposals, the construction of buildings, storage areas and assembly areas.

Based on the above, the magnitude of change experienced by each of landscape, seascape or visual receptors identified for assessment would be either “low” or “no change” and the level of effect would be no greater than minor and therefore not significant. In conclusion, none of the landscape, seascape or visual receptors identified for assessment are likely to experience significant effects during construction.

### 7.7.2 Operation

EIAR Chapter 3 (Project Description) provides information about the proposed development. The operational stage assessment focuses on the ‘worst case’ landscape, seascape and visual conditions most likely to be associated with the transient port related activities which are likely to be prevalent over summer months. Key operational stage impacts of the proposed development on landscape, seascape and visual receptors would include the effect on character and views of the proposed permanent port infrastructure over a wider area including the extended quayside and permanent buildings; and the effect on character and views of the activities likely to take place across the extended port including the presence of stored components; partly and fully assembled floating off-shore wind turbines (before being towed out to sea); and associated cranes and craft. As an indication of potential approximate heights, the taller of the proposed elements comprise (based on indicative layout plan in EIAR Chapter 3 (Project Description)):

- Buildings
- Jackets at 110m
- Crane up to 250m (in tallest configuration)
- Fully assembled offshore wind turbine.

#### Landscape and Seascape Effects

**Table 7.4: Summary of assessment of significance of landscape and seascape effects during operation**

| Receptor | Sensitivity | Potential impact during operation | Magnitude | Residual effect |
|---|---|---|---|---|
| LCT 281 Beaches, Dunes and Links – Moray & Nairn | High | There would be a direct alteration to areas of LCT 281 within the site boundary. The extent of landscape features lost or altered would be limited but the height of the proposed buildings, stored components and under-assembly turbines would be at substantial variance to the scale of the existing LCT 281 landscape. Local to the site, the proposed development would become a defining feature of LCT 281. East along the coast, at greater distances, the proposed development would be visible and continue | High | Major adverse (Significant) |

| Receptor | Sensitivity | Potential impact during operation | Magnitude | Residual effect |
|---|---|---|---|---|
| | | the influence perceptions of landscape character, but to a lesser degree. | | |
| LCT 284 Coastal Farmlands – Moray & Nairn | Medium | There would be a direct alteration to areas of LCT 284 within the site boundary, with the removal of existing trees and introduction of buildings and storage and assembly areas. The extent of alteration would be limited but the height of the proposed buildings, stored turbine components and under-assembly turbines would be at substantial variance to the scale of the LCT 284 landscape. The proposed development would be a contributing feature in the landscape and would alter perceptions of landscape character. The degree of influence on perceptions of landscape character would be reduced at greater distances to a point where it would become a generally unnoticed secondary feature. | Medium | Moderate adverse (Significant) |
| LCT 228 Rolling Farmland and Woodland | Medium | LCT 228 is located outside the site boundary, and the proposed development would not have direct impacts on LCT 228. LCT 228 is relatively well-wooded, and this would reduce the extent over which the proposed development would be visible and influence perceptions of landscape character. Where visible, the proposed development would not affect understanding of the key defining characteristics of LCT 228. | Low | Minor adverse (Not significant) |
| LCT 343 Coastal Shelf | High | LCT 343 is located outside the site boundary, and the proposed development would not have direct impacts on LCT 343. LCT 343 is relatively flat and featureless and open views across the firth of the opposite shoreline are a key characteristic. There would be open direct views of the proposed development from LCT 343. The proposed development would constitute a substantial alteration to the setting of LCT 343 and would become a defining feature of the setting, forming a focal point on the horizon as viewed from LCT 343. | High | Major adverse (Significant) |
| LCT 345 Farmed and Forested Slopes – Ross & Cromarty | Medium | LCT 345 is located outside the site boundary, and the proposed development would not have direct impacts on LCT 345. The proposed development would be visible from open south-facing slopes of LCT 345. The proposed development would be a notable alteration to the setting, at odds with existing landscape features, and in proximity of the coast would become a focal point in views from LCT 345. Away from the coastline, | Medium | Moderate adverse (Significant) |

| Receptor | Sensitivity | Potential impact during operation | Magnitude | Residual effect |
|---|---|---|---|---|
| | | levels of woodland cover increase and with this, levels of localised screening increase. The degree of influence on perceptions of landscape character would be reduced at greater distances to a point where the proposed development would become a generally unnoticed secondary feature. | | |
| LCT 346 Open Farmed Slopes | Medium | LCT 346 is located outside the site boundary, and the proposed development would not have direct impacts on LCT 346. The proposed development would be visible from the open eastern extents of LCT 346 and screened from view elsewhere in LCT 346 by vegetation and topography. Where visible, the proposed development would be a notable alteration to the southern setting of LCT 346, at odds with existing landscape features in the southern setting of LCT 346. The proposed development would be consistent in character with similar developments in the setting north of LCT 346, such as Invergordon and Nigg, albeit larger in scale. | Low | Minor adverse (Not significant) |
| LCT 348 Cliffs and Rocky Coasts – Ross & Cromarty | High | LCT 348 is located outside the site boundary, and the proposed development would not have direct impacts on LCT 348. LCT 348 comprises steep, south and southeast facing cliffs and open views across the firth are a key characteristic of LCT 348. There would be open direct views of the proposed development from LCT 348. Within proximity of the site, on the Black Isle the proposed development would constitute a notable alteration to the setting of LCT 348, forming a focal point on opposite shoreline. North of the Sutors of Cromarty, the alteration would continue to be notable but the degree of influence on perceptions of landscape character would be reduced. | Medium | Moderate adverse (Significant) |
| Area 6 Moray Firth Type 4 Outer Firth | High | There would be a direct alteration to the stretch of Type 4 within the site boundary. The extent of Type 4 coastline altered would be limited but the height of the proposed buildings, stored components and under-assembly turbines would be at substantial variance to the scale of the existing Type 4 coastline features within this area of seascape. Local to the site, the proposed development would become a defining feature of the Type 4 seascape character. At greater distances, the proposed development would be visible and continue | High | Major adverse (Significant) |

| Receptor | Sensitivity | Potential impact during operation | Magnitude | Residual effect |
|---|---|---|---|---|
| | | to influence perceptions of seascape character, but to a lesser degree. | | |
| Area 6 Mory Firth Type 11 Less Developed Inner Firths | High | Type 11 is located outside the site boundary, and the proposed development would not have direct impacts on Type 11. The site would be clearly visible from Type 11 as far west as Kessock Bridge. The proposed development would constitute a notable alteration to the setting of Type 11 and would form a focal point on the Moray Firth shoreline. At greater distances, the proposed development would be visible and continue to influence perceptions of seascape character, but to a lesser degree. | Medium | Moderate adverse (Significant) |
| Sutors of Cromarty, Rosemarkie and Fort George Local Landscape Area (Special Landscape Area) | High | There would be a direct alteration to the area of the LLA designation within the site boundary, with the removal of existing trees and introduction of buildings and storage and assembly areas. The extent of alteration would be limited but the height of the proposed buildings, stored turbine components and under-assembly turbines would be at substantial variance to the scale of the LLA landscape and seascape. The proposed development would be a defining feature of the LLA and would alter perceptions of the landscape and seascape within the designation. | High | Major adverse (Significant) |

### Visual effects

The visual effects of the proposed development at each of the representative viewpoints are set out in detail in EIAR Appendix 7.4. The detailed assessments of representative viewpoints contained in EIAR Appendix 7.4 are supported by visualisations. These are provided in EIAR Appendix 7.5 as Figures 7.5.1a to 7.5.24e. Table 7.5 summarises the assessment of significance of effect of the proposed development upon and each representative viewpoint during operation. This is used to support a more generalised discussion around significance of effects for different types of visual receptors (after the table).

**Table 7.5: Summary of assessment of significance of visual effect during operation**

| Representative Viewpoint | Sensitivity | Potential impact during operation | Residual effect |
|---|---|---|---|
| 1 Easter / Wester Bog | High | High | Major adverse (Significant) |
| 2 Ardersier Cemetery | High | High | Major adverse (Significant) |
| 3 B9039 Old Military Road west of Ardersier | Medium | Medium | Moderate adverse (Significant) |

| Representative Viewpoint | Sensitivity | Potential impact during operation | Residual effect |
|---|---|---|---|
| 4 Fort George – north east bastion | High | High | Major adverse (Significant) |
| 5 Chanonry Point | High | High | Major adverse (Significant) |
| 6 Rosemarkie beachfront | High | High | Major adverse (Significant) |
| 7 Headland north of Rosemarkie | High | High | Major adverse (Significant) |
| 8 Learnie Red Rocks | High | High | Major adverse (Significant) |
| 9 Hilton of Delnies / The Secret Beach | High | High | Major adverse (Significant) |
| 10 Nairn Beach | High | High | Major adverse (Significant) |
| 11 A96 at Delnies | Medium | Low | Minor adverse (Not significant) |
| 12 Rail crossing near Flemington | Medium | Medium | Moderate adverse (Significant) |
| 13 B9090 Near Royal Brackla Distillery | Medium | Low | Minor adverse (Not significant) |
| 14 A96 layby near Culblair | Medium | Medium | Moderate adverse (Significant) |
| 15 Culloden battlefield | High | No change | Negligible (Not significant) |
| 16 Avoch | High | Medium | Moderate adverse (Significant) |
| 17 Sutors of Cromarty (South Sutor) | High | Medium | Moderate adverse (Significant) |
| 18 Findhorn | High | No change | Negligible (Not significant) |
| 19 Burghead visitor centre | High | Negligible | Negligible (Not significant) |
| 20 A9 south of Inverness | Medium | No change | Negligible (Not significant) |

| Representative Viewpoint | Sensitivity | Potential impact during operation | Residual effect |
|---|---|---|---|
| 21 Kessock Bridge Cycleway | High | Medium | Moderate adverse (Significant) |
| 22 Aultvaich | High | Negligible | Negligible (Not significant) |
| 23 Pitmaduthy | High | No change | Negligible (Not significant) |
| 24 Balintore | High | Medium | Moderate adverse (Significant) |

Residential visual receptors

Whilst the plantation woodlands between the scattered residential locations to the south of the site and the proposed development would provide a degree of screening, it is likely some residential locations close to the site would experience Major adverse (Significant) effects due to the height of the proposed development and the degree to which the under-assembly turbines and stored jackets would be prominent features occupying a large extent of the skyline above the plantation woodlands. Further south, it is likely effects would become Moderate adverse (Significant), as the proposed development becomes part of a wider landscape setting and remaining Significant until such a point layers of intervening vegetation and the effects of distance reduced the magnitude of change to Low and Not significant.

Major adverse (Significant) effects would be experienced by residents in coastal settlements such as those at Rosemarkie, on the Black Isle, with open views south and east over the Moray Firth and those at Nairn with open views west towards Ardersier Port. The level of effect would reduce with distance, but it is likely the visual effects experienced by residents within coastal settlements would remain Moderate adverse (Significant) until such a point where the proposed development would no longer be a notable feature on the horizon across the firth e.g. north of Balintore and east of Findhorn.

Whilst the ZTV indicated potential visibility inland, west of the Moray and Beauly firths and north of Cromarty Firth, significant effects are unlikely due to the distances between the settlements and the effects of intervening vegetation. Where the proposed development would be visible, it would be a largely unnoticed and barely perceptible feature in the general view from these locations.

Visitor locations and recreational routes visual receptors

Significant effects would be experienced by visual receptors within proximity of the site and at coastal locations with open views across the Moray Firth towards Ardersier Port. Major adverse effects would be experienced at locations such as the Secret Beach, east of the site, and Chanonry Point, west of the site due to the large scale industrial nature of the proposed development which would be inconsistent with the baseline. Ardersier Port is visible in the baseline, but the proposed development would introduce features with greater prominence and presence than those present within the baseline conditions.

Moderate adverse (Significant) effects would be likely where the proposed development would reduce in visual prominence to a notable feature as viewed from visitor locations and recreational routes. This would likely occur where the proposed development would appear to be set into a back drop of hills and no longer constitutes a prominent focal point in the view.

The ZTV indicated visibility for recreational receptors at greater distances but due to the screening effects of vegetation and topography it is likely the visual impact would be low and therefore not significant. The ZTV also indicated potential visibility at inland visitor locations, but vegetation would likely screen visibility of reduce visibility to a point where effects would be not significant.

Roads and rail visual receptors
Moderate adverse (Significant) effects would be experienced by users of routes through scenic areas within proximity of the site, with views towards the site and visibility of the proposed development. The large scale, vertical nature of the proposed development means it is likely there would be clear visibility of the proposed development above intervening vegetation. At greater distances, where the proposed development would be visible from the road and rail network, it would be more visually proportionate to local landscape features and much less visually prominent and vegetation local to the visual receptors would be more effective at screening the proposed development from view.

## 7.8 STATEMENT OF SIGNIFICANCE

### 7.8.1 Summary of significant effects

The preceding assessments identify significant landscape, seascape and visual effects as judged:

- Against the Summer 2025 landscape, seascape and visual baseline in the absence of the landscape, seascape and visual implications of the extant consent; and
- With a focus on the 'worst case' conditions likely to be associated with full scale operations of the extended port in the most active summer months.

### 7.8.2 The extant consent

The significance of the landscape, seascape and visual effects specifically associated with the proposed extension of the port over and above those effects already implied by the extant consent would be less.

The extant consent allows for large scale activities of a similar nature across much of the site. In the absence of any cap on height, and although not reasonably foreseeable when the earlier application was consented, the extant consent can be interpreted as already permitting the assembly of tall floating off-shore wind turbines, subject to a requirement to consult with Highlands and Islands Airports Ltd. As the extant planning permission stands, there is no planning restriction on any height or any activity that is directly related to the application description. Whilst this new application includes the extension land, it is anticipated that assembly (or any significant components of the proposed use involving significant structures, components or cranes at height) would only take place either at the quayside or the adjacent land within the extant port boundary and where there are no planning restrictions on heights or use of equipment, other than that imposed by Highlands and Islands Airports Ltd.

The development and port activities permitted under the extant consent mean that the additional landscape, seascape and visual effects of extending the site would **not be significant**.

### 7.8.3 The transient and seasonal nature of port activities

The significance of the landscape, seascape and visual effects specifically associated with the proposed extension of the port over and above those effects already implied by the extant consent would be less during periods of low port activity, especially during winter months. Part and fully assembled turbines would not likely be present during winter months.

Turbine assembly to the maximum heights is only expected to be taking place for six to eight months each year. It is possible that bases may have tower sections erected in February which may be as high as 168m, but full turbine assembly is not expected to commence until March/April. During the 'winter' months of October to February/March, turbine components are expected to be on site, bases and fabrication thereof, individual tower sections, nacelles blade etc.

The ‘conveyor belt’ transient nature of the proposals and that elements would only be assembled for the absolute minimal amount of time before being moved out to sea is an important consideration in assessing any impact.

A maximum of three turbines will be at quayside, and these will be in various stages of the integration process. At any one time, it is anticipated that two turbines could be fully integrated (i.e. with blades fitted); the other being partially assembled ahead of blades being fitted in a 'conveyor belt' type chain.

The fully integrated turbines would be placed into the harbour, or integrated at quayside, after which they would be towed from the facility to the deployment site: current maximum deployment assumption is one turbine towed every 10 days.

Cold testing may take place at quayside; blades are expected to rotate at a speed of no more than 1 rpm. No ‘hot’ testing will take place where blades rotate much faster. It is envisaged that the turbine and the blades will be fixed in position for the tow-out process through the harbour channel (not rotating).
The transient and seasonal nature of the reasonably foreseeable activities likely to be associated with the use of the extended port further supports the overall conclusion that the additional landscape, seascape and visual effects of extending the site would **not be significant**.

## 7.9 CUMULATIVE EFFECTS

### 7.9.1 Introduction and approach

This section of the EIAR considers the potential for the proposed development to give rise to cumulative landscape, seascape and visual effects in conjunction with other proposed developments in the vicinity.

Consideration of the potential for significant cumulative landscape, seascape and visual effects begins from the following starting point:

- The reasonably foreseeable port activities likely to be associated with the proposed development have been assessed as likely to give rise to significant (non-cumulative) landscape, seascape and visual effects when judged against the Summer 2025 baseline, but
- The source of the significant landscape, seascape and visual effects is principally the storage of off-shore wind turbine jackets and the assembly of off-shore floating wind turbines which would have only a transient presence on the site; and

The effects are unlikely to be regarded as significant once the permitted activities associated with the extant consent are taken into account.

The purpose of this cumulative assessment is therefore principally to consider two things:

- Whether the transient presence of off-shore wind farm components and turbine assembly could give rise to additional significant cumulative effects with other surrounding developments, possibly over a considerable distance (noting that non-cumulative effects have already been identified as significant); and
- Whether the permanent port infrastructure (including likely buildings) could give rise to significant cumulative effects with other surrounding development, more likely at shorter distances.

Proportionate cumulative assessment (including sequential assessment) requires careful identification of those other developments that have the potential to give rise to potentially significant cumulative effects. These can fall into two broad categories:

- Developments of a similar type over a potentially wide area (for example port or energy related developments across a wide study area); or

- Accumulations of multiple developments of different types within a particular focused location.

This cumulative assessment of the proposed development considers both categories. Because reasonably foreseeable activities likely to be associated with the proposed development include the assembly of wind turbines of a considerable height the assessment considers whether there could be cumulative interaction with wind energy or port related development over a wider area. At the same time, however, it also considers whether different types of development (such as residential) at a more local level might be the source of cumulative effects.

### 7.9.2 Study area

Consideration of the potential for different aspects of the proposed development to give rise to potentially significant cumulative effects with surrounding development over different distances has led to a tiered approach to the determination of a study area and the sifting of developments considered relevant for inclusion in the cumulative assessment.

<u>The wider context</u>

It is reasonably foreseeable that the proposed development could allow for the assembly on site of off-shore wind turbines. But this 'worst case' circumstance associated with port-related activities would be transient with fully assembled turbines being towed out to see within days of their complete assembly. Nevertheless, the theoretical potential for cumulative interaction between this transient presence of assembled turbines and both on- and off-shore wind energy developments in the surrounding area is acknowledged.

THC maintains information relating to wind energy development which maps existing and proposed wind energy development at all scales[14]. This mapping shows that large scale wind energy development is wholly associated with mountainous areas to the north, west and south of the site at distances in excess of 15 km.

Given the transient nature of the reasonably foreseeable port related activities associated with the proposed development it is judged that there is no potential for significant cumulative effects with wind energy developments (either on- or off-shore) in excess of 15 km from the site. This conclusion is further supported by the ZTV of the proposed development which shows the limited potential for visibility of the proposed development from these surrounding mountainous areas closer to on shore wind developments.

A detailed cumulative assessment including cumulative ZTVs and visualisations of the proposed development and consented wind energy development at distances in excess of 15 km has therefore been judged not to be necessary. Any cumulative effects with proposed on- and off-shore wind energy developments would not be significant.

<u>Cumulative development within a 15 km radius study area</u>

Figure 14.1 in EIAR Chapter 14 (Cumulative Effects) identifies proposed developments within 15 km of the proposed development. Consideration of a 15 km radius study area:

- Reflects the focus of the non-cumulative landscape, seascape and visual assessment including where significant effects have been identified against the Summer 2025 baseline; and
- Specifically includes the similar proposed port development at Invergordon which lies just below 15 km from the site.

Proposed developments across this 15 km radius study area include residential, infrastructure, port and other development and range in scale from the Invergordon Service Base Phase 5 Development that

[14] Highland Council (2024.) Highland Special Landscape Areas Online Map Viewer, https://highland.maps.arcgis.com/apps/webappviewer/index.html?id=5ec04b13a9b049f798cadbd5055f1787 (Accessed 02/10/2025)

would be associated with off-shore wind turbine assembly of a comparable scale to the activities likely to be associated with the proposed development, to smaller scale developments of a lower potential height with less potential to cumulatively interact with the proposed development due either to their distance from it or dissimilarity to it.

EIAR Appendix 14.2 provides a detailed schedule of the proposed developments within 15 km of the proposed development. With reference to the ZTV of the proposed development, a sieving exercise has been undertaken to identify which of these developments has the potential to cumulatively interact with the proposed development in landscape, seascape and visual terms. For example, port related activities around Nigg and Cromarty (4a, 4b, 4c and 4d) may have the potential to cumulatively interact with the proposed development over longer distances due to their possible scale and similarity. Whereas residential developments are more likely to have the potential to cumulatively interact only where they are contiguous with or close to the site (for example, 1b). Small scale residential developments at greater distances have no potential to give rise to cumulative effects with the proposed development (for example, 1h in Invergordon and 1g on the edge of Inverness).

### 7.9.3 Relevant projects

The sieving exercise of developments within 15 km of the proposed development identified the following as requiring further consideration to determine the potential to give rise to significant cumulative landscape, seascape or visual effects:

- 1b - Land To North Of A96 Extending From Whiteness Access Road To The Common Good Land Nairn: Mixed use development of 300 houses; tourism and heritage, equestrian and ecological centres; hotel and conference facilities; championship golf course, clubhouse and golf academy; community woodland and country park with associated infrastructure (henceforth referred to as 'Mixed Use Development at Delnies') – although of relatively limited height this proposed development extends over a wide area and its boundaries are contiguous with the site of the proposed development.
- 4e - Invergordon Service Base Phase 5 Development (henceforth referred to as 'Invergordon Service Base') – although at a distance of almost 15 km, port related activities at this site are likely to be similar in nature to the proposed development and would likely include the assembly of off-shore wind turbines of a similar size to those anticipated at the proposed development.

These two developments can be considered separately as there is limited potential for three-way interaction with the proposed development due to their difference in distance and development type.

In undertaking this sieving exercise the cluster of proposed, and in some cases large scale, developments in the vicinity of Inverness Airport was noted. These include large scale residential/new town development (1a) and business park development proposals. Following careful consideration, it was judged that this cluster of proposed developments in the vicinity of the airport has very limited potential to cumulatively interact with the proposed development, including in terms of potential sequential visual effects along key routes such as the A96, because the height and type of development here markedly differs from the proposed development and higher ground to the north east of Ardersier village provides clear perceived separation of the two localities.

Similarly, a proposed energy related development close to Ardersier village (2e) is of a sufficiently small scale (an 11kV overhead line over a relatively short distance) to cumulatively interact with the proposed development to any significant degree.

### 7.9.4 Cumulative landscape and seascape effects

<u>Interaction with Mixed Use Development at Delnies</u>

This development and the proposed development would be contiguous with one another within the same landscape and seascape character context (Landscape Type 281 Beaches, Dunes and Links – Moray and Nairn and Seascape Coastal Type 4 – Outer Firth). Their contrasting typologies mean that their effects on this landscape and seascape character context would be distinctly different. There would be no significant cumulative landscape or seascape interaction or effect. The presence of the proposed mixed use development at Delnies would not significantly alter the effects of the proposed development.

Both developments would extend to areas within the Sutors of Cromarty, Rosemarkie and Fort George Local Landscape Area. For the reasons given above, there would be no cumulative effect on this designation. The effect of the proposed development on this designation would not significantly differ were this development fully implemented as currently proposed.

Interaction with Invergordon Service Base

Although similar in nature, this development and the proposed development would be located in distinctly different landscape and seascape contexts, with this development lying within the enclosed Cromarty Firth (defined in the seascape assessment as a Developed Inner Firth). Furthermore, the ZTV of the proposed development shows that potential visibility of the proposed development from the vicinity of Invergordon would be very limited in terms of location and extent but also limited to only the tops of the taller transient structures likely to be associated with the extended port activities. This is largely due to the shielding effect that the reasonably high cliffs along the northern side of the Moray Firth would afford meaning that visibility of the proposed development from north of Cromarty Firth (where the development at Invergordon might be more prominent) would be only occasional and limited to glimpses of the upper blades of part-assembled turbines at a great distance over intervening landforms. Co-visibility would be infrequent in intervening areas on the Black Isle and in different directions with each development exerting an effect on the perception of different landscapes and seascapes. There would be no significant cumulative landscape or seascape effect. The presence of the proposed Invergordon Service Base would not alter the effects of the proposed development.

The Invergordon Service Base would not extend to areas within the Sutors of Cromarty, Rosemarkie and Fort George Local Landscape Area. Although there would be some occasions of co-visibility from within the designation, for the reasons given above, there would be no significant cumulative effect on this designation. The effect of the proposed development on this designation would not significantly differ were the development at Invergordon also proceed.

### 7.9.5 Cumulative visual effects

Interaction with Mixed Use Development at Delnies

Visibility of both developments would likely be limited to locations such as those at representative viewpoints 9: Hilton of Delnies / The Secret Beach, 10: Nairn Beach and 11: A96 at Delnies. Visibility of both would also theoretically be possible in long distance views south across the Moray Firth from locations such as representative viewpoints 8: Learnie Red Rocks, 17: Sutors of Cromarty and 24: Balintore but the distances involved, and with the proposed development in the foreground, mean that the addition of the mixed use at Delnies would not alter the visual effects of the proposed development.

The difference in development type and scale means that there would not be significant cumulative visual effects. The visual effects of the proposed development would not significantly differ were this development fully implemented as currently proposed.

Interaction with Invergordon Service Base

The potential opportunities for visibility of both the proposed development and the proposed development at Invergordon are limited by their distance from one another (approximately 15 km), the intervening high ground along the northern coast of the Moray Firth and along the Black Isle, and the transient nature of

the turbine assembly activities anticipated at both. Potential visibility of port related activities at both would principally arise from locations such as representative viewpoints 9: Hilton of Delnies / The Secret Beach, 10: Nairn Beach, 18: Findhorn and 19: Burghead along the southern coastline of the Moray Firth. However, visibility of the proposed development at Invergordon from such locations would be extremely limited due to the intervening high ground along the northern coastline and at the Black Isle. This, combined with distance, means that only the transient presence of the upper sections and blade tips of part-assembled turbines would be glimpsed in very clear conditions over a considerable distance over the intervening landform. The additional visual effect of this combined visibility, assuming that the part-assembly of turbines coincided at the same time at both sites, would be negligible over and above the appearance of the proposed development.

The limited extent and degree of potential co-visibility means that there would not be significant cumulative visual effects. The visual effects of the proposed development would not significantly differ were this development implemented and the transient presence of part-assembled turbines temporally coincide.

### 7.9.6 Sequential visual effects

Sequential interaction with Mixed Use Development at Delnies

The contiguous sites of these two developments mean that there is no potential for significant additional sequential visual effects over and above the cumulative visual effects considered above. There would be no journey linking the two developments.

Sequential interaction with Invergordon Service Base

The physical separation of the sites of these two developments mean that there is no potential for significant additional sequential visual effects over and above the cumulative visual effects considered above. There would be no specific route or journey linking the two developments. This is underlined by the complex nature of the intervening coastline with the closest crossing of the Moray Firth some 15 km to the south west of the proposed development followed by the need to pass the western extremity of the Cromarty Firth. Any theoretical route or journey linking the two would be too lengthy to generate a meaningful visual association and insufficiently frequent for there to be any distinct and additional sequential visual effect on any visual receptor.

### 7.9.7 Conclusion

No potentially significant cumulative landscape, seascape or visual effects with the proposed development have been identified. The non-cumulative landscape, seascape and visual effects of the proposed development identified in this EIAR would not be materially altered or increased as a consequence of any other known proposed development in the vicinity.

## 7.10 OVERALL CONCLUSION

The assessment of landscape, seascape and visual effects has been heavily influenced by the scope of the extant permissions, associated assessments and positive determinations by The Highland Council, and extant permitted development rights as conferred through the HRO.

The focus of the current application is the proposed extension area, but also requires incorporation of the previous assessments and the conclusions derived from these.

Taking into account the development and port activities permitted under the extant consent, the additional landscape, seascape and visual effects of extending the site would **not be significant,** either individually or cumulatively with other development.

# ARDERSIER PORT ENERGY TRANSITION FACILITY PORT EXTENSION

Haventus

November 2025

# Chapter 8 Historic Environment

# Ardersier Port Extension

| | |
|---|---|
| Revision Number | Final |
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| Version: | 1 |
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| Technical Reviewer | Paul Clark MCIfA |

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# 8. HISTORIC ENVIRONMENT

## 8.1 INTRODUCTION

This chapter presents information required by the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 and the Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 to be provided in the Environmental Impact Assessment Report (EIAR) to enable the identification and assessment of likely significant effects on the historic environment.

The approach to this assessment follows the methodology set out in the EIA Scoping Report (SCOP-0062) and is in accordance with the Scoping Opinion (25/00226/SCOP) produced by The Highland Council. EIAR Chapter 4 (Consultation) contains further information on how each of the matters raised in the Scoping Opinion have been addressed.

The overarching legislation, policy and guidance relating to the historic environment in Scotland and relevant to this assessment of the proposed development are presented in EIAR Appendix 8.1.

The assessment has been undertaken in accordance with the methodology as set out in Section 8.3 below and in EIAR Appendix 8.2 which includes the study area, data sources used and the assumptions and limitations of the assessment. EIAR Chapter 3 (Project Description) contains a detailed description of the proposed development. This chapter is supported by the following EIAR Appendices:

- EIAR Appendix 8.1: Legislation, Policy and Guidance, Desk-Based Assessment and Assessment of Effects
- EIAR Appendix 8.2: Historic Environment Assessment Methodology

## 8.2 CONSULTATION

Responses in relation to the statutory consultation undertaken are presented in EIAR Chapter 4 (Consultation).

### 8.2.1 Historic Environment Scotland (HES)

Consultation was undertaken with HES by email on 15th May 2025, 22nd May 2025, 02nd July 2025, 22nd July 2025 and 25th July 2025 to confirm which heritage assets within their interests should be subject to setting impact assessment. The assessment is based on the agreed list, and the photomontages and wireframe visualisations (EIAR Appendix 7.5: Figure 7.4 Figure 7.4 and Figures 7.5.1 to 7.2.24) used to support the assessment are based on the agreed list.

### 8.2.2 The Highland Council Historic Environment Team (HET)

Consultation was undertaken with the HET by email on 22nd May 2025 to confirm the approach to the historic environment assessment. To date (4th September 2025), no response has been received.

## 8.3 METHODOLOGY

This section provides a summary of the assessment methodology. Further detail is provided in EIAR Appendix 8.2.

The impacts identified as requiring consideration are listed in EIAR Appendix 8.2, Table 8.2/1. Information on the nature of the impact (i.e. temporary/permanent direct/indirect physical and setting) is also described.

The assessment covers all potential impacts identified through scoping, as well as any further potential impacts that have been highlighted as the assessment progressed. It should be noted that impacts are not necessarily relevant to all stages of the proposed development.

The assessment of potential effects on the historic environment has been undertaken using a structured methodology consistent with best practice and relevant guidance and is set out in EIAR Appendix 8.2. This approach considers both the nature and extent of potential impacts, including direct physical effects and changes to the setting of heritage assets. The approach to assessment is based on ORCA's bespoke methodology that draws on best practice and guidance set out in the scoping report and in line with the *Environmental Impact Assessment Handbook* (NatureScot and Historic Environment Scotland 2018[1]).

Two study areas have been used for this assessment. A 1km study area offset from the site boundary that considers heritage assets that could be directly (physically) impacted by the proposed development; and a study area based on the proposed development's Zone of Theoretical Visibility (ZTV) (as set out in EIAR Chapter 7: Landscape, Seascape and Visual) that considers potential setting impacts on those designated heritage assets that have been short-listed by ORCA and agreed in consultation with Historic Environment Scotland.

A set of topic-specific criteria has been developed to determine the value of heritage assets. These criteria are informed by statutory designations, professional judgement, and the asset's contribution to understanding the past. The value assigned to each asset is then considered alongside the predicted magnitude of impact resulting from the proposed development.

The magnitude of impact is assessed based on the scale, extent, and duration of change (short-term (temporary) and long-term (permanent), as well as the degree to which the asset's heritage value may be altered. While example criteria are used to guide this process, they are not applied mechanistically. Instead, professional judgement plays a central role in interpreting the likely effects, allowing for flexibility where the context or character of an asset warrants a nuanced approach.

The combination of asset value and impact magnitude informs the assessment of the overall consequence of effect. This consequence is then used to determine the significance of the effect as shown in Table 8.1, taking into account the anticipated effectiveness of embedded design and mitigation measures. The final assessment reflects the residual effect – i.e. the effect remaining after mitigation has been applied.

**Table 8.1: Assessment of significance of effect**

| Effect | Description | Significance of Effect |
|---|---|---|
| Positive | Positive – to be encouraged. | Significant |
| Major | Highly significant and requires immediate action. May be intolerable risk or significance. | Significant |
| Moderate | Significant – may require additional control measures and/or management where possible. | Not significant |
| Minor | Not significant – however may require some management to ensure it remains within acceptable levels. | Not significant |
| Negligible | Not significant | Not significant |

[1] Available online: https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=6ed33b65-9df1-4a2f-acbb-a8e800a592c0 [accessed 02/07/2025)

Effects assessed as having a major or moderate significance are considered ‘material’ or ‘likely to be material’ in the planning decision-making process. These are regarded as ‘significant’ for the purposes of the EIA Regulations.

The assessment of setting effects follows a consistent approach, evaluating how changes in the surrounding environment may influence the character, experience, or understanding of the heritage asset.

## 8.4 BASELINE CONDITIONS

### 8.4.1 Archaeological and historic background

The following is a brief outline of the archaeological and historic background of the 1km study area, and the wider environs of the study area.

A detailed summary of the archaeological and historic background is provided in EIAR Appendix 8.1, Annex 2, Section 5 and the locations of heritage assets within the 1km study area are shown on Figure 8.1, and designated assets subject to setting impact assessment are shown in Figure 8.2.

**Figure 8.1: Location of HER assets within 1km of the proposed development**

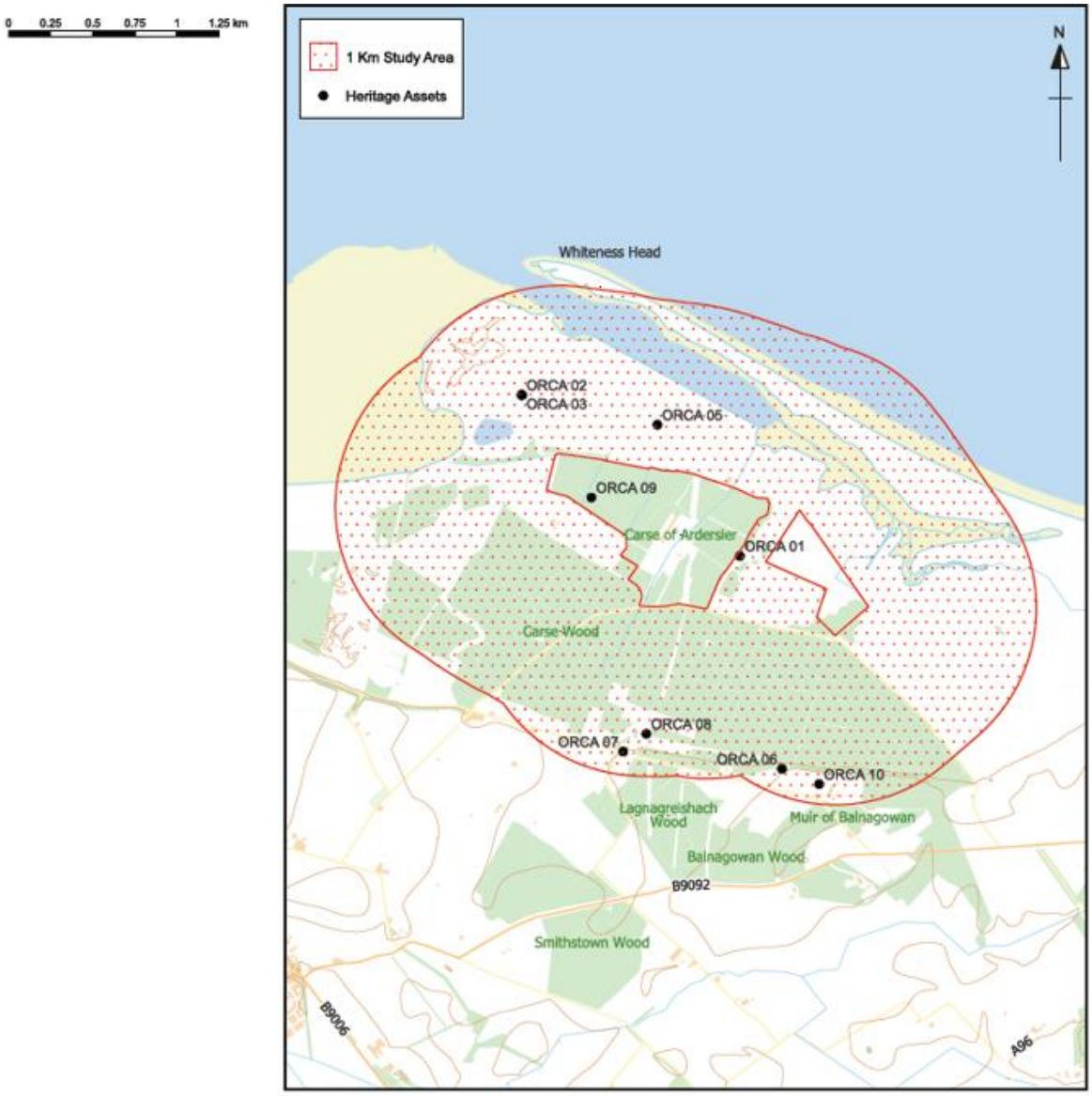
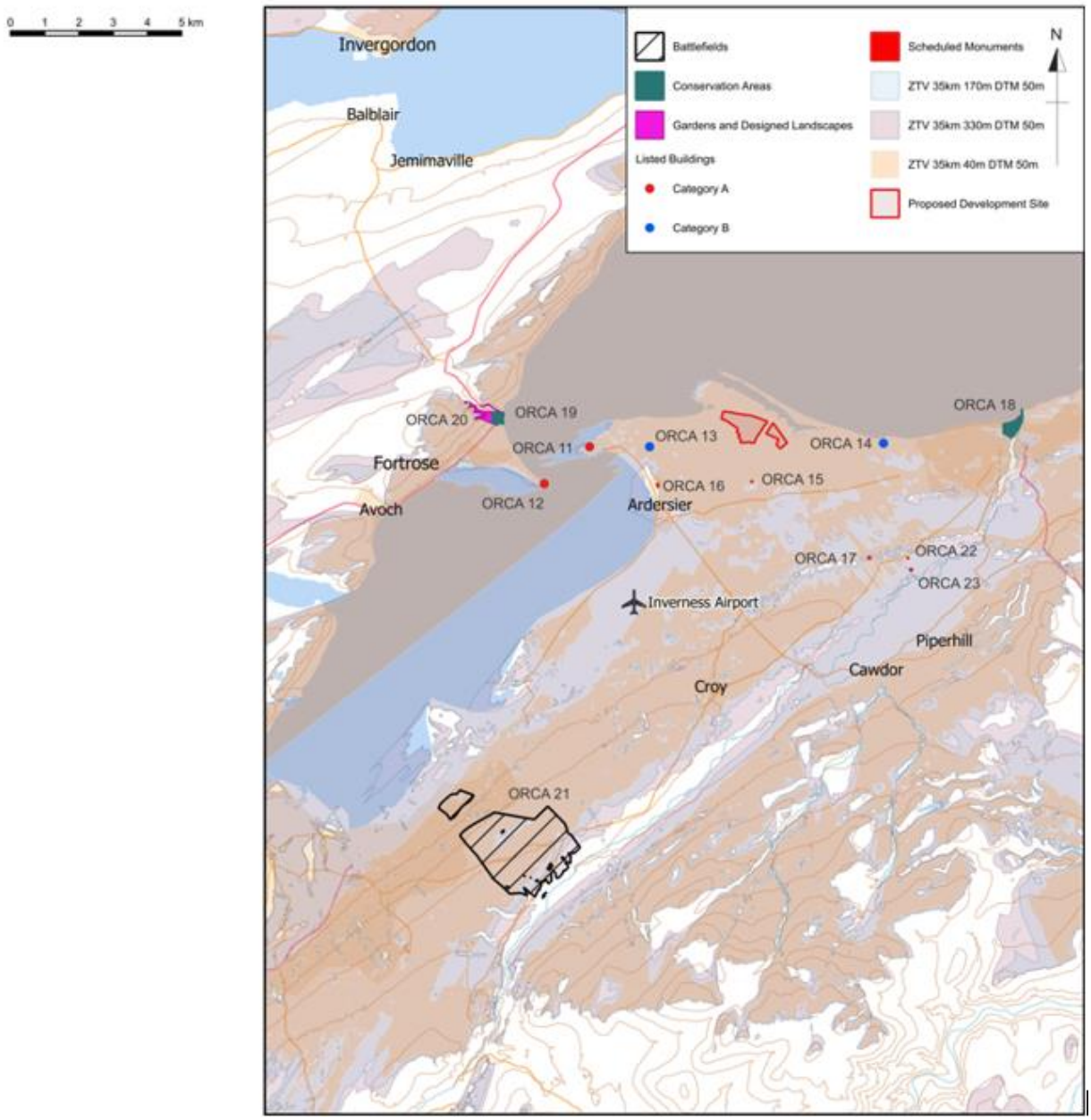


**Figure 8.2: Designated heritage assets subject to setting impact assessment**




A review of existing records indicates that while no direct evidence of prehistoric activity has been identified within the proposed development site itself, the surrounding landscape contains numerous sites indicative of early settlement and land use.

The early Holocene period (c. 11,700–8,200 years ago) was characterised by significant climatic changes following the Last Glacial Maximum, resulting in rising sea levels and shifting coastal landscapes that would have influenced early human activity in the Ardersier area.

While no direct archaeological evidence of early Holocene occupation has been recorded within the study area, findings from nearby Culbin Sands (10km to the east of the proposed development site) indicate

that Mesolithic hunter-gatherers were active along the Moray Firth coastline. These communities would have exploited the area's marine resources, woodlands, and freshwater sources, making the dynamic coastal environment well-suited for seasonal occupation and subsistence activities. The proximity of such evidence at Culbin Sands suggests that similar patterns of coastal exploitation may have occurred along the Ardersier coastline, particularly in relation to fishing and foraging practices.

Within 4km of the proposed development site, recorded archaeological features include shell middens, cropmarks, and settlement remains at Hilton of Delnies (2.5km to the east of the proposed development site) and Easter Delnies (3.5km to the southeast of the proposed development site). Additionally, evidence of enclosures and pit circles has been documented at Wester Delnies (HER MHG7294 [2]) and Easter Delnies (HER MHG7284 [3]) approximately 3.5km to the southeast and east of the proposed development site.

Further afield, additional sites of prehistoric significance are recorded. A burial, likely of prehistoric origin, has been identified within Balnagowan Wood (ORCA 15, Figure 8.2), while a henge and cairn are documented within Lagnagreishach Wood. Numerous cropmark sites, indicating former habitation and activity, include features such as hut circles, enclosures, pits, ring ditches, cultivation remains, souterrains, roundhouses, and barrows.

The Pictish period (approximately 300AD to 900D) was a time of significant power, culture and religious influence, with the Highlands serving as a key centre. The Kebbuck Stone, a later Pictish cross-slab near Wester Delnies, dates to the 8th or 9th century, and although worn, its intricate interlace designs suggest religious and artistic significance, and nearby finds indicate human activity in the area at the time.

Cromal Mount (ORCA 16, Figure 8.2), a motte, would have had timber defences and served as a centre of local authority is located just over 2km to the southwest of the proposed development site. Close by, Ardersier Old Parish Church (ORCA 13, Figure 8.2), dating to at least 1227, was rebuilt multiple times, with its late 18th-/early 19th-century graveyard still visible is located approximately 3km to the southwest of the proposed development site.

The post-medieval period saw substantial changes in land use, industry, and settlement patterns in the environs of the proposed development. The area was predominantly agricultural, with grain production and cattle grazing forming the core of local economic activity. Fishing was also a significant industry, evidenced by the Easter Delnies fishing station (ORCA 14, Figure 8.2), located near the proposed development site within Nairn Golf Course. Remains of the ice house, constructed in 1877, and the bothy, added in 1904, survive within the landscape, providing physical testimony to the area's maritime heritage.

In terms of military influence, the construction of Fort George (ORCA 11, Figure 8.2 located 3.5km to the west of the proposed development) in the 18th century marked a major strategic development following the Jacobite Rising of 1745. The fort functioned as a key military stronghold, prompting economic growth, improvements in transport infrastructure, and changes in local population dynamics.

The 19th and 20th centuries saw further industrialisation, most notably with the establishment of the Ardersier oil rig fabrication yard in the 1970s. As one of the largest oil rig construction sites in the UK, it provided significant employment until its closure in 2001.

### 8.4.2 Heritage assets within the study areas

The following lists heritage assets that have been identified within the 1km study area, and designated heritage assets that have been identified within the ZTV and have been shortlisted for setting impact assessment.

[2] Highland HER: https://her.highland.gov.uk/Monument/MHG7294
[3] Highland HER: https://her.highland.gov.uk/Monument/MHG7284

### 1km Study Area

There are no scheduled monuments, listed buildings, conservation areas, inventory battlefields, world heritage sites or gardens & designed landscapes within the 1km study area.

There are nine undesignated heritage assets within the 1km study area listed in the Highlands Historic Environment Record (HER) and recorded during the walkover survey (Table 8.1: Assessment of significance of effect and Figure 8.1). Two of these assets ORCA 01 and ORCA 09 are located within the site boundary of the proposed development, and the remaining seven assets are located outside the site boundary. In addition to the heritage assets within the 1km study area, potential unknown heritage assets and potential deposits of palaeoenvironmental have been included. These have not been spatially located within the study area.

Heritage assets that are within the site boundary but not within areas that will be affected by construction, or are of negligible value, will not be considered further. Justification for scoping in or out of the assessment is provided in the table.

Table 8.1: Summary of the value of receptors within the 1km study area

| Asset | Value | Scoped in/out of assessment |
|---|---|---|
| **ORCA 01**<br>**MHG20808[4]: farmstead, Carse of Ardersier, depicted on the 1st edition 6-inch OS map (1876).** | **Negligible.**<br><br>**Located within the site boundary of the extension site, this asset no longer appears to survive.**<br><br>**Any physical remains that exist would make a negligible contribution to our understanding or appreciation of the past** | **Out.**<br><br>**The negligible value of the asset makes any impacts on it not significant.** |
| **ORCA 02**<br>**MHG489135: wreck, Comet.** | **Medium.**<br><br>**If the wreck is present at this location, it has the potential to make a significant contribution to our understanding of mid-19th century cargo vessel design** | **Out.**<br><br>**While the asset is within the site boundary, it is not within an area that would be disturbed by construction or dredging.** |
| **ORCA 03**<br>**MHG48721[6]: wreck, Patriot.** | **Medium.**<br><br>**If the wreck is present at this location, it has the potential to make a significant contribution to our understanding of mid-19th century cargo vessel design.** | **Out.**<br><br>**While the asset is within the site boundary, it is not within an area that would be disturbed by construction or dredging..** |
| **ORCA 04**<br>**MHG52077[7]: wreck, Bess.** | **Medium.**<br><br>**If the wreck is present at this location, it has the potential to make a significant contribution to our** | **Out.**<br><br>**While the asset is within the site boundary, it is not within an area that would be** |

[4] Highland HER: https://her.highland.gov.uk/Monument/MHG20808
[5] Highland HER: https://her.highland.gov.uk/Monument/MHG48913
[6] Highland HER: https://her.highland.gov.uk/Monument/MHG48721
[7] Highland HER: https://her.highland.gov.uk/Monument/MHG52077

| | | |
|---|---|---|
| | understanding of mid-19th century cargo vessel design. | disturbed by construction or dredging. |
| **Asset** | **Value** | **Scoped in/out of assessment** |
| ORCA 05<br>MHG45951: Ardersier oil rig construction yard. | Negligible.<br><br>The remains of the oil rig construction yard have been removed and nothing remains that would contribute to our understanding and appreciation of it. | Out.<br><br>The negligible value of the asset makes any impacts on it not significant. |
| ORCA 06<br>MHG2818: natural feature, Glac Nan Ceannaichean. A natural hollow thought in local legend to have been a burial place of rival packmen. | Low.<br><br>If the heritage is a burial site as suggested by folklore, then it has local value or interest for cultural appreciation. | Out.<br><br>The asset lies outside the site boundary. |
| ORCA 07<br>MHG20826: farmstead, Upper Carse, depicted on the 1st edition 6-inch OS map (1876). | Low.<br><br>A non-designated asset that is common to the area. | Out.<br><br>The asset lies outside the site boundary. |
| ORCA 08<br>MHG20816: farmstead, Upper Carse, depicted on the 1st edition 6-inch OS map (1876). | Low<br><br>A non-designated asset that is common to the area. | Out.<br><br>The asset lies outside the site boundary. |
| ORCA 09<br>Unnamed building recorded by walkover survey. Depicted on the 2nd edition OS map of 1906. | Low.<br><br>Located within the site boundary of the extension site, this is a non-designated asset that is common to the area. | In.<br><br>The asset is located within the site boundary and within an area that would be disturbed by construction. |
| ORCA 10<br>MHG20811: Muir of Balnagowan farmstead, depicted on the 1st edition 6-inch OS map (1876). | Low.<br><br>A non-designated asset that is common to the area. | Out.<br><br>The asset lies outside the site boundary. |
| Unknown historic environment assets | Low to Medium<br><br>Any historic environment remains that exist would make a low or significant contribution to our understanding of deposits of palaeoenvironmental interest | In<br><br>There is a potential for unknown historic environment assets within the site boundary. |
| Deposits of palaeoenvironmental interest | Negligible to Medium<br><br>Any palaeoenvironmental deposits that exist would make a negligible, low or significant contribution to our understanding of deposits of palaeoenvironmental interest | In<br><br>There is a potential for deposits of palaeoenvironmental interest within the site boundary. |

### 35km ZTV study area

A wider study area was developed, based on the ZTV, to identify heritage assets, the settings of which could potentially be affected by the proposed development. After consultation with HES and undertaking a sifting process based on professional judgement, the following assets were identified for setting impact assessment. The locations of the assets are shown on Figure 8.2.

**Table 8.2: Summary of the value of designated receptors short-listed for setting impact assessment**

| Asset | Value | Reasoning |
|---|---|---|
| Listed Buildings: Category A | | |
| ORCA 11<br>LB1721: Fort George, excluding the interior and roof of the Junior Ranks Mess and Kitchen with the rear enclosure of North Stores Block.<br><br>Located 3.5km to the west of the proposed development. | High | Category A listed building that is valued at a national level. |
| ORCA 12<br>LB31799: Chanonry Lighthouse, Keeper's House, Wall and Gatepiers.<br><br>Located 5.5km to the southwest of the proposed development. | High | Category A listed building that is valued at a national level. |
| Listed Buildings: Category B | | |
| ORCA 13<br>LB1720: Kirkton, Old Burial Ground and Watch-house.<br><br>Located 3km to the southwest of the proposed development. | Medium | Category B listed building that is valued at a regional level. |
| ORCA 14<br>LB52544: Delnies Ice House and Bothy, The Nairn Golf Club, Nairn.<br><br>Located 2.2km to the east of the proposed development. | Medium | Category B listed building that is valued at a regional level. |
| Scheduled Monuments | | |
| ORCA 15<br>SM4737: Moor of Balnagowan, enclosure 250m SW of<br><br>Located 2km to the south of the proposed development. | High | Scheduled monument that is valued at a national level. |

| Asset | Value | Reasoning |
|---|---|---|
| ORCA 16<br>SM2823: Cromal Mount, mound and earthworks<br><br>Located 3.2km to the southwest of the proposed development. | High | Scheduled monument that is valued at a national level. |
| ORCA 17<br>SM11608: Easter Lochend, fort 350m WNW of<br><br>Located 6km to the southeast of the proposed development. | High | Scheduled monument that is valued at a national level. |
| ORCA 22<br>SM11607: Ackron, three cairns 325m ENE of, Kinchyle<br><br>4.8km to the south of the proposed development | High | Scheduled monument that is valued at a national level. |
| ORCA 23: Hangman's Hill, cairn 380m E of Kinchyle<br><br>5km to the south of the proposed development | High | Scheduled monument that is valued at a national level. |
| Conservation Areas | | |
| ORCA 18<br>Nairn Fishertown<br><br>Located 9km to the east of the proposed development. | Medium | Valued at a regional level due as a good example of a traditional fishing community with a distinctive layout and character. |
| ORCA 19<br>Rosemarkie<br><br>Located 7.5km to the west of the proposed development. | Medium | Valued at a regional level as a good example of a late 18th/early 19th century coastal village. |
| Gardens and Designed Landscape | | |
| ORCA 20<br>GDL00357: The Fairy Glen<br><br>Located 6.5km to the west of the proposed development. | High | Valued at a national level for its unique geological features, cultural associations and scenic beauty. |
| Inventory Battlefield | | |
| ORCA 21<br>BTL6: Battle of Culloden<br><br>Located 13.5km to the southwest of the proposed development. | High | Inventory Battlefield that is valued at a national level, holding deep cultural significance and serves as a place of reflection and remembrance. |

## 8.5 POTENTIAL IMPACTS

The impacts identified as requiring consideration are listed in Table 8.3. Information on the nature of the impact (i.e. direct (physical), direct (setting) and short-term (temporary) and long-term (permanent) is also described.

Setting impacts on non-designated historic environment assets were not considered as none were highlighted by THC HET or HES during the scoping or early consultation phases and have therefore been scoped out of this assessment.

**Table 8.3: Impacts requiring consideration in assessment**

| Potential Impact | Nature of Impact |
|---|---|
| **Construction** | |
| Loss of or damage to known marine archaeological remains | Direct (physical) |
| Loss of or damage to unknown marine archaeological remains | Direct (physical) |
| Loss of or damage to known historic environment assets | Direct (physical) |
| Loss of or damage to unknown historic environment assets | Direct (physical) |
| Loss of or damage to deposits of palaeoenvironmental interest | Direct (physical) |
| Short-term (temporary) changes to the setting of designated historic environment assets that reduces their value | Direct (setting) |
| **Operation** | |
| Long-term (permanent) changes to the setting of designated historic environment assets that reduces their value | Direct (setting) |

### 8.5.1 Construction

Ground-breaking activities associated with the construction phase have the potential to result in damage or loss of known and unknown archaeological remains, terrestrial historic environment assets, and palaeoenvironmental deposits.

Key construction activities resulting in impacts on the historic environment include:

- Inner harbour deepening – Excavation works associated with the selected deepening of the inner harbour may disturb or remove marine archaeological deposits, including potential wreck sites and submerged heritage assets.
- Site clearance of extension lands – Tree felling, stump removal, and topsoil stripping in the site boundary could impact buried archaeological remains that have not been previously disturbed.
- Drainage installation – The installation of new drainage along the southern perimeter of the proposed development may cause ground disturbance, potentially affecting archaeological and palaeoenvironmental deposits.

### 8.5.2 Operation

There is a possibility that the proposed development could have long-term (permanent) effects on the setting of designated historic environment assets, affecting the way in which the asset is understood, appreciated and experienced, and thus the cultural significance of the asset.

Key operational characteristics resulting in impacts on the historic environment include:

- The temporary presence of turbines under construction (maximum number of three), and the storage of floating bases.
    - Turbine assembly and storage will be temporary and will be present during operation at regular intervals over the lifetime of the development. The consented development already allows for turbines and tall structures.
- The permanent presence of the proposed port and buildings including manufacturing workshops assembly facilities (principally bases), storage, offices and business units.
    - The permanent buildings assessed take into account the presence of the already consented development that allows for buildings across the site. This assessment will only consider any change from the consented development.

## 8.6 MITIGATION AND ENHANCEMENT

### 8.6.1 Embedded mitigation

The proposed development design has been an iterative process. The environment team has worked in close collaboration with the infrastructure design team to avoid or reduce environmental impacts through the proposed design. This is referred to as embedded mitigation (or design interventions). The principles of the design and mitigation hierarchy outlined in EIAR Chapter 2 (Methodology) have been followed.

The first principle being to avoid potential adverse impacts, if at all practicable, before seeking to minimise or mitigate for any unavoidable impacts. Embedded mitigation for the proposed development is reported in EIAR Chapter 3 (Project Description) which also includes a description of the design alternatives that have been considered, including the environmental factors which have influenced the decision-making. Mitigation measures will seek to reduce impacts during both construction and operation phases. Any effects which cannot be mitigated or reduced are referred to as residual effects.

### 8.6.2 Mitigation

Mitigation is included in the Outline Construction Environmental Management Document (CEMD). The Outline CEMD will be developed into the Construction Environmental Management Plan (CEMP) for implementation during construction. Further information on the Outline CEMD is provided within EIAR Chapter 3 (Project Description). EIAR Chapter 15 (Schedule of Mitigation and Enhancements) provides a summary of the mitigations identified within this EIAR.

Mitigation relating to the historic environment will be set out in a Project Design (PD) [8] that will be agreed with The Highland Council's Historic Environment Team prior to construction proceeding. The agreed PD will also be included in the Outline Construction Environmental Document (CEMD).

### 8.6.3 Construction Mitigation Measures

#### Known historic environment assets

<u>ORCA 09: Farmstead</u>

Construction works will require the removal of ORCA 09, the ruins of a farmstead of post-medieval date. Prior to construction proceeding, remains of the building will be recorded in accordance with ALGAO Scotland's *Historic Building Guidance* (2013)[9]. This will ensure that a permanent record of the structure

[8] In CifA's updated standards 'Project Design' has replaced 'Written Scheme of Investigation' as a universal term for the document that sets out how the archaeological work will be conducted.
[9] Available at: https://www.algao.org.uk/sites/algao.org.uk/files/2023-08/ALGAO Buildings Guidance.pdf

is made. The level of recording will need to be agreed in advance with The Highland Council's Historic Environment Team (THC HET) and will need to be undertaken by suitably qualified professionals in accordance with an agreed PD. The final outputs will be archived with the appropriate local repository.

#### Unknown historic environment assets

The proposed method of woodland removal will be whole tree removal, where the tree and flat root system is pulled out in a single event. This introduces a risk of encountering previously unrecorded archaeological remains. It is therefore recommended that an archaeological watching brief is maintained during tree removal and ground clearance works in areas that will be agreed in consultation with THC HET and outlined in the PD. The watching brief will include:

- Recording any exposed archaeological features or artefacts.
- Protocols and provisions for halting works if significant archaeological remains are encountered.
- Provision of immediate advice on further mitigation if necessary.

A concise report will be produced summarising the results of the watching brief and any subsequent investigations. This will be submitted to THC HET and deposited with the Highland Historic Environment Record (HER).

#### Deposits of palaeoenvironmental interest

Boreholes have been taken across the proposed development site, and given the potential for early Holocene deposits and raised beaches it is recommended that these are analysed by an appropriately qualified specialist to identify areas of palaeoenvironmental potential.

If areas of palaeoenvironmental potential are identified by this analysis, a watching brief on these areas will be maintained during groundworks and would record and sample any exposed palaeoenvironmental contexts (e.g. buried soils, organic lenses).

The methodology for the assessment of the borehole logs and associated reporting along with specifications for the watching brief will be set out in the PD. The results will be set out in a specialist report detailing the sampling locations and methods, results and interpretation that would be incorporated into the overall reporting on the archaeological mitigation works. Archive samples and data would be submitted to a suitable repository.

This approach would ensure that any palaeoenvironmental deposits encountered during development are identified, recorded, and analysed in a proportionate manner. It complements the archaeological mitigation measures and contributes to a fuller understanding of the site's historic environment.

### 8.6.4 Operation Mitigation Measures

No specific operational mitigation measures are considered to be possible.

### 8.6.5 Enhancements

In line with best practice and planning policy objectives to maximise public value from development-led investigations, the PD should be designed to deliver meaningful public benefit. This could be realised through community engagement, where practicable opportunities can be explored to engage local communities with the findings of the archaeological investigations. This could include public talks and presentations delivered in collaboration with local heritage groups or community organisations.

Educational opportunities, supporting learning and education by using findings to develop curriculum-linked resources for local schools, exploring themes like archaeology, local history and climate change.

### 8.6.6 Monitoring

It is anticipated that THC HET may undertake monitoring visits during watching briefs.

## 8.7 ASSESSMENT OF SIGNIFICANT EFFECTS

The following lists those effects that have been identified as significant, or potentially significant in the case of unknown historic environment assets and deposits of palaeoenvironmental interest. All identified effects are set out in EIAR Appendix 8.1, Annex 2.

### 8.7.1 Construction

It is important to note that in EIA terms, the physical removal of archaeological remains represents a high magnitude of impact. Preservation by record through the watching brief and subsequent reporting, and deposition of an ordered archive in a suitable repository is considered a form of mitigation that compensates for the loss of the archaeological resource, rather than reducing the scale of impact. As such, residual effects will not change from those identified.

#### Loss of or damage to unknown historic environment assets

As outlined in the Desk-Based Assessment (EIAR Appendix 8.1), the proposed development site may contain evidence of human activity dating from the Mesolithic period onwards. While extensive forestry planting has taken place, particularly in the western part of the extension lands, which could have truncated or removed any archaeological remains, the potential exists for surviving deposits or features. The heritage value of any such finds could range from negligible to high, depending on their condition, context and cultural significance.

Given the low archaeological potential of the application site, these impacts should be considered to be unlikely, but possible, and would therefore require proportionate mitigation. As the application site would be cleared and covered with a platform, this would constitute a high magnitude of impact, resulting in a potential **minor** to **major** adverse effect (depending on the value of any assets), and this could therefore potentially be **significant**.

#### Loss of or damage to deposits of palaeoenvironmental interest

The site clearance of extension lands, including tree felling and vegetation removal, and dredging activities have the potential to disturb or destroy deposits of palaeoenvironmental interest.

As outlined in the EIAR Appendix 8.1, Annex 2 the study area contains known early Holocene deposits and raised beaches that may preserve evidence of past environmental conditions and early human activity. However, previous development, including the construction of the Ardersier oil rig fabrication yard, as well as historical dredging and land redevelopment, may have removed or disrupted any surviving deposits of cultural significance within those areas as opposed to the extension areas.

Given the low archaeological potential of the extension lands for deposits of palaeoenvironmental interest, these impacts should be considered to be unlikely, but possible and would therefore require proportionate mitigation. If palaeoenvironmental remains are present in the extension areas, their heritage value could range from negligible to medium, depending on their condition, context, and significance. Construction activities could have a low to medium magnitude of impact (depending on location), resulting in a potential **minor** to **major** adverse effect (depending on the value of any deposits of palaeoenvironmental interest) and this could therefore potentially be **significant**.

**Table 8.4: Summary of assessment of significant effects during construction**

| Receptor | Value | Potential impact (in the absence of mitigation) | Mitigation | Residual effect [10] |
|---|---|---|---|---|
| Unknown historic environment assets | Low to Medium | Loss of or damage to receptor | Watching brief | Minor to **Major** (potentially significant) |
| Deposits of palaeoenvironmental interest | Low to Medium | Loss of or damage to receptor | Assessment and analysis of borehole logs and watching brief | Minor to **Major** (potentially significant) |

### 8.7.2 Operation

#### Long term changes to the setting of designated historic environment assets that reduces their value

This assessment takes into account the fact that there is extant consent for the assembly of turbines along with the temporary presence of floating bases, and for the construction of the consented development that would comprise buildings immediately adjacent to the proposed development site. This assessment therefore assesses the change from the consented development.

There is a possibility that the proposed development could have long-term (permanent) effects on the setting of designated historic environment assets, affecting the way in which the asset is understood, appreciated and experienced, and thus the cultural significance of the asset.

An assessment of the potential impact from the proposed port and offshore wind related buildings including manufacturing workshops, assembly facilities (principally bases), storage, offices and business units has been undertaken on designated heritage assets that have been identified by ORCA for assessment and subsequently agreed in consultation with Historic Environment Scotland.

Those designated assets where significant effects have been identified below. A full description of all the assets and potential effects is provided in EIAR Appendix 8.1, Annex 3: Setting Impact Assessment.

<u>ORCA 11: Fort George, Category A Listed Building (LB1721)</u>

See EAR Chapter 7 (Landscape, Seascape and Visual), Figure 7.5.4a, Viewpoint 4, taken from the Duke of Cumberland's Bastion.

The proposed development is located approximately 3km to the northeast of Fort George and would introduce both temporary and permanent changes to its setting in the following ways:

Wind Turbines and floating bases (Short-term (temporary), static): The proposed development has extant consents in place for tall turbine structures. The proposed development includes for the fabrication of offshore turbines, and the storage of floating turbine bases. Although the turbines will not be operational or moving during their time on land, their exceptional height means they are likely to be visible from elevated positions within Fort George, particularly from the Duke of Cumberland's Bastion, the north casement curtain, and the Ravelin. Their scale alone may draw visual attention and contrast with the historic and natural character of the setting. However, their temporary and non-operational nature, along with their eventual removal, limits the duration and permanence of this impact. Although temporary and

[10] The mitigation proposed compensates for the loss of the archaeological resource, rather than reducing the scale of impact. As such, residual effects remain the same after mitigation is accounted for.

non-operational, the turbines height would introduce a medium magnitude of change to the setting. Given Fort George's high value, this would result in a major short-term adverse effect.

Permanent Buildings (Long-term (permanent)): The proposed permanent buildings would be seen within a complex of already consented buildings that would be behind a tree belt along the southwestern boundary of the proposed development site. While the proposed permanent buildings would add to the existing massing of the consented buildings, they would not significantly change the setting within the fort's wider visual envelope, and the tree belt would also provide some screening in views from the southwest. Their potential visibility from sensitive viewpoints within Fort George would therefore result in a negligible long-term adverse effect.

Overall, and taking into account that it would not be possible to fully mitigate the impacts, it is assessed that there would be a **major** short-term (temporary) adverse effect on the Fort George during periods of turbine construction, which is **significant**; and a **minor** long-term (permanent) adverse effect from the presence of the permanent buildings, which is not significant.

**Table 8.5: Summary of assessment of significance of effect during operation**

| Receptor | Value | Potential impact (in the absence of mitigation) | Mitigation | Residual effect [11] |
|---|---|---|---|---|
| Fort George (ORCA 11, LB1721) | High | • Shorth-term (temporary) presence of wind turbines under construction that introduces a notable change to the setting of the asset.<br>• Long-term (permanent) presence of buildings that introduces a notable change to the setting of the asset. | None proposed | Major short-term (temporary) adverse<br><br>Minor long-term (permanent) adverse |

## 8.8 STATEMENT OF SIGNIFICANCE

The assessment has identified the following significant effects on the historic environment.

[11] The mitigation proposed compensates for the loss of the archaeological resource, rather than reducing the scale of impact. As such, residual effects remain the same after mitigation is accounted for.

### 8.8.1 Construction Phase

#### Unknown Historic Environment Assets

Ground-breaking activities within the extension lands may result in the loss of or damage to previously unrecorded archaeological remains. While the archaeological potential of the site is assessed as low, the magnitude of impact from construction would be high where such remains are present. The residual effect, following mitigation through archaeological watching brief and preservation by record, is assessed as minor to major adverse depending on the value of any assets encountered. This is considered to be **potentially significant.**

#### Deposits of Palaeoenvironmental Interest

The presence of early Holocene deposits and raised beaches within the extension lands introduces the potential for palaeoenvironmental remains of archaeological interest. Although previous development has likely disturbed some areas, undisturbed deposits may survive. The residual effect, following mitigation through borehole analysis and targeted watching brief, is assessed as minor to major adverse, and is therefore **potentially significant.**

### 8.8.2 Operational Phase

#### Fort George (ORCA 11, LB1721)

The temporary presence of offshore wind turbines under construction and floating bases would result in a major short-term (temporary) adverse effect on the setting of Fort George, a Category A Listed Building. This is considered **significant.**

The permanent presence of port-related buildings, when assessed against the baseline of already consented development, would result in a minor long-term (permanent) adverse effect, which is **not significant.**

No other significant effects on designated or non-designated heritage assets have been identified. All other effects are either not significant or have been scoped out of the assessment based on professional judgement and consultation with statutory consultees.

## 8.9 CUMULATIVE EFFECTS

It is necessary to consider whether the effects of other schemes in conjunction with the proposed development would result in an additional cumulative change on the settings of heritage assets, beyond the levels predicted for the proposed development alone.

The cumulative assessment will have regard to the guidance on cumulative effects on heritage assets as set in the Environmental Impact Assessment Handbook[12] and will utilise the criteria for assessing setting impacts as set out in EIAR Appendix 8.2. The assessment of cumulative effects will consider whether there would be an increased impact, ether additive or synergistic, on the setting of heritage assets as a result adding the proposed development to a baseline, which may include operation, under construction, consented or proposed developments within the planning system.

[12] NatureScot and HES (2018) https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=6ed33b65-9df1-4a2f-acbb-a8e800a592c0

In determining the degree to which a cumulative effect may occur as a result of the addition of the proposed development into the cumulative baseline a number of factors are taken into consideration:

- The overall character of the heritage asset and its sensitivity to change in setting.
- The siting, scale and design of the baseline schemes.
- The way in which the heritage asset is experienced.
- The contribution of the cumulative baseline schemes to the significance of the effect, excluding the proposed development being assessed, on the setting of the heritage asset under consideration.

Given the emphasis placed by NatureScot and HES in their EIA Handbook on significant effects, and the requirements of the EIA Regulations, cumulative effects have only been considered in detail for those heritage assets where the effects on setting from the proposed development, alone, have been judged to be an effect of moderate adverse level or greater. Where effects on the setting of heritage assets would be of less than moderate adverse level, cumulative effects are unlikely to reach the threshold of significance.

As set out above, cumulative impacts relating to the historic environment are for the most part limited to effects on the setting of heritage assets; however, given possible significant effects have been identified for unknown historic environment remains and deposits of palaeoenvironmental interest, these are also considered.

A list of operational, consented and within-planning developments within 15km of the proposed development has been prepared, and this is provided in EIAR Chapter 14 (Cumulative Effects). With regard to the likely significant cumulative effects on heritage assets, the assessment considers operational, consented and within-planning developments at distances up to 5km from the proposed development. The location of cumulative developments is shown on Figure 14.1. Cumulative effects from the following developments are considered:

- 18/00514/FUL: Land 270m SE of Fort George, Ardersier:
  - The installation of a Multi-Use Games Area with 3m high fencing (5m at goal ends) to include paths and ground drainage.
- 20/01116/S37: Land 585m SE of Kirkton, Ardersier:
  - New span of 11kV overhead line to link existing spurs to reinforce network for new wastewater treatment works. Permission implemented and operational.

<u>Potential Cumulative Effects</u>

Neither of the developments identified above would have significant adverse effects on the setting of Fort George, and therefore no significant cumulative effects are predicted.

Neither of the developments identified above would have significant adverse effects on unknown historic environment remains, or deposits of palaeoenvironmental interest, and therefore no significant cumulative effects are predicted.

# ARDERSIER PORT ENERGY TRANSITION FACILITY PORT EXTENSION

Haventus

November 2025

# Chapter 9 Hydrology and hydrogeology

# Ardersier Port Extension

| | |
|---|---|
| Revision Number | Final |
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| Technical Reviewer | MN |

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# 9 HYDROLOGY AND HYDROGEOLOGY

## 9.1 INTRODUCTION

This chapter presents information required by the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 and the Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 to be provided in the Environmental Impact Assessment Report (EIAR) to enable the identification and assessment of likely significant effects on hydrology and hydrogeology which is considered to encompass hydrology, flooding, drainage, soils, hydrogeology and water quality.

The approach to this assessment follows the methodology set out in the EIA Scoping Report (SCOP-0062) and is in accordance with the Scoping Opinion (25/00226/SCOP) produced by The Highland Council (THC). EIAR Chapter 4 (Consultation) contains further information on how each of the matters raised in the Scoping Opinion have been addressed.

The overarching legislation, policy and guidance relating to hydrology and hydrogeology in Scotland and relevant to this assessment of the proposed development are presented in EIAR Appendix 9.1.

The assessment has been undertaken in accordance with guidance and methodology relating to hydrology and hydrogeology. The assessment relating to coastal processes (tides, waves, and sediment transport) and geomorphology is outlined in EIAR Chapter 10 (Coastal Processes and Geomorphology). The methodology used in the assessment is presented in EIAR Appendix 9.2 which includes the study area, data sources reviewed and the assumptions and limitations of the assessment. Chapter 3 (Project Description) contains a detailed description of the proposed development.

This chapter is supported by the following EIAR Appendices:

- EIAR Appendix 9.1: Legislation, policy and guidance
- EIAR Appendix 9.2: Assessment Methodology
- EIAR Appendix 9.3: Flood Risk Assessment
- EIAR Appendix 9.4: Drainage Impact Assessment

## 9.2 CONSULTATION

Responses in relation to the statutory consultation undertaken are presented in EIAR Chapter 4 (Consultation). Following production of the EIA Scoping Report the following consultation has been undertaken.

**Table 9.1: Consultation Response Summary**

| Organisation | Request | Response and where addressed |
|---|---|---|
| Scottish Environment Protection Agency (SEPA) | SEPA were contacted to provide any information that they hold relating to existing Controlled Activities Regulations (CAR) licences, including abstractions and discharges, registered within 2 km of the application site. | SEPA confirmed that an abstraction is present within the application site. Abstractions are addressed within section 9.4.6 of this chapter. |

| Organisation | Request | Response and where addressed |
|---|---|---|
| THC | THC were contacted to provide any information they hold on private water supplies within 2 km of the application site. | THC confirmed that no PWS are present within 2km of the application site. These have therefore been scoped out of this assessment. |

An online technical pre-application meeting was held on 27 May 2025 to discuss flood risk, involving SEPA and THC. Both SEPA and THC agreed that the proposed approach to flood risk assessment, and specifically proposed mitigation (in the form of diversion of land drainage by newly created watercourse features), was appropriate. THC advised that diversion watercourse design should ensure no health and safety risk to users of the public road along the site's southern boundary is posed by the created watercourse, which should be set back from the road as much as practicable, with appropriate screening.

## 9.3 METHODOLOGY

This section provides a summary of the assessment methodology with further detail provided in EIAR Appendix 9.2. This chapter is considered to encompass hydrology, flooding, soils, drainage, hydrogeology and water quality.

The methodology follows standard Environmental Impact Assessment (EIA) procedures, in accordance with the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017, and involves the following:

- Consultation with key stakeholders;
- Desk based study establishing the existing baseline conditions;
- Identification of sensitive receptors and environmental constraints;
- Identification of potential environmental impacts including cumulative impacts;
- Assessment of impact magnitude;
- Identification and assessment of mitigation, enhancement, and monitoring measures; and
- Statement of significance of residual effects.

The criteria for assessing receptor sensitivity and the magnitude of impact is presented in EIAR Appendix 9.2. These criteria have then been used to develop a matrix to assess the significance of effects from the proposed development on the water environment as shown in Table 9.2

**Table 9.2: Criteria for Assessing Effects**

| | | Magnitude of Impact | | | |
|---|---|---|---|---|---|
| | | **Negligible Impact** | **Low Impact** | **Medium Impact** | **High Impact** |
| **Receptor Sensitivity** | **High Sensitivity** | Negligible Effect | Moderate Effect | Major Effect | Major Effect |
| | **Medium Sensitivity** | Negligible Effect | Minor Effect | Moderate Effect | Major Effect |
| | **Low Sensitivity** | Negligible Effect | Minor Effect | Minor Effect | Moderate Effect |

## 9.4 BASELINE CONDITIONS

This section describes the hydrology and hydrogeology baseline for the proposed development within the general 1km identified study area. Factors such as PWS, CAR, and designations have a larger study area as noted in EIAR Appendix 9.2.

### 9.4.1 Site Description

The proposed development comprises of an extension to the consented site of Ardersier Port to the southwest in the areas of forestry around the Carse of Ardersier and some works within the existing harbour. Works within the extension area include site clearance, land raising, platform creation and creation of new perimeter watercourse features, to facilitate the development of port and offshore wind related buildings including manufacturing, workshops, assembly facilities, storage, offices and business units. Works within the existing harbour will include dredging, construction of a quay wall and launch pocket, placement of rock armour and mattress and installation of mooring dolphins. Further detail on the proposed development is presented within EIAR Chapter 3 (Project Description) of this EIAR.

Further details on local designations (within 2km) relating to coastal features and the saltmarsh are outlined within EIAR Chapter 10 (Coastal Processes and Geomorphology) and EIAR Chapter 12 (Terrestrial Ecology).

### 9.4.2 Topography

Zenith Surveying undertook a LiDAR survey of the full site in May 2025, indicating that ground levels within the consented site (generally above 4 metres above Ordnance Datum (mAOD) and as high as 17 mAOD within material stockpiles) are higher than those in the extension site (generally below 3 mAOD, but ranging between 1.3 mAOD within land drainage channels and 5.7 mAOD in parts of the southern perimeter of the site). Overall, terrain within the extension site slopes gently down from south to north, although the gradient is shallow and features noticeable undulation.

A review of available LiDAR data for the wider area[1] indicates that the topography remains relatively flat across Carse Wood to the south and sand flats surrounding the foot of Whiteness Head spit. Beyond this, elevation increases towards Ardersier in the southwest, Balnagowan Wood in the south, and the agricultural lands surrounding Delnies in the southeast.

### 9.4.3 Geology, Hydrogeology and Soils

#### Geology and Soils

A review of British Geological Survey (BGS) 1:50k geology mapping[2] indicates that the proposed development and surrounding study area is wholly underlain by Devonian sedimentary bedrock of the Alves Formation, consisting of pebbly (gravelly) sandstone.

Underlying the proposed development, superficial deposits consist of mainly raised marine deposits (Holocene Age) comprising of sand and gravel. Small pockets of blown sand are present along the western and southern boundary of the western extension area, as well as the southeastern portion of the eastern extension area. Raised tidal flat and intertidal deposits are present in the northern portion of the eastern extension area, extending throughout the southern section of the existing harbour. To the north of the existing harbour, underlying Whiteness Head Spit, superficial deposits vary between beach deposits (sand and silt), blown sand, raised marine deposits, and intertidal deposits. Outwith the application site, raised marine beach deposits and tidal flat deposits are present to the west, blown sand deposits are

[1] Scottish Government, 2011. LiDAR (Phase I) dataset (2011 – 2012). Available at: https://remotesensingdata.gov.scot/data#/map
[2] BGS, 2020. Geology of Britain Viewer. Available at: https://geologyviewer.bgs.ac.uk/

present to the south, and raised tidal flat deposits, saltmarsh deposits, and raised marine deposits extend to the east.

A review of BGS records[3] highlights a historic borehole (NH85NW14) is present within the extension area at NH 80610 57320 drilled in 1972. This indicates medium dense grey silty fine sand to a depth of 60 feet underlain by layers of silt, sand and gravelly sand.

The National soil map of Scotland [4] indicates that the proposed development is underlain by noncalcareous gleys of undifferentiated raised beach deposits. At the southern edge of the eastern extension area, some humus-iron podzols are mapped to be present, which extend east, south and west outwith the application site.

#### Hydrogeology

Review of the BGS Hydrogeology 1:625,000 scale map[3] indicates that the site is situated upon a moderately productive aquifer of upper old red sandstone, considered to be regionally important and multi-layered, producing yields of up to 5L/s.

Groundwater at the application site, underlying the extension area, is classified under the Water Framework Directive[5] (WFD) monitoring programme as belonging to the Inverness and Ardersier Coastal groundwater body (ID: 150807) and has an overall classification of 'Good'. The majority of the consented development overlies the Inverness groundwater body (ID: 150670), also classified as 'Good'. BGS groundwater vulnerability maps[6] show that groundwater vulnerability at the application site is between class 4c (where groundwater is vulnerable to pollutants which are not readily absorbed or transformed) and class 5 (Vulnerable to most pollutants, with rapid impact in many scenarios).

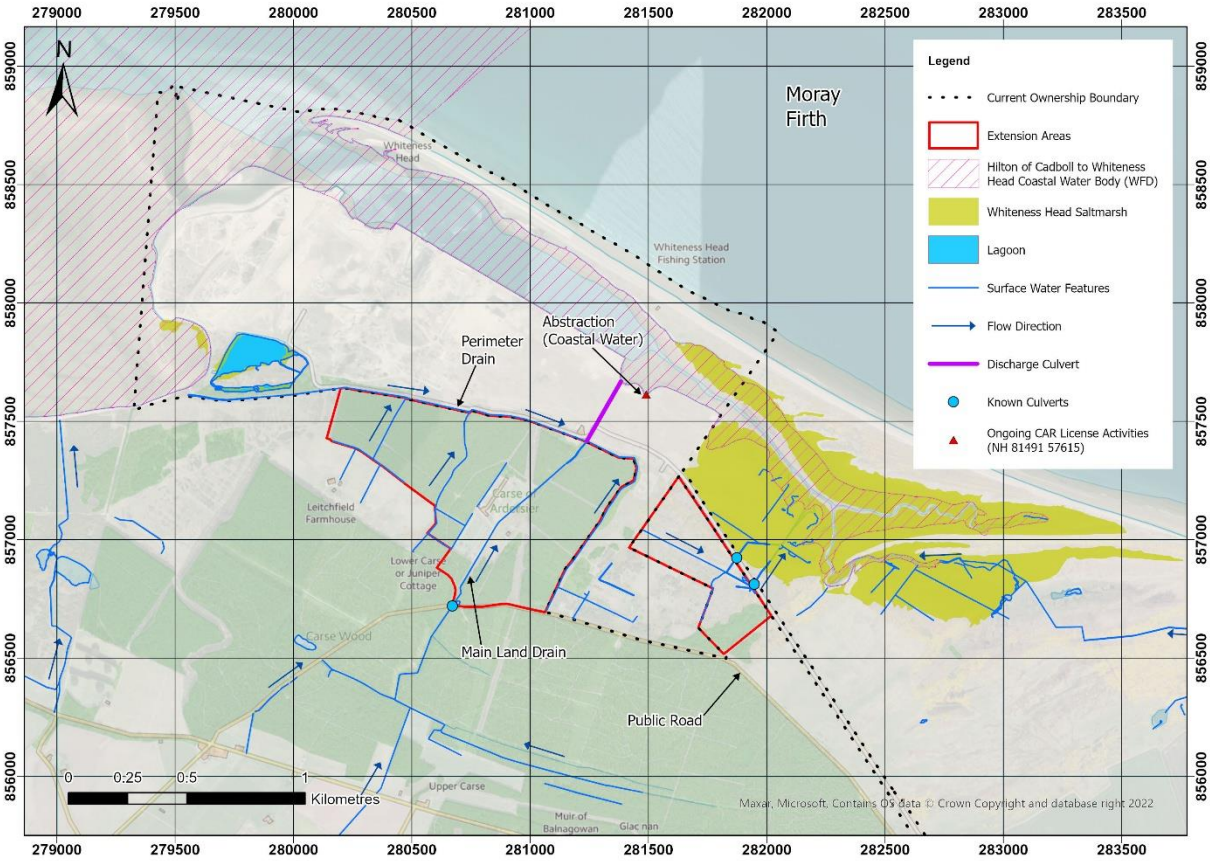
Previous site investigations undertaken across the main area of the former fabrication yard noted that groundwater was encountered at typically 3 m below ground level (mbgl) and is likely to be tidally influenced within the vicinity of coastal waters.

### 9.4.4 Hydrology, Drainage and Water Quality

Hydrological receptors are shown in Figure 9.1. As per the scoping response from the THC no invasive non-native species (INNS) were recorded to be present within the NVC or phase 1 habitat survey undertaken by Botanaeco in August 2025 within the eastern extension area. No mapped or named watercourses are present within the application site or wider study area. No mapped or named watercourses are present within the application site or wider study area.

[3] BGS, 2020. Geoindex Onshore. Available at: https://mapapps2.bgs.ac.uk/geoindex/home.html?_ga=2.51660010.2129794909.1749198372-1149183065.1749198372
[4] The James Hutton Institute, 2013. National Soil Map of Scotland. Available at: https://map.environment.gov.scot/Soil_maps/?layer=10#
[5] SEPA, 2023. Water Classification Hub. Available at: https://informatics.sepa.org.uk/WaterClassificationHub/
[6] British Geological Survey, (2011). User Guide: Groundwater Vulnerability (Scotland) GIS dataset, Version 2. Available at: https://nora.nerc.ac.uk/id/eprint/17084/1/OR11064.pdf

**Figure 9.1: Hydrological Overview**




A lagoon is present along the western extent of the consented boundary, between existing port infrastructure and the Whiteness Head sands; while this lagoon is within a designated area (Inner Moray Firth SPA and RAMSAR, Whiteness Head SSSI), the Applicant has confirmed that it is considered to be in a degraded condition (i.e. no longer performing the function it was designated for) by NatureScot due to unapproved historical works by the previous site owner which have degraded its function as a saltmarsh / intertidal mudflats and sandflats. Several land drains as denoted on SEPA mapping[7] are present within the application site area. The main land drain through the extension site drains an approximate catchment area of 4.8 km$^2$, originating south of the application site to the north of Smithstown Wood, culverting under the road, flowing north through the area of forestry within the western section of the application site, before connecting into the perimeter drain which is located along the northern boundary of the western section of the application site. Several smaller land drains are also present within the forested area of the application site draining north towards the main perimeter drain. OS mapping indicates that the perimeter drain drains westward towards Whiteness Head sands to the south of the lagoon; however, following a site walkover and review of topography, the perimeter land drains does not drain westwards and instead has an eastwards fall. It discharges via large (1 m diameter, approximately 300 m length) twin steel culverts located northeast of the western portion of the application site, which flow northwards under the existing port site into the inner harbour.

[7] SEPA (2025) SEPA Flood Maps. Available at: https://scottishepa.maps.arcgis.com/apps/webappviewer/index.html?id=3098bbef089c4dd79e5344a0e1e7c91c&showLayers=FloodMapsBasic_2743;FloodMapsBasic_2743_0;FloodMapsBasic_2743_1;FloodMapsBasic_2743_2;FloodMapsBasic_2743_3;FloodMapsBasic_2743_4;FloodMapsBasic_2743_5;FloodMapsBasic_2743_6;FloodMapsBasic_2743_7;FloodMapsBasic_2743_8;FloodMapsBasic_2743_9;FloodMapsBasic_2743_10;FloodMapsBasic_2743_11

Within the eastern section of the application site, a land drain flows south-eastwards, splitting into two channels flowing northwards and north-eastwards, with flows in these drains discharging via (900 mm diameter) concrete culverts under the existing site access road. The outlet channels of these culverts converge a short distance northeast of the application site to discharge as an open channel which crosses the saltmarsh to the northeast of the application site, an area which is designated as RAMSAR, SSSI, and Special Protection Area (SPA).

The drainage features within the application site and wider study area are not classified under the WFD, however the land drain discharges into the Hilton of Cadboll to Whiteness Head coastal waterbody (ID: 200501) which has a 'good' overall status, with some physico-chemical and biological elements classified as 'high'. On the northern side of the spit is the Whiteness Head to Burghead coastal water body (ID: 200502), which also have an overall classification of 'good'.

Water quality monitoring has been undertaken at Ardersier Port since 2022. EnviroCentre have undertaken sediment transport monitoring at Whiteness Sands since 2022, analysing total suspended solids (TSS) at five locations as shown in Figure 9.2. For each of the twelve monitoring events between 2022 and 2025, samples were collected at 1-2 m below the water's surface on the flood and ebb tides, with measured total suspended solids (TSS) in samples summarised in Table 9.3. It should be noted that TSS concentrations at the time of sampling will be impacted by prevailing weather, wave and tidal conditions and port activities, including dredge activities during the baseline period (pre capital dredge) which will vary temporally and spatially. The March 2025 event was the final pre-dredge monitoring event undertaken prior to the Phase 1 capital dredge in the outer harbour which commenced in April 2025, with the June 2025 event undertaken during the dredge event. The June 2025 event falls towards the end of the dredge period where turbidity readings were generally lower as shown in Table 9.3. During flood tides, the pre-dredge range of TSS concentrations across the five locations varies between 4 mg/l to 170 mg/l compared to between <5 mg/l to 8 mg/l during the dredge event. The pre-dredge TSS concentrations across all locations during ebb tides range between 2 mg/l to 140 mg/l, compared to a range of <5 mg/l to 16 mg/l during the dredge event. The TSS concentrations recorded during the dredge event lies within the lower end of the pre-dredge range, implying no significant increase in TSS due to dredging at the time of sampling.

**Figure 9.2: Water Quality Monitoring Locations**

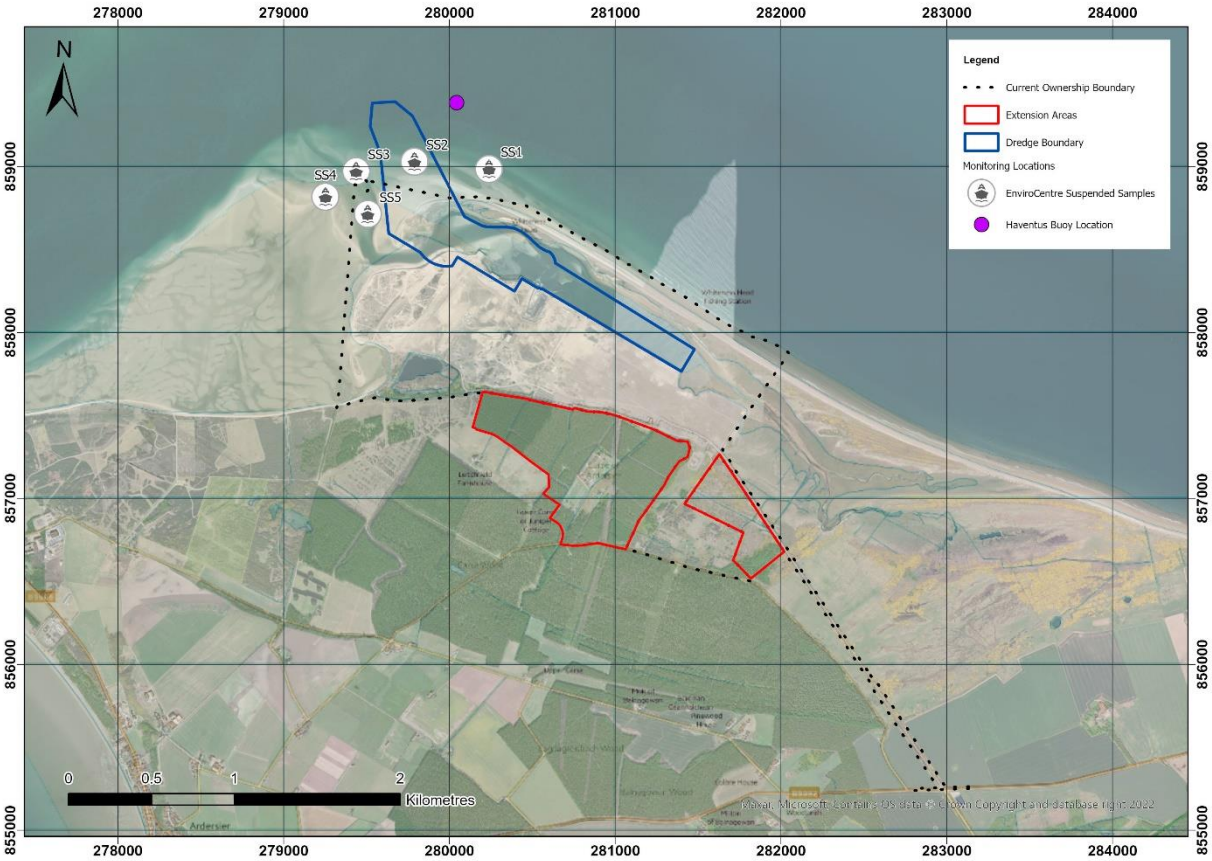
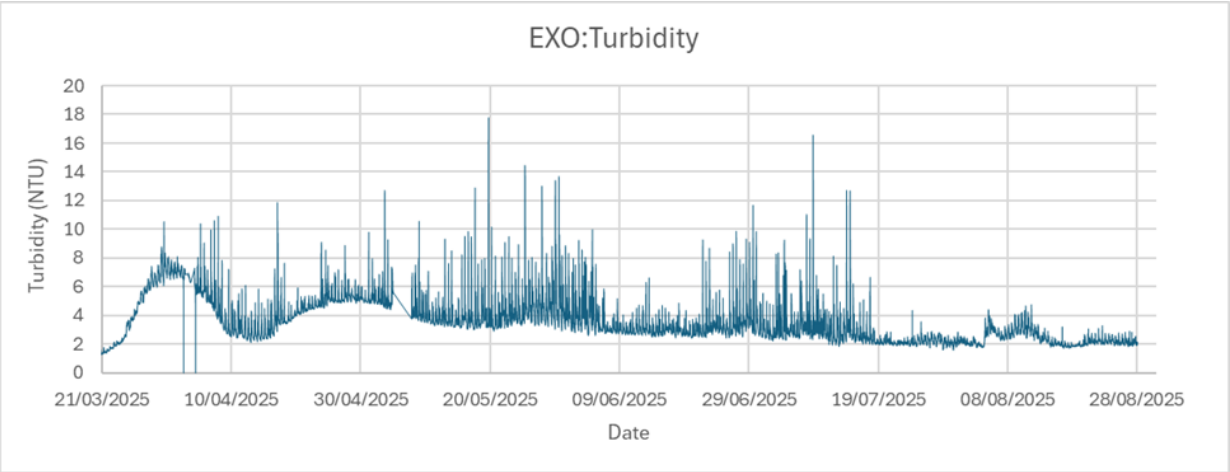



**Table 9.3: Sediment Transport Monitoring Total Suspended Solids Results 2023-2025**

| Sample ID | Monitoring Events TSS (mg/l) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 17th May 2022 | 13th June 2022 | 13th July 2022 | 25th Aug 2022 | 30th Aug 2023 | 5th Oct 2023 | 29th Nov 2023 | 20th Feb 2024 | 9th April 2024 | 25th June 2024 | 12th March 2025 | 25th June 2025 |
| SS1 Ebb | 21 | 13 | 53 | 21 | 55 | 13 | 120 | 69 | 44 | 12 | 36 | <5 |
| SS1 Flood | 24 | 17 | 33 | 21 | 73 | 15 | 24 | 61 | 8 | 6 | 19 | <5 |
| SS2 Ebb | 23 | 9 | 59 | 17 | 56 | 16 | 140 | 59 | 28 | 2 | <14 | 13 |
| SS2 Flood | 18 | 17 | 32 | 20 | 74 | 11 | 40 | 30 | 170 | 4 | <13 | <5 |
| SS3 Ebb | 21 | 14 | 41 | 18 | 67 | 16 | 140 | 63 | 120 | 6 | <14 | <5 |
| SS3 Flood | 14 | 18 | 33 | 20 | 74 | 29 | 53 | 32 | 37 | 5 | <13 | <5 |
| SS4 Ebb | 26 | 12 | 36 | 18 | 70 | 14 | 140 | 51 | 30 | 7 | <14 | 16 |
| SS4 Flood | 25 | 20 | 35 | 27 | 75 | 23 | 48 | 34 | 48 | 6 | <17 | <5 |
| SS5 Ebb | 24 | 22 | 39 | 19 | 76 | 13 | 40 | 60 | 17 | 8 | 11 | <5 |
| SS5 Flood | 19 | 18 | 39 | 22 | 71 | 21 | 24 | 33 | 170 | 11 | <13 | 8 |

A monitoring buoy was also installed in March 2025 by the Applicant prior to the capital dredge at NGR NH 80304 60380 as shown in Figure 9.2, which gathers data on waves (velocity and direction) as well as some water quality parameters including turbidity. A plot of measured turbidity is shown in Figure 9.3. This shows that the average turbidity prior to the capital dredge commencing in early April 2025 was 4.9 NTU. Concentrations during the Phase 1 dredge (April to July 2025) fluctuated with an average of 3.7 NTU recorded. Concentrations were typically higher at the start of the dredge period reducing towards the end. Fluctuations could be the result of dredge activities, weather, tidal or wave conditions but in general the majority of readings fell within the same range as pre-dredge readings. Concentrations remained generally low following the dredge event, recording an average concentration of 2.4 NTU.

**Figure 9.3: Haventus Buoy Turbidity Results March to August 2025**




### 9.4.5 Flood Risk

A flood risk assessment (FRA) has been undertaken in compliance with NPF4 requirements and SEPA and THC guidance, and is presented within EIAR Appendix 9.3. A summary of the baseline flood risk is noted below.

While SEPA fluvial flood maps[8] indicate flooding within the western extent of the consented development, and the western area of the application site, this is based on an incorrect assumption of the direction of water flow within the site perimeter drain (which falls eastwards towards the twin outfall culverts into the inner harbour, rather than westwards towards the mouth of Rosemarkie Bay) and an incorrect classification of local water channels (which are excavated land drainage channels rather than watercourses).

Site-specific modelling undertaken for 1 in 200 year plus climate change flood conditions as part of the flood risk assessment predicts limited flooding from land drainage channels within the site under low tide conditions, with extensive site flooding predicted if extreme rainfall coincides with high tides. The culvert of the main site drain is predicted to surcharge and flood onto the public road regardless of tidal conditions.

SEPA maps indicate that surface water flood risk is minimal across the application site, limited to small, isolated pockets of lower-lying ground and within drainage channels. Surface water flood risk is indicated to be more extensive across the consented site, noting that mapping does not account for consented

platforming, relevelling and site drainage provision, which will address surface water flood risk to the consented site.

The majority of the application site lies within an area at high risk of coastal flooding, with site ground levels generally below 4 mAOD compared to estimated 1 in 200 year coastal flood levels (with allowance for sea level rise due to climate change) of 4.24 mAOD based on the standard Coastal Flood Boundary dataset[9] and current SEPA climate change guidance[10]. Platforming of the consented site will protect the application site from direct coastal inundation from the north, but the application site will remain at risk due to coastal inundation from the west as well as from backflow from the inner harbour and site access road outfall culverts along the northern and eastern boundary of the site. More information on extreme sea levels and coastal flooding is provided in EIAR Appendix 9.3.

### 9.4.6 Abstractions

Consultation was undertaken with SEPA in May 2025, which identified an abstraction licence is present at Ardersier Port, granted in April 2024 (CAR/R/5007603) with a variation in September 2024, which is noted to be a micro activity by SEPA.

Further information provided by the Applicant detailed that the original CAR licence (April 2024) included authorisation for an abstraction via a borehole at NH 80256 58321 to a maximum depth of 200 m, and an abstraction for industrial or commercial purposes (Process water – coastal) at NH 81491 57615 with a maximum daily abstraction limit of 100 $m^3$. A variation to this was granted in September 2024 which supersedes the original license. It removed authorisation for abstraction via the borehole, allows for continued abstraction at NH 81491 57615, and includes an additional dewatering activity between NH 79929 58474 and NH 80480 58289. The Applicant has advised that dewatering is no longer undertaken as it was only required for the construction of a section of the quay wall, which is now complete. The active abstraction location is shown in **Error! Reference source not found.**.

The works within the extension areas of the application site will comprise of land raising through infilling of dredged sand, with no proposed sub-surface activities, excavation, or dewatering to be undertaken Additionally a quay wall will be constructed as part of the marine works. The current abstraction location lies out with the recommended SEPA buffer zones[11], lying over 10m from any proposed activities within the application site (approximately 273m to extension area). The edge of the marine component of the works (dredge activities) lies 130m northeast of the active abstraction and it is considered marine works are not likely to impact on the abstraction. Given the distance from the proposed activities and the nature of the works within the application site it is considered that the abstraction would not be impacted by the proposed development and as such has been scoped out of this EIAR.

### 9.4.7 GWDTE

National Vegetation Classification (NVC) surveys were undertaken by Botanaeco in August 2025 for the eastern extension area[12]. An NVC Survey was undertaken by Highland Ecology and Development Limited for the western extension area where no GWDTE‘s were identified. More information is provided in EIAR Chapter 12 (Terrestrial Ecology). GWDTE’s are protected under the Water Framework Directive (WFD) and therefore NVC communities have been assessed for groundwater dependency as part of the EIAR.

Potential GWDTE’S have been identified within the eastern extension site based on the communities identified within the NVC survey and associated potential for groundwater dependency as classified within

[9] Environment Agency. (2018). *Coastal Design Sea Levels – Coastal Flood Boundary Extreme Sea Levels.*
[10] SEPA (2025) Climate change Allowances for Flood Risk Assessments in Land Use Planning (Vol. Version 6). Available at: https://www.sepa.org.uk/media/jjwpxuso/climate-change-allowances-guidance_v6.pdf
[11] SEPA. (2024). Guidance on Assessing the Impacts of Development on Groundwater Abstractions. Available at: https://www.sepa.org.uk/media/mfzpnjwb/guidance-on-assessing-the-impacts-of-developments-on-groundwater-abstractions.docx
[12] Botanaeco (2025). Haventus Expansion Area. Habitats, vegetation and GWDTE.

SEPA Land Use Planning System Guidance Note 31 (LUPS-GU31)[13] and updated SEPA guidance[14]. Within the eastern extension site, vegetation communities of MG10a (neutral grassland) and M23b (rush-pasture) are present. MG10a was previously classified as moderately groundwater dependant in SEPA LUPS-GU31 guidance however in more recent updated SEPA guidance (August 2024) it is classified as no longer groundwater dependant. M23b has the potential for groundwater dependency as shown in Table 9.4

**Table 9.4: Potential GWDTE Habitats within Eastern Application Site**

| NVC Community | JNCC Phase 1 Habitat Type | Description | Location | Potential for Groundwater Dependency* |
|---|---|---|---|---|
| M23b | Rush-pasture | *J. effusus/acutiflorus - Galium palustre* rush-pasture, J. effusus sub-community | Adjacent to existing land drain within centre of eastern application site (considered surface water fed). | High |

* This is primarily based on SEPA LUPS-GU31 guidance however for MG10 and MG25 communities the updated guidance from SEPA[13] has been used. This updated guidance has reclassified MG10 and MG25 communities from moderately groundwater dependant to having no groundwater dependency.

The eastern application site is relatively flat with notable topographic lows within the existing and historic land drains. This habitat lies adjacent to an existing land drains which is considered the primary source of water. In the eastern application site, the bedrock and existing aquifer are also noted to be at depth. As a result, it is therefore considered that this habitat is dependent upon precipitation and surface water flows. As such, the Site hydrology does not support GWDTE and it is also noted that the nature of works will involve site clearance including removal of these habits, therefore these habitats are scoped out of this EIAR.

### 9.4.8 Future Baseline

SEPA's (Version 6, 2025) climate change guidance[10] advises the following allowances should be applied to account for the impact of climate change in the North Highlands region:

- Peak flows in large watercourses are projected to increase by 40% to 2100.
- Peak rainfall intensity is projected to increase by 42% to 2080.
- Climate change is projected to result in 0.89 m of sea level rise to 2100.

These uplifts are accounted for, as appropriate, in flood risk assessment and drainage impact assessment for the site provided in EIAR Appendix 9.3 and 9.4 respectively.

### 9.4.9 Receptor Sensitivity

On the basis of the baseline assessment, Table 9.5 identifies the receptor sensitivity using the criteria outlined in Table 1 in EIAR Appendix 9.2.

[13] SEPA (2017). Land Use Planning System; SEPA Guidance Note 31.
[14] SEPA (2024). Guidance on Assessing the Impacts of Developments on Groundwater Dependant Terrestial Ecosytems. Avaliable at: guidance-on-assessing-the-impacts-of-developments-on-groundwater-dependent-terrestrial-ecosystems.docx

**Table 9.5: Summary of the value/sensitivity/importance of receptors**

| Receptor/Feature | Value/ Sensitivity/ Importance | Reasoning |
|---|---|---|
| Land Drains | Low | The existing land drains within the site are not classified as a surface water body within the River Basin Management Plan; are not subject to environmental designations; are not of local importance; and are not used for abstraction. |
| Groundwater | Medium | The groundwater body at the site is identified as a moderately productive aquifer; classified under the WFD as 'Good'; and classified as class 4c (where groundwater is vulnerable to pollutants which are not readily absorbed or transformed) and class 5 (Vulnerable to most pollutants, with rapid impact in many scenarios). |
| Coastal waters of Hilton of Cadboll to Whiteness Head | High | Coastal waterbody has a WFD designation of 'Good' and designated RAMSAR, SSSI, SPA, and SAC. |
| Lagoon to west of site | High | Designated RAMSAR and SPA (Inner Moray Firth) and SSSI (Whiteness Head). Note that the lagoon is considered to be in a degraded condition (i.e. no longer performing the function it was designated for) by NatureScot |
| Saltmarsh to east of site | High | Designated RAMSAR and SPA (Inner Moray Firth) and SSSI (Whiteness Head) |

## 9.5 POTENTIAL IMPACTS

### 9.5.1 Construction

Key construction stage impacts of the proposed development on hydrology and hydrogeology may include:

- Hydrology alterations including potentially increased run-off and alteration of surface water overland flow patterns and surface water flood risk to the site and surrounding area;
- Physical changes to the local surface water / land drainage network (infilling and diversions);
- Changes to coastal flood risk and extent;
- Changes in water quality, due to contamination of groundwater, coastal water, surface water, sensitive habitats and sediments through spillage or leakage of polluting substances and/or sediment transfer.

Impacts relating to coastal processes (tides, waves and sediment transport) and geomorphology are considered within EIAR Chapter 10 (Coastal Processes and Geomorphology).

<u>Hydrology and Surface Water Flow (Land Drainage) Alterations</u>

The proposed development would include clearance of the application site through tree removal and soil stripping, and raising the ground level by infilling with dredged sand to the height of the currently consented land platform height (approximately 4.51 mAOD). This consists of an average land raise of 1.3 m within the western extension area, and 1.0 m within the eastern extension area. Existing land drains will also be lost within the application site due to infilling, with incoming land drainage from areas external to the site diverted around the site to the east (discharging by existing culverts under the site access road into a newly created watercourse and wetland feature, which thereafter discharges into the saltmarsh)

and west (discharging via a newly created watercourse feature into the existing lagoon), with more details provided in EIAR Appendix 9.3. Proposals also include for landscaped modifications to the lagoon to restore historical coastal connectivity and thereby improve its function as a saltmarsh / intertidal habitat for wading birds, which form the basis for the lagoon's inclusion within the RAMSAR, SSSI and SPA designated areas (refer to EIAR Chapter 3 (Project Description) for more information).

All of these activities, as well as the construction phase of buildout upon the site platform (i.e. construction of buildings and associated hardstand), have the potential to alter or disrupt surface water flow pathways and alter patterns of surface water runoff generation, flow and drainage.

The proposed net increase in catchment area draining eastwards to discharge towards the saltmarsh have the potential to impact upon hydrological and morphological processes within the receiving channel discharging into the saltmarsh. However:

- Analysis undertaken using representation of the receiving channel within the hydrodynamic model developed to represent post-development conditions for the flood risk assessment predicts peak in-channel velocities of 0.5 m/s for the median annual maxima flood (QMED), below values associated with risk of scour in typical silt/mud saltmarsh soils (i.e. > 0.6 m/s), with even 1 in 200 year plus climate change peak velocities only slightly above this threshold (0.8 m/s). The potential for proposed land drainage diversion (via watercourse creation) to induce additional scour compared to pre-existing conditions is limited to peak flow conditions in response to extreme storms, with negligible impact outwith extreme events.
- Freshwater baseflow rates into the receiving channel are predicted to increase from 0.011 $m^3/s$ to 0.051 $m^3/s$, while those in the main channel of the saltmarsh increase from 0.05 $m^3/s$ to 0.091 $m^3/s$ due to development proposals. These increases are insignificant in magnitude compared to rates of seawater refresh, such that the flow regime within the receiving channel and saltmarsh more generally will not be materially impacted by proposed land drainage diversion.
- Any freshwater dilution impact will be restricted to the channels themselves, excepting in response to extreme high flows (where some flooding of low ground is predicted), with no potential to impact the general out-of-bank habitat of the saltmarsh (which will continue to be dominated by seawater refresh at high tide).

The impact of development upon altering hydrological and morphological processes within the saltmarsh is therefore concluded to be negligible, and is therefore not considered further.

<u>Flooding</u>

The construction phase of development entails infilling all existing land drains within the site, which currently drain surface water runoff from the site as well as areas to the south of the site. Continuity of external land drainage will be achieved by provision of new watercourse features, to divert these flows either eastwards or westwards around the southern perimeter of the site, which must be constructed prior to infilling of existing land drains. Diversion of land drainage has the potential to increase flood risk to the public road along the site's southern boundary.

During construction, and prior to final platforming, the site will remain at risk of coastal flooding from extreme tides and storm surge. However, given the site's proximity to the open coast, construction-phase platforming, stripping and stockpiling, etc., is not considered to cause flood storage displacement, such that construction activities are not considered to pose a risk of detrimentally impacting coastal flood risk to other receptors.

The construction phase of buildout upon the site platform will not have any flood risk impact, as the completed platform will be outwith the flood risk area and flood risk associated with surface water runoff will be managed by construction-phase SuDS or equivalent systems.

<u>Sediment Discharges</u>

There would be the potential for an increased release of sediments to surface water and coastal water as a consequence of the following activities:

- Vegetation clearance;
- Topsoil removal;
- Formation of the new perimeter drain;
- Land raising using dredged sand;
- Runoff and erosion from sediment stockpiles;
- Installation of rock armour and rock mattress; and
- Capital dredging of harbour extension area.

During the phase of site clearance, topsoil will be removed from the site and trees and roots removed, which could loosen the soil structure resulting in a risk of soil erosion and mobilisation. In addition to this, the temporary stockpiling of dredged material is proposed which could result in sediment laden runoff draining from the site. Surface water runoff will be discharged to groundwater via direct infiltration. It should be noted that temporary drainage will be constructed to the south of the application site and will intercept runoff from outwith the site (to discharge either eastwards to the saltmarsh or westwards to the lagoon, as described above). Site drainage provision, including during the construction phase, will therefore only be required in relation to rainfall falling upon the application site.

The proposed material to raise the land is dredged sand, topped with a crushed rock permeable pavement. These works could potentially cause plumes of suspended solids and a reduction in water quality with a resultant impact on aquatic life. Sedimentation of the proposed watercourse features may also have a detrimental effect on flow conveyance within these channels and downstream culverts, affecting flood risk. The proposed drainage for the application site will discharge either eastwards to the saltmarsh habitat (which is designated as RAMSAR, SSSI, and SPA) or else westwards into the lagoon (not classified under WFD, but within the Whiteness Head SSSI and Inner Moray Firth SPA and RAMSAR designated area), and subsequently to the Hilton of Cadboll to Whiteness Head coastal water body, which is designated as a SSSI, SPA, RAMSAR, and SAC, and is classified under the WFD as ‘good’. These waterbodies and habitats may be impacted by sediment discharges arising from site clearance and land raising activities. The greatest potential impact is expected to the proposed watercourse features with lower impact expected to subsequent receptors such as the coastal waterbody and saltmarsh, as they are a greater distance from the works and separated by waterbodies (i.e. the proposed wetland area for the eastern watercourse and lagoon for the western watercourse) within which flow velocities will be low and settlement will occur.

It is considered that coarser sediment would be used to construct the rock armour and rock mattress. Any finer dust present on the surface of the crushed rock could results in a localised plume of sediment in the vicinity of the works.

The proposed dredge works could potentially cause plumes of suspended solids and a reduction in water quality to the receiving Hilton of Cadboll to Whiteness Head waterbody and resultant impact on aquatic life. The sediment within the dredge pocket consists predominantly of sands, with gravel also present and a minimal presence of silts and clay. Given the relatively coarse nature of the dredged sediment, it is considered that any plumes generated as a result of the dredging works will be very localised and short term in duration, primarily dropping out in the vicinity of where it is generated. In addition, Fairhurst have produced a Whiteness Sands Stability assessment presented in EIAR Appendix 3.1. This assessment determined that the ground conditions are broadly comparable within the proposed dredging area (dense sandy gravel) to those encountered within the Phase 1 dredge area with little variation in material properties. The outcome of water quality monitoring undertaken during the Phase 1 dredge are provided in Section 9.4.4, with measured TSS concentrations in water samples taken during the Phase 1 dredge within the range of pre-dredge measurements. Similarly, turbidity measurements recorded by offshore

buoy before, during and following the Phase 1 dredge are generally similar. As the sediment type is similar across the harbour, it is considered that impacts from the proposed Phase 2 dredge will also be negligible, noting that the Phase 2 dredge is smaller in scale than the Phase 1 dredge and will take place within the inner harbour, at a greater distance from Whiteness Sands.

Pollution Incidents / Contaminant Discharge

During construction there is a risk of accidental pollution incidences affecting the water environment (i.e. coastal waters, the existing lagoon and saltmarsh areas, created watercourse features and wetland features) from the following sources:

- Spillage or leakage of oils and fuels stored on site;
- Spillage or leakage of oils and fuels from construction machinery, site vehicles and vessels;
- Spillage of oil or fuel from refuelling machinery on site; and
- Spillage or leakage from on-site welfare facilities.

The main risk is considered to be posed by refuelling activities. Oil or fuel spillages to the water environment would be detrimental to water/sediment quality and could affect fauna and flora. The effect of the potential pollution incidences during construction on surface water quality would be dependent on the scale and nature of the incident.

### 9.5.2 Operation

Key operational stage impacts of the proposed development upon hydrology and hydrogeology would include:

- Hydrology alterations including increased run-off and alteration of flow patterns;
- Physical changes to the local surface water / land drainage network (infilling and diversions);
- Changes to coastal flood risk and extent;
- Changes in water quality, due to contamination of groundwater, coastal water and sediments through spillage or leakage of polluting substances and/or sediment transfer.

Hydrology and Surface Water Flow (Land Drainage) Alterations

As for the construction phase, proposed land drainage diversion (via watercourse creation) will increase flow rates and velocities discharging eastwards from the site towards the saltmarsh, but these increases are determined to have a negligible impact upon hydrological and morphological processes within this designated site. As detailed in Section 9.5.1, the lagoon will receive increased land drainage flows compared to baseline conditions, but with accompanying landscaping measures restoring coastal connectivity.

Flooding

As during construction, during operation, continuity of external land drainage will be achieved by provision of new watercourse features, directing external land drainage flows either eastwards or westwards around the southern perimeter of the site. Diversion of land drainage has the potential to increase flood risk to the public road along the site's southern boundary.

The operational site will be raised above the projected 1 in 200 year plus climate change coastal flood level. Given the site's proximity to the open coast, platforming is not considered to cause flood storage displacement, such that the operational site is not considered to pose a risk of detrimentally impacting coastal flood risk to other receptors.

Pollution Incidents

Given the proposed use of the extension site includes the handling and assemble/construction of wind turbine components and manufacturing, there is likely to be a potential for pollution incidences from spillage or leakage during the operational stage as during construction. Additionally, there would be the potential for fuel spills and leakage from vessels berthing within the inner harbour.

The risk of pollution as a result of sedimentation is much lower than during construction given no groundworks are expected to be undertaken within the application site during operation. Maintenance dredging may be undertaken if required, however it is expected the risk of generation of plumes of sediment solids would be low based on the coarser sediment within the dredge pocket, with similar impacts expected to the construction phase.

## 9.6 MITIGATION AND ENHANCEMENT

### 9.6.1 Embedded Mitigation

The development of the design has been an iterative process. The environment team has worked in close collaboration with the infrastructure design team to avoid or reduce environmental impacts through the design. This is referred to as embedded mitigation (or design interventions). The principles of the design and mitigation hierarchy outlined in EIAR Chapter 2 (Methodology) have been followed. The first principle being to avoid potential adverse effects, if at all practicable, before seeking to minimise or mitigate for any unavoidable impacts. Embedded mitigation for the proposed development is reported in EIAR Chapter 3 (Project Description) which also includes a description of the design alternatives that have been considered, including the environmental factors which have influenced the decision-making. Mitigation measures will seek to reduce impacts during both construction and operation phases. Any effects which cannot be mitigated or reduced are referred to as residual effects.

### 9.6.2 Mitigation

Mitigation is included in the Outline Construction Environmental Management Document (CEMD). The Outline CEMD will be developed into the Construction Environmental Management Plan (CEMD) for approval by the Highland Council, with subordinate Construction Environmental Management Plans (CEMPs) for implementation during construction. Further information on the Outline CEMD is provided within EIAR Chapter 3 (Project Description). EIAR Chapter 15 (Schedule of Mitigation and Enhancements) provides a summary of the mitigations identified within this EIAR.

A suitably qualified Environmental Clerk of Works (EnvCoW) will monitor as appropriate the construction works to ensure that the CEMP and associated mitigation measures are being implemented effectively.

### 9.6.3 Construction Mitigation Measures

This section summarises the mitigation required during the construction of the proposed development. Unless stated all mitigation is considered to be embedded as it follows best practice measures and/or is required to achieve compliance with legislation. Mitigation measures of relevance during construction are included within the Outline CEMD.

Construction will be carried out using industry best practice and in accordance with implementation of the requirements identified in the Outline CEMD. Construction information is presented in Chapter 3 (Project Description).

<u>General Management</u>

An Outline CEMD will be produced to ensure that the mitigation measures outlined in the EIAR are followed during the proposed construction works. The Outline CEMD will be developed into a Construction Environment Management Plan (CEMP) and will include surface water management and pollution

prevention measures (e.g. Pollution Prevention Plan) and will be in place during construction and operation. The CEMD will remain a live document and will be continually updated as the work progresses. The Outline CEMP is a practical tool to facilitate the management of environmental mitigation measures and to provide a clear roadmap of the key roles and responsibilities during construction, and is detailed further within EIAR Appendix 3.2 of EIAR Chapter 3 (Project Description).

Best practice will be adopted throughout all phases of development, following current guidance. The programme of works, including timing, direction and method of capital dredge, will be planned, monitored and managed to minimise the potential negative environmental impacts through a specific CEMP.

A Pollution Incident Response Plan will be developed relating to the construction of the proposed development, statutory requirements and identification of areas of highest sensitivity. This will provide site spill response procedures, emergency contact details and equipment inventories and their location. All staff will be made aware of this document and its content during site induction. A copy will be available in the site office at all times.

Any activities above Mean High Water Springs (MHWS) with potential to affect the water environment require to be authorised under the Water Environment (Controlled Activities) (Scotland) Regulations 2011 (CAR) (to be replaced by Environmental Authorisation (Scotland) Regulations 2018, EASR, as of 1 November 2025). The level of authorisation required is dependent on the anticipated environmental risk posed by the activity to be carried out.

Surface Water Management

Silt fences and temporary bunds will be installed around open or exposed ground and stockpiles to minimise the risk of significant overland flow and sediment mobilisation due to extreme or persistent rainfall, and to maximise direct infiltration to groundwater.

During the construction phase, until slopes are stabilised and planting established, there is an elevated erosion risk that may increase sediment loading in runoff in the proposed created watercourses along the southern site perimeter. This risk will be minimised by early-phase planting adjacent to and within the outer channel of the proposed two-stage watercourse channel and employing temporary settlement measures, such as settlement lagoons, to minimise the risk to the receiving environment during the construction phase. Construction methodologies will be in line with the recommendations given in *CIRIA C532, Control of Water Pollution from Construction Sites*[15], and best practice.

Topsoil and vegetation stripping will only be undertaken where necessary, and programmed to minimise the time between stripping and construction of a finalised platform in any given area. These measures will minimise the timescale of elevated risk of erosion and sediment pollution in runoff. Silt fences will be installed around open or exposed ground and stockpiles to further limit sediment mobilisation in construction phase runoff, and aid infiltration of runoff.

Site Compounds

Run-off from compounds will be captured and passed through construction drainage features prior to discharge via infiltration. Foul drainage is discussed in EIAR Chapter 3 (Project Description).

Surface Water run-off from the site (including internal site roads) is to be discharged into the water environment through permeable pavement designed to accommodate storm events of 1 in 30 years plus 42% climate change allowance, and assessed by sensitivity testing to be capable of attenuating flows for events up to and including 1 in 200 years plus 42% climate change allowance while providing water quality treatment appropriate for the anticipated runoff pollution hazard.

[15]CIRIA (2001). Control of water pollution from contruction sites: Guidance for consultants and contractors (C532) https://www.ciria.org/CIRIA/CIRIA/Item_Detail.aspx?iProductCode=C532

Concrete

In the case that concrete batching is to be undertaken on-site the following mitigation measures would be implemented to minimise the potential impact of concrete batching on the water environment in line with *GPP 6: Working on construction and demolition sites*[16]:

- Concrete batching will take place on an impermeable designated area and at least 10m from any waterbody.
- Equipment and vehicles will be washed out in a designated area that has been specifically designed to contain wet concrete/ wash water.
- A closed loop system will be used for wash waters. Wash waters will be stored in a contained lined pond for settlement before being reused (e.g. for mixing and washing).
- No discharge of wash waters will occur on-site. All excess wash water that cannot be reused will be disposed of off-site.

The following mitigation is proposed for concrete handling and placement:

- Pouring of concrete will take place within well shuttered pours to prevent egress of concrete from the pour area.
- Pouring of concrete during adverse weather conditions (i.e. high rainfall etc) will be avoided where practical.
- A designed washout bay will be maintained throughout construction which will be lined and bunded, potentially using a system such as Siltbuster concrete washout.

The CEMP will include a Pollution Incident Response Plan, and drivers of vehicles carrying concrete will be informed so as to raise awareness of potential effects of concrete and of the procedures for clean-up of any accidental spills.

Concrete acidity (pH) will be as close to neutral (or site-specific pH) as practicable as a further precaution against spills or leakage. The concrete acidity for the site will be confirmed post-consent with the Principal Contractor involvement and detailed in the CEMP.

Oil, Fuel, Site Vehicle Use and Storage

The risk of oil contamination will be minimised by good site working practice further described below. The storage of oil is considered a Controlled Activity which will be deemed to be authorised if it complies with the Regulations. The mitigation measures to minimise any risk of contaminant release are in line with SEPA PPG and GPP documents and include the following:

- Storage for oil and fuels on site will be designed to be compliant with GPP2[17] and GPP8[18].
- Refuelling and maintenance of vehicles and machinery, and cleaning of tools, will be carried out in a designated area where possible in line with PPG7[19].

Emergency procedure: The Pollution Incident Response Plan will include measures to deal with accidental spillages.

Sediment Management

[16] NetRegs (2023). Guidance for pollution prevention. Working at construction sand demolition sites (GPP6) https://www.netregs.org.uk/media/tsybv2y3/gpp6-working-on-construction-and-demolition-sites.pdf
[17] NetRegs (2021). Guidance for Pollution Prevention: Above Ground Oil and Storage Tanks: GPP2
[18] NetRegs (2021). Guidance for Pollution Prevention: Safe Storage and Disposal of Used Oils: GPP8
[19] Environment Agency (2011). Pollution Prevention Guidelines PPG7 Safe operation of refuelling facilities

It is considered that dredging would be undertaken in line with the conditions of the marine licence and associated BPEO. To minimise dust being washed off the crushed rock used to construct the mattress and rock amour, rocks could be washed prior to construction.

### 9.6.4 Operation Mitigation Measures

General Management

The Port Operational Environmental Management Plan (POEMP) is already in place for the consented site, this will be updated for the operational phase should the extension gain consent. Best practice will be followed throughout the operational phase, with reference to the SEPA Guidance for Pollution Prevention (GPPs), and best practice guidance.

Surface Water (and Land Drainage) Management

Surface water runoff from roads and other hardstanding areas within the application site will be treated via SuDS-compliant site drainage measures, as detailed in the Drainage Impact Assessment presented within EIAR Appendix 9.4. Internal site access roads and yard areas will employ permeable pavement, suitable for treatment of low to medium pollution hazard runoff in compliance with the Simple Index Approach. Buildout of individual plots upon the site platform will include SuDS-compliant site drainage suitable for treatment and attenuation of runoff appropriate for the specific usage and impervious surface area of each plot.

Surface water and land drainage runoff from areas south of the site will continue to drain towards the site, and will be picked up by two newly created watercourses to be installed along the southern perimeter of the site:

- An eastern watercourse will collect flows from the main drain, along with any overland flows generated to the east of the main drain, and discharge it via the existing site access road culverts towards the saltmarsh area to the east of the site. The watercourse feature will meander through the proposed wetland area and will have riparian planting along the southeast and eastern boundaries.
- A western watercourse will collect flows from minor land drains to the west of the main drain, along with any overland flows generated to the west of the main drain, and discharge it into the existing lagoon to the west of the site.

To comply with scoping response requirements, both watercourse features employ a two-stage design, with inner channel sized to accommodate typical flows and outer channel capable of accommodating design (1 in 200 year plus climate change) flows. Hydraulic analysis undertaken as part of the flood risk assessment (EIAR Appendix 9.3) determines that the proposed watercourse feature design is sufficient to ensure that development does not cause flood risk detriment to external receptors relative to baseline conditions.

It is recommended that inlet screening is installed at the existing site access road culverts, to mitigate against the risk of culvert blockage due to floating debris (noting that the proposed wetland upstream of the inlets will reduce flow velocities on approach to the culverts and therefore provide protection against blockage by entrained debris). Consideration will also be given to installing flap valves at the culvert outlets, as well as at the outlet to the western watercourse, to reduce the risk of coastal flood inundation via backflow (noting that this risk exists for both pre- and post-development conditions) and maintain freshwater conditions within the watercourses and proposed wetland.

Oil, Fuel, Site Vehicle Use and Storage

The proposed development's Pollution Incident Response Plan will be updated for the operational phase of the development, taking full consideration of best practice, statutory requirements and identification of areas of highest sensitivity. It will provide site spill response procedures, emergency contact details and

equipment inventories and their location. All operation staff will be made aware of this document, and its contents, and it will be available in the port office. Appropriate spill kits and absorbent materials will be stored in a suitable location which is easy to access. Staff/contractors will be trained in the use of spill kits and other pollution control equipment and the operation of pollution control devices.

### 9.6.5 Enhancements

Proposals include creation of an approximate 2 ha wetland area in the southeastern corner of the site, which will be surface water fed. More details on this are provided within EIAR Chapter 3 (Project Description), EIAR Chapter 12 (Terrestrial Ecology) and EIAR Chapter 15 (Schedule of Mitigations and Enhancements).

### 9.6.6 Monitoring

The Applicant shall undertake a planned programme of compliance monitoring to verify the effectiveness of the project's environmental management during construction. Monitoring plans will be established and implemented with the agreement of THC, SEPA, NatureScot and Marine Scotland.

Specific auditing and monitoring plans will be developed by the Principal Contractor and will cover the following:

- The contractor's own Environmental Management System and project monitoring plans;
- The CEMD, schedule of mitigation register, relevant legislation and industry good practice;
- All construction activity;
- Roles and responsibilities for those undertaking audits and monitoring;
- Frequency of inspection activities (i.e. daily, weekly, monthly);
- Process to deal with corrective actions/non-compliance; and
- Reporting procedures (including non-compliance).

## 9.7 ASSESSMENT OF SIGNIFICANT EFFECTS

This section assesses the level and significance of the residual effects of the proposed development upon hydrology and hydrogeology receptors during both construction and operation with the mitigation described in Section 9.6 in place. The residual effects are presented in Table 9.6 and Table 9.7.

Table 9.6 summarises the assessment of significance of effect of the proposed development upon hydrology and hydrogeology receptors during construction.

**Table 9.6: Summary of assessment of significance of effect during construction**

| Receptor | Value/ Sensitivity/ Importance | Potential impact (in the absence of mitigation) | Mitigation | Residual effect |
|---|---|---|---|---|
| Land Drains | Low | • Infilling of drains, change in surface water flow paths and drainage | • Creation of perimeter watercourse features to ensure continuous land drainage and ensure no detrimental impact upon flood risk during construction phase | Negligible |

| Receptor | Value/ Sensitivity/ Importance | Potential impact (in the absence of mitigation) | Mitigation | Residual effect |
|---|---|---|---|---|
| | | • Increased sediment loading and impact on flow conveyance. | • Appropriate SuDS principles, pollution control and adequate surface water management measures | Negligible |
| | | • Impacts from fuel/ oil spill and pollution from cement which can affect the water, and associated habitat quality, and affect flora/fauna. | • Concrete batching to take place in line with GPP6<br>• Storage of fuels and oils in line with GPP2 and GPP8 and POEMP including spill response plans | Negligible |
| Groundwater | Medium | • Impact of groundwater levels and flow pathways | • Drainage in line with SuDS principles | Negligible |
| | | • Impacts from fuel/ oil spill and pollution from cement which can affect the water, and associated habitat quality, and affect flora/fauna. | • Concrete batching to take place in line with GPP6<br>• Storage of fuels and oils in line with GPP2 and GPP8 and POEMP including spill response plans | Negligible |
| Coastal waters of Hilton of Cadboll to Whiteness Head | High | • Changes to flow and surface water flow pathways | • Appropriate SuDS principles | Negligible |
| | | • Increased sediment loading from terrestrial works and subsequent effects on flora and fauna and flow conveyance. | • Appropriate SuDS principles, pollution control and adequate surface water management measures | Negligible |
| | | • Impacts from fuel/ oil spill and pollution from cement which can affect the water, and associated habitat quality, and affect flora/fauna. | • Concrete batching to take place in line with GPP6<br>• Storage of fuels and oils in line with GPP2 and GPP8 and POEMP including spill response plans | Negligible |

| Receptor | Value/ Sensitivity/ Importance | Potential impact (in the absence of mitigation) | Mitigation | Residual effect |
|---|---|---|---|---|
| | | • Impacts to coastal water quality resulting from rock armour and rock mattress | • Wash crushed rock prior to construction | Negligible |
| | | • Impacts to coastal water quality resulting from capital dredge works. | • Undertake in accordance with marine licence, BPEO and associated conditions | Negligible |
| Lagoon to west of site | High | • Change in hydrological regime (due to increased land drainage flows to lagoon combined with restored coastal connectivity)) | • None | Negligible |
| | | • Increased sediment loading and subsequent effects on flora and fauna and flow conveyance. | • Appropriate SuDS principles, pollution control and adequate surface water management measures | Negligible |
| | | • Impacts from fuel/ oil spill and pollution from cement which can affect the water, and associated habitat quality, and affect flora/fauna. | • Concrete batching to take place in line with GPP6<br>• Storage of fuels and oils in line with GPP2 and GPP8 and POEMP including spill response plans | Negligible |
| Saltmarsh to east of site | High | • Increase in (freshwater) flow rate and volume entering saltmarsh via site. | • None (impact within designated site is marginal relative to saltwater refresh in each tidal cycle) | Negligible |
| | | • Increase in flow velocity entering saltmarsh via site | • None (velocities within designated site insufficient to induce scour) | Negligible |
| | | • Impacts from fuel/ oil spill and pollution from cement which can affect the water, and associated habitat | • Concrete batching to take place in line with GPP6<br>• Storage of fuels and oils in line with | Negligible |

| Receptor | Value/ Sensitivity/ Importance | Potential impact (in the absence of mitigation) | Mitigation | Residual effect |
|---|---|---|---|---|
| | | quality, and affect flora/fauna. | GPP2 and GPP8 and POEMP including spill response plans | |

Table 9.7 summarises the assessment of significance of effect of the proposed development upon hydrology and hydrogeology receptors during operation.

**Table 9.7: Summary of assessment of significance of effect during operation**

| Receptor | Value/ Sensitivity/ Importance | Potential impact (in the absence of mitigation) | Mitigation | Residual effect |
|---|---|---|---|---|
| Land Drains | Low | • Potential flood risk and risk of scour | • Creation of new two-stage perimeter watercourse features in compliance with scoping requirements | Negligible |
| | | • Impacts from fuel/ oil spill and pollution from cement which can affect the water, and associated habitat quality, and affect flora/fauna. | • Storage of fuels and oils in line with GPP2 and GPP8 and POEMP including spill response plans. Vehicles and vessels to carry spill kits | Negligible |
| Groundwater | Medium | • Impacts from fuel/ oil spill and pollution from cement which can affect the water, and associated habitat quality, and affect flora/fauna. | • Storage of fuels and oils in line with GPP2 and GPP8 and POEMP including spill response plans. Vehicles and vessels to carry spill kits | Negligible |
| Coastal waters of Hilton of Cadboll to Whiteness Head | High | • Increased runoff flow volumes and rates | • Maintain site drainage | Negligible |
| | | • Impacts from fuel/ oil spill and pollution from cement which can affect the water, and associated habitat quality, and affect flora/fauna. | • Storage of fuels and oils in line with GPP2 and GPP8 and POEMP including spill response plans. Vehicles and vessels to carry spill kits | Negligible |
| | | • Impacts to coastal water quality from maintenance dredging. | • Undertake in accordance with | Negligible |

| Receptor | Value/ Sensitivity/ Importance | Potential impact (in the absence of mitigation) | Mitigation | Residual effect |
|---|---|---|---|---|
| | | | conditions of marine licence | |
| Lagoon to west of site | High | • Change in hydrological regime (due to increased land drainage flows to lagoon combined with restored coastal connectivity) | • None | Negligible |
| Saltmarsh to east of site | High | • Increase in (freshwater) flow rate and volume entering saltmarsh via site. | • None (impact within designated site is marginal relative to saltwater refresh in each tidal cycle) | Negligible |
| | | • Increase in flow velocity entering saltmarsh via site | • None (velocities within designated site insufficient to induce scour) | Negligible |
| | | • Impacts from fuel/ oil spill and pollution from cement which can affect the water, and associated habitat quality, and affect flora/fauna. | • Storage of fuels and oils in line with GPP2 and GPP8 and POEMP including spill response plans. Vehicles and vessels to carry spill kits | Negligible |

## 9.8 STATEMENT OF SIGNIFICANCE

Overall, the proposed effects of the proposed construction and operation at Ardersier are considered to be **negligible** relative to baseline conditions, following the implementation of mitigation measures.

## 9.9 CUMULATIVE EFFECTS

A review of proposed and existing developments was undertaken within 15 km of the application site. For hydrology and hydrogeology the assessment focused on a smaller Zone of Influence (ZOI) surrounding the application site incorporating the wider surface water catchment of the site, lagoon, saltmarsh and receiving coastal waterbody (Hilton of Cadboll to Whiteness Head coastal water body).

No existing or proposed development are present within the surface water catchment of the site with the exception of the existing port. A development is proposed to the east of the application site ‘ ‘Land To North Of A96 Extending From Whiteness Access Road To The Common Good Land Nairn’. A review of this proposed development indicates that construction is currently occurring on the land closer to Nairn over 4km from the eastern boundary of the application site, it lies out with the surface water catchment of the site and would discharge into a different coastal waterbody (Whiteness Head to Burghead). As such it is not expected that there would be any significant effect from this development.

From a water quality perspective there is a risk of pollution incidents and spills from vessels into the Hilton of Cadboll to Whiteness Head coastal water body. It is considered that when mitigation measures are applied (POEMP and PIRP) the residual impact of a spill from the proposed development is

negligible. Additionally, the two active ports present within 10km of the application site (The Port of Nigg and Cromarty Firth) discharge into the Cromarty Firth and a different coastal waterbody (Outer Cromarty Firth) therefore it is not expected there would be a significant cumulative effect on water quality from these developments.

The cumulative effects on hydrology and hydrogeology would therefore be **Negligible**.

# ARDERSIER PORT ENERGY TRANSITION FACILITY PORT EXTENSION

Haventus

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# Chapter 10 Coastal Processes and Geomorphology

# Ardersier Port Extension

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# 10 COASTAL PROCESSES AND GEOMORPHOLOGY

## 10.1 INTRODUCTION

This chapter presents information required by the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 and the Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 to be provided in the Environmental Impact Assessment Report (EIAR) to enable the identification and assessment of likely significant effects on coastal processes, which is considered to encompass tides, waves, sediment transport, and associated geomorphology.

The approach to this assessment follows the methodology set out in the EIA Scoping Report (SCOP-0062) and is in accordance with the Scoping Opinion (25/00226/SCOP) produced by The Highland Council (THC) and the Scoping Opinion produced by the Marine Directorate (MD). EIAR Chapter 4 (Consultation) contains further information on how each of the matters raised in the Scoping Opinion have been addressed.

The overarching legislation, policy and guidance relating to coastal processes and geomorphology in Scotland and relevant to this assessment of the proposed development are presented in EIAR Appendix 10.1.

The assessment has been undertaken in accordance with guidance and methodology relating to coastal processes and geomorphology. The methodology used in the assessment is presented in EIAR Appendix 10.2 which includes the study area, data sources reviewed and the assumptions and limitations of the assessment. EIAR Chapter 3 (Project Description) contains a detailed description of the proposed development. The assessment relating to hydrology and hydrogeology (flooding, drainage, soils and water quality) is outlined in EIAR Chapter 9 (Hydrology and Hydrogeology).

This chapter is supported by the following EIAR Appendices:

- EIAR Appendix 10.1: Legislation, Policy and Guidance
- EIAR Appendix 10.2: Assessment Methodology
- EIAR Appendix 10.3: Coastal Processes Assessment

## 10.2 CONSULTATION

Responses in relation to the statutory consultation undertaken are presented in EIAR Chapter 4 (Consultation). Following production of the EIA Scoping Report the following consultation has been undertaken.

**Table 10.1: Consultation**

| Organisation | Request | Response and where addressed |
|---|---|---|
| NatureScot | NatureScot were contacted to discuss and agree the proposed coastal assessment scope and coastal modelling methodology. NatureScot requested: | EIAR Appendix 10.3 includes detail of the coastal modelling exercise undertaken and assessment of impacts to coastal processes, including tides, waves and sediment transport, and |

| Organisation | Request | Response and where addressed |
|---|---|---|
| | Assessment of impact to Saltmarsh habitat and associated RAMSAR designation. | associated receptors. The coastal model extent includes the Saltmarsh extent adjacent to the inner harbour. Predicted impacts to coastal processes and geomorphology are described in Section 10.5 of this chapter.<br><br>EIAR Appendix 5.8: Marine and Coastal Ecology includes description of the Saltmarsh habitat and assessment of impact to that habitat and associated designations. |
| | Coastal model to consider full development proposal and sediment transport modelling to include for period of regular astronomical tides in addition to storm event. | EIAR Appendix 10.3 includes detail of the coastal modelling exercise undertaken and assessment of impact to coastal processes, including tides, waves and sediment transport.<br>The coastal model considers all relevant elements of the proposed port extension in the marine environment. Options for island extension are also considered, these have been modelled in combination with other development proposals.<br>Sediment transport model simulations undertaken all include for a period of regular astronomical tides, wind and wave conditions, followed by a storm event from the key north-eastern sector (Storm Ciaran, 2023). |

## 10.3 METHODOLOGY

This section provides a summary of the assessment methodology. Further detail is provided in EIAR Appendix 10.2. This chapter is considered to encompass tidal action, wave climate, and sediment transport.

The methodology follows standard Environmental Impact Assessment (EIA) procedures, in accordance with the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017, and involves the following:

- Consultation with key stakeholders;
- Coastal Processes Assessment (EIAR Appendix 10.3) including coastal modelling study;
- Desk based study establishing the existing baseline conditions, including a review of coastal model outputs;
- Identification of sensitive receptors and environmental constraints;
- Identification of potential environmental impacts including cumulative impacts;
- Assessment of impact magnitude;
- Identification and assessment of mitigation, enhancement, and monitoring measures; and
- Statement of significance of residual effects.

The criteria for assessing receptor sensitivity and the magnitude of impact is presented in EIAR Appendix 10.2. These criteria have then been used to develop a matrix to assess the significance of effects from the proposed development on the coastal processes and geomorphology as shown in Table 10.2.

**Table 10.2: Criteria for Assessing Effects**

| | | Magnitude of Impact | | | |
|---|---|---|---|---|---|
| | | **Negligible Impact** | **Low Impact** | **Medium Impact** | **High Impact** |
| **Receptor Sensitivity** | **High Sensitivity** | Negligible Effect | Moderate Effect | Major Effect | Major Effect |
| | **Medium Sensitivity** | Negligible Effect | Minor Effect | Moderate Effect | Major Effect |
| | **Low Sensitivity** | Negligible Effect | Minor Effect | Minor Effect | Moderate Effect |

## 10.4 BASELINE CONDITIONS

This section describes the coastal processes and geomorphology baseline for the proposed development within the study areas identified within EIAR Appendix 10.2.

### 10.4.1 Site Description

Ardersier Port is situated within the Inner Moray Firth at Whiteness Head as shown in Figure 1.1 and described in EIAR Chapter 1 (Introduction). The site history and constraints are also described in EIAR Chapter 1. Ardersier Port has been subject to recent redevelopment with capital dredge works of the navigation channel and outer harbour recently completed to depth of -12.4 metres Chart Datum (mCD), along with construction of a quay wall.

The proposed development comprises an extension of the existing port within the inner harbour, including dredging, construction of a quay wall and launch pocket, placement of rock armour and mattress and installation of mooring dolphins within the existing harbour. Works within the extension area include site clearance, land raising, platform creation and creation of new perimeter drainage. Further detail on the proposed development is presented within EIAR Chapter 3 (Project Description) of this EIAR.

In general terms, the proposed port extension represents an increase in depth to the inner harbour versus that previously assessed in 2013, 2018 and 2024, while the relative positioning of proposed dredge extents remains similar. The port and dredge design considered within the 2024 assessment has been partially delivered during the summer of 2025 with the dredging of the navigation channel and outer harbour, and formation of associated quay.

### 10.4.2 Designated Sites

Numerous designated sites relating to the coastal water environment are present within 2 km of the proposed development including:

- The Whiteness Head Site of Special Scientific Interest (SSSI);
- The Inner Moray Firth Special Protection Area (SPA);
- The Moray Firth Special Area of Conservation (SAC);

- The Inner Moray Firth RAMSAR site; and
- To the northwest of the site, designated haul-out sites for Grey and Common/Harbour Seals (Protection of Seals Orders) are present.

Further detail on the designated sites is presented in Figure 1.3, EIAR Chapter 1 (Introduction). The potential impacts related to coastal processes on the Whiteness Head SSSI, the Inner Moray Firth SPA, Inner Moray Firth RAMSAR and the Moray Firth SAC are further detailed within Section 10.5 of this chapter. The Inner Moray Firth RAMSAR site and designated haul-out sites are further assessed within EIAR Chapter 11 (Marine Mammals), EIAR Chapter 12 (Terrestrial Ecology), EIAR Chapter 13 (Ornithology) and EIAR Appendix 5.8.

### 10.4.3 Topography and Bathymetry

The wider bathymetry of the Inner Moray Firth includes several key features that influence local hydrodynamics, such as the north and south channels around the Riff Bank sandbank near Ardersier Port, and the narrows between Fort George and Chanonry Point to the west.

The present-day bathymetry of the harbour and navigation channel is reflective of the recently completed capital dredge works, with depths of -12.4 m Chart Datum (CD) through the channel and outer harbour. The inner harbour is the subject of the proposed development and currently has varying bed levels, with shallower areas of recent deposition and localised areas which have been subject to smaller scale dredge activities over recent years.

Terrestrial elements of the spit to the north and east of the harbour sit above highest astronomical tide (HAT) level of +4.8 mCD, with localised topographic highs of 6.4 mCD. The former spit head to the immediate west of the navigation channel now forms an island feature elevated above HAT level, with peak level of 5.7 mCD. Across the terrestrial extent of Ardersier Port ground levels are generally around 6.8 mCD.

Further detail on topography, bathymetry and associated surveys, is provided in EIAR Appendix 10.3.

### 10.4.4 Sediment

Previous investigations[1] show that Whiteness Sands, the spit, and the nearby channel primarily consist of mobile sand deposits. Four sand types have been identified based on lognormal grain size:

- Medium-coarse sand (0.355 mm): Often forms a secondary grain population, indicating bedload transport.
- Medium sand (0.250 mm): Forms bimodal populations with medium-fine sand, also linked to bedload transport.
- Medium-fine sand (0.180 mm): Widespread except just offshore from the spit; easily mobilised by water, moving in near-bed suspension.
- Fine sand (0.125–0.150 mm): Dominates offshore seabed; typically transported in suspension.

Lithogenic gravel is found on the spit surface, predominantly along and above the high-water mark. Lower quantities of gravel appear nearby, with gravel consisting of shell debris present to the north of Whiteness Sands. Sediments around the site are typically shaped by modern processes, though chart annotations of seabed conditions indicate the presence and erosion of two Holocene or Pleistocene deposits to the east of the spit and at Fort George narrows, where recent sediment is likely thin or absent. These eroding areas are key sources of gravel reworked by current processes.

[1] EnviroCentre, 2024. Ardersier Deeper Dredge Coastal Modelling Report

Further detail on sediment character and transport processes is provided in EIAR Appendix 10.3.

### 10.4.5 Tidal Water Levels

Tidal levels at Ardersier Port (formerly McDermott Base) as presented within the Admiralty Tide Tables[2] are shown in Table 10.3. The mean tidal range at Ardersier Port is 3.3 m during spring tides and 1.6 m during neap tides, and the maximum astronomical tidal range is 4.6 m.

Further detail on tidal action is provided in EIAR Appendix 10.3.

**Table 10.3: Tidal Water Levels - Ardersier Port**

| Tide Condition | Chart Datum (mCD)* | Ordnance Datum (mAOD) |
|---|---|---|
| Highest Astronomical Tide (HAT) | 4.8 | +2.7 |
| Mean High Water Springs (MHWS) | 4.2 | +2.1 |
| Mean High Water Neap (MHWN) | 3.3 | +1.2 |
| Mean Sea Level (MSL) | 2.5 | +0.4 |
| Mean Low Water Neap (MLWN) | 1.7 | -0.4 |
| Mean Low Water Springs (MLWS) | 0.9 | -1.2 |
| Lowest Astronomical Tide (LAT) | 0.2 | -1.9 |

* Chart Datum correction for Ordnance Datum is -2.1 m (relative to OD at Newlyn)

Extreme sea levels are outlined within EIAR Chapter 9 (Hydrology and Hydrogeology), section 9.4.5 (Flood Risk).

### 10.4.6 Tidal Currents

The key tidal flows near the site have been identified through site observation, monitoring and coastal modelling studies. During flood tides, tidal flow is east to west around the spit and into the harbour. During ebb tides, the flow reversed. Peak current speeds reach approximately 1 m/s in the main channel (South Channel) located to the north of Whiteness Sands, with lower velocities across the sands and within the harbour. Current speeds generally decrease at high and low tide, influenced by local seabed features. Residual current analysis has shown a dominant flood flow around the spit and into the harbour, while ebb flows dominate in deeper offshore waters. Within the inner harbour and further east into intertidal extents there is a marginal ebb current dominance, although peak current speeds are generally low.

Further detail on tidal action is provided in EIAR Appendix 10.3.

### 10.4.7 Wind and Wave Climate

A review of historic wind data from the Met Office[3], for an area situated over 20 km offshore from the proposed development in the Outer Moray Firth, indicates an annual average wind speed at Kinloss (1991 – 2020) of 4.6 m/s, with highest monthly average wind speed shown in February (5.3 m/s) and lowest monthly average wind in July (4.0 m/s).

Hindcast wind data has been obtained from the DHI MetOcean data portal[4] for a location immediately offshore of Ardersier Port between July 2024 and July 2025. The prevailing wind direction is from the

[2] Admiralty Tide Tables, 2025. *UKHO*
[3] Met Office, 2020. UK Climate Averages. Available at: https://www.metoffice.gov.uk/research/climate/maps-and-data/location-specific-long-term-averages/gcuezdjq3
[4] DHI. Metocean Data Portal. Available at : https://www.metocean-on-demand.com/

southwest, with the wind speed typically between 4 and 6 m/s, and in excess of 19 m/s during winter months. This is consistent with site measured data recorded by site weather stations. Hindcast wind data has also been obtained for an offshore location in the Outer Moray Firth covering the period 1979 to 2023, with a similar prevalence of wind from the south-western sectors.

The prevailing offshore wave direction is from the northeast. The proposed development is largely sheltered from offshore waves approaching from the northeast by the Whiteness Head Spit, and the wider topography of the Moray Firth. For a point just offshore from Whiteness Head, hindcast wave data from the period of July 2024 to July 2025 obtained from the DHI MetOcean Data Portal[4], indicates that wave height was most commonly below 0.3 m, and occasionally in excess of 1m during winter months. This is consistent with data collected within 2025 by a wave buoy positioned immediately offshore from Ardersier Port to the northeast of the navigation channel.

At the offshore hindcast location in the Outer Moray Firth waves from the north and northeast are also prominent. This sector represents the longest fetch from Ardersier Port and therefore considered the key wave sectors for the site and surrounds.

Further detail on wave action and wind climate is provided in EIAR Appendix 10.3.

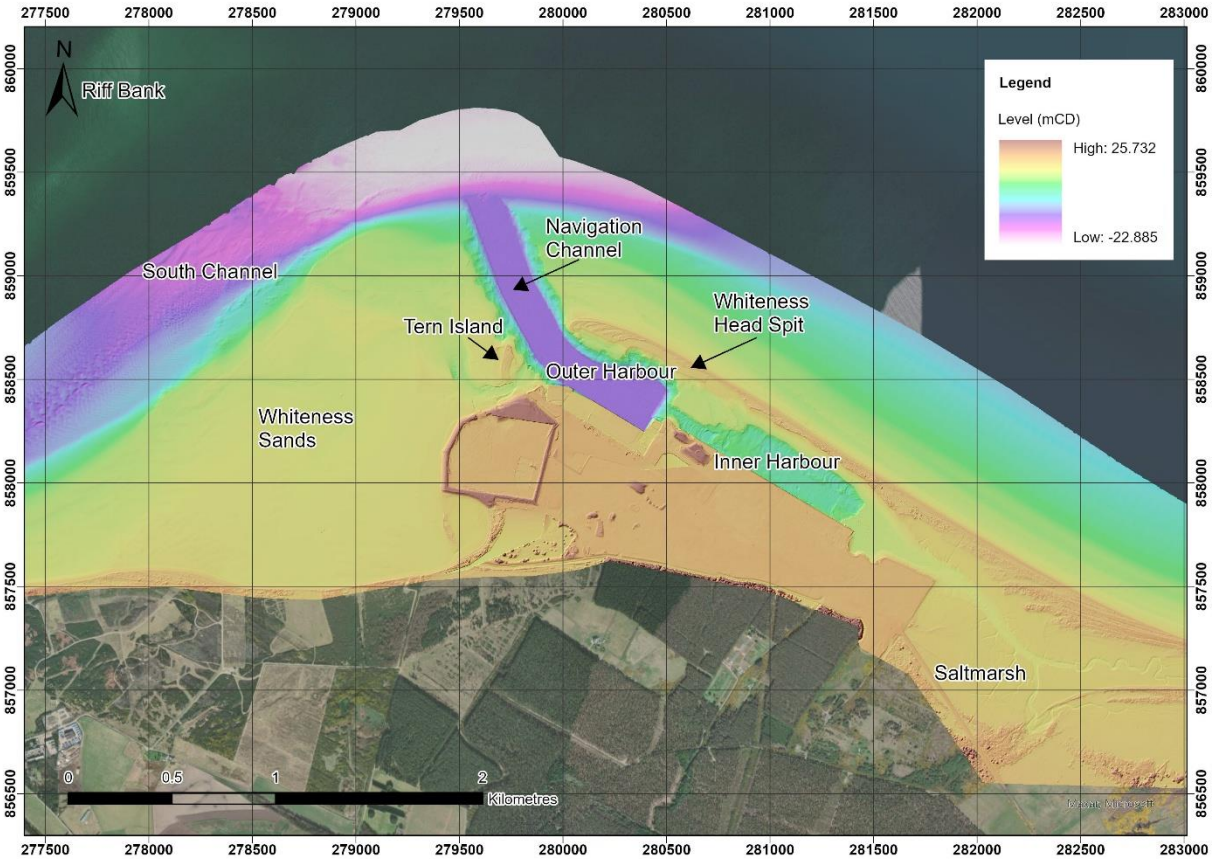
### 10.4.8 Morphology and Sediment Transport

A number of key morphological features are present within the site and surrounding area, as shown in Figure 10.1. An intertidal spit with a prominent intertidal recurve, truncated by the recently dredged navigation channel, extends immediately north of the present-day terrestrial spit head. Historically this has been orientated in a northwestern direction in line with the longshore sediment feed. Below MLWS, areas of subtidal deposition are present to the northwest of the spit and navigation channel, extending along the northern fringe of Whiteness Sands. The historic spit head remains as an island feature to the immediate west of the navigation channel, with the historic meandering harbour inlet channel still present further west, separating the island from Whiteness Sands.

Within the harbour recent spit restoration works have restored the inner face of Whiteness Head spit where erosion had occurred. To the southeast of the inner harbour the modified waters of the harbour transition to a network of creek features associated with saltmarsh habitat.

The main Moray Firth channel, known as the South Channel is located to the north of Whiteness sands, with various large scale bedforms including dunes, megaripples, ribbons, and possible landslips, present on the bed and surrounding slopes. These features indicate both westward and eastward sediment transport, shaped by flood and ebb currents. The Riff Bank sandbank forms the northern edge of the South Channel, with the intertidal Whiteness Sands to the south. The intertidal Whiteness Sands is relatively flat, with small scale ripples dominant, a few channel features are associated with tidal flow and a general absence of larger scale bedforms. A small sand spit feature is present on the southern shoreline of Whiteness Sands, indicative of westerly longshore transport of sand in this area. To the south of this a former lagoon is present, historically disconnected from the marine environment by former site operations.

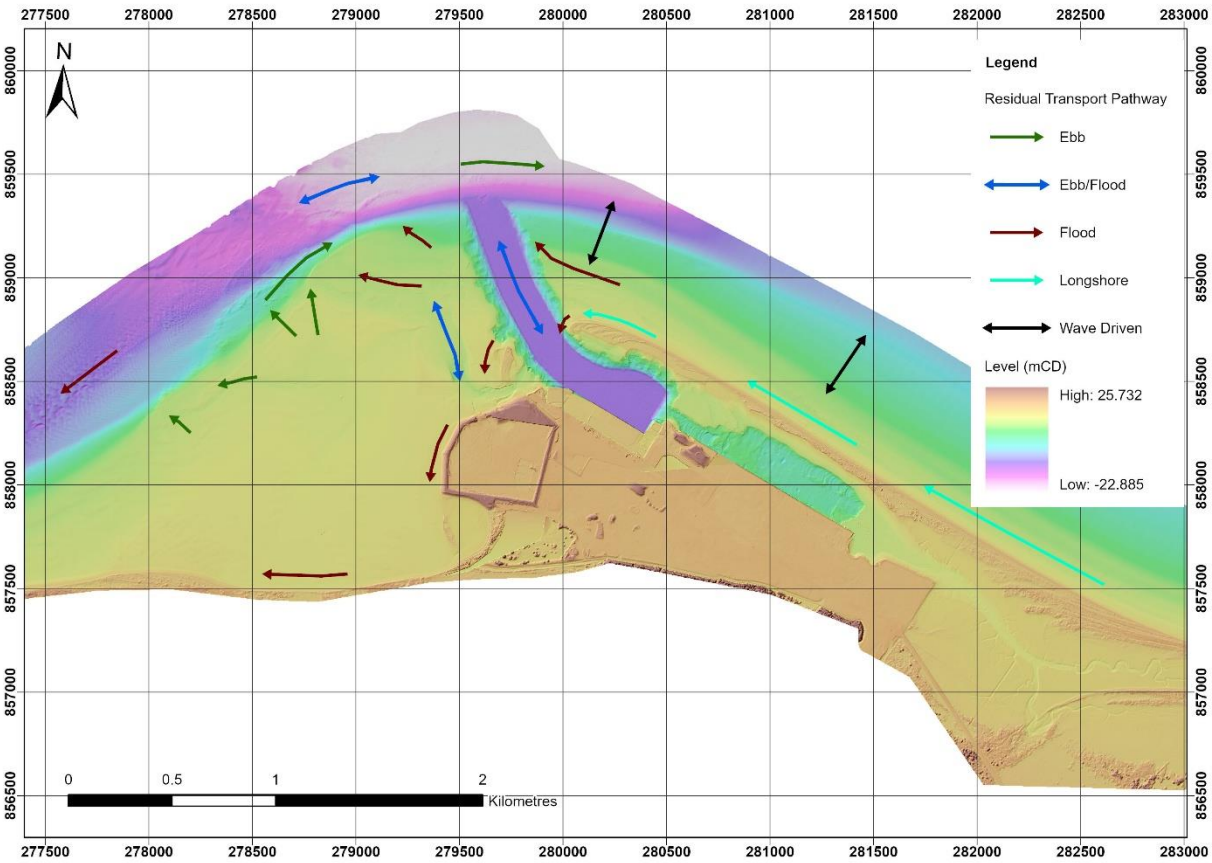
**Figure 10.1: Key Morphological Features of Interest**




Longshore transport of sand and gravel along the eastern shore of Whiteness Head spit drives the continued spit growth to the northwest, with the development of recurves extending to the southwest. This northwestern sediment pathway continues into the navigation channel and offshore into the deeper waters of the main South Channel, with some continuity of westward transport toward the north-eastern intertidal and subtidal edges of Whiteness Sands. Wave action from the northeast produces both on and offshore transport of sediment along the north-eastern shores of the Whiteness Head spit and Whiteness Sands. In addition, sand is transported offshore from the northern margin of Whiteness Sands, with a return transport pathway further offshore heading east. This eastward movement has historically contributed sediment to both the harbour and the southern shoreline of Whiteness Sands. Meanwhile, the central areas of Whiteness Sands remain generally stable relative to the surrounding dynamics at Whiteness Head.

A conceptual model of coastal processes under present day conditions is shown in Figure 10.2, whilst further detail on morphology and sediment transport is presented in EIAR Appendix 10.3.

**Figure 10.2: Conceptual Model of Coastal Processes**




### 10.4.9 Future Baseline

Future projections relating to the increase in rainfall intensity due to climate change are outlined within EIAR Chapter 9 (Hydrology and Hydrogeology) of this EIAR.

The UK government has published a range of climate projection reports and data for use in the assessment of climate change risks to help plan how to adapt to a changing climate. The latest set of comprehensive reports produced by UK Climate Projections (UKCP18) was published in 2018 and provides future climate projections for land and marine regions for the UK[5].

The UKCP18 projections are presented for a range of different scenarios or Representative Concentration Pathways (RCPs). RCPs are a method for capturing assumptions required on future economic, social and physical changes to our environment that will influence climate change. The increase in global mean surface temperature (°C) by 2081 – 2100 for the different RCP's is outlined below:

- RCP2.6 = 1.6°C (0.9 – 2.3°C)
- RCP4.5 = 2.4°C (1.7 – 3.2°C)
- RCP6.0 = 2.8°C (2.0 – 3.7°C)
- RCP8.5 = 4.3°C (3.2 – 5.4°C)

[5] MetOffice. (2018). UK Climate Projections 2018.

Predictions are provided for carbon dioxide concentrations, along with resulting changes in mean temperature and mean sea level change around the UK coastline to the year 2100. Review of these predictions highlights that the proposed development is within a zone of moderate sea level change in a UK context.

It should be noted that there is a wide range of uncertainty associated with these projections, and that these values represent an average relative sea-level rise across a range of return period scenarios. Under the United Nations Climate Change Paris Agreement, the UK is committed to attempt to hold the increase in global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit warming to 1.5°C. These targets are in line with those allowed for within UKCP18 RCP 2.6, or the lower end of RCP 4.5, in terms of median global temperature increase by 2100.

The UKCP18 values for sea-level rise at the proposed development have been obtained based on the best available guidance. Cumulative rise from 2017 to 2100 for the region within which the proposed development is located (North Highland) is 0.89 m, derived from the 95th percentile estimate for RCP8.5[6].

The UKCP18 wind speed analysis concludes that there are no compelling trends in storminess, as determined by maximum gust speeds, from the UK wind network over the last four decades. The global projections over the UK show an increase wind speeds over the UK for the second half of the 21st century for the winter, associated with an increase in frequency of winter storms over the UK, while overall there is no trend in the wind speed over the UK.
The Marine Climate Change Impacts Partnership (MCCIP)[7] highlights the poleward shift in the storm track since the 1990s and an increase in number of storms, but notes that the mechanisms are poorly understood, and that natural variability will likely continue to dominate storm conditions for the next few decades.

The likely impact of climate change on wave height remains an area of significant uncertainty. The SEPA climate change guidance[6] does not provide recommended allowances. It is noted that the size of waves at the coast is often limited by depth of water, and therefore sea level is likely to have a greater impact on wave overtopping. The guidance recommends that wave model sensitivity to offshore wave height is tested through an increase of 10 – 20% in offshore wave height to account for changes as a result of climate change.

MCCIP[7] notes that mean significant wave height has reduced in the north of the UK over the last 30 years, and that whilst the most severe waves could increase in height as a result of climate change, particularly under a high-emissions scenario, there could be an overall reduction in mean significant wave height in the North Atlantic.

### 10.4.10 Receptor Sensitivity

On the basis of the baseline assessment, Table 10.4 identifies the potential receptors and their sensitivity using the criteria outlined in Table 1 in EIAR Appendix 10.2.The Hilton of Cadboll to Whiteness Head coastal waterbody extent is shown in Figure 1.1 in EIAR Appendix 10.2 and further described in EIAR Chapter 9 (Hydrology and Hydrogeology). The designated site extents are shown in Figure 1.3, EIAR Chapter 1 (Introduction).

[6] SEPA (2025) Climate change Allowances for Flood Risk Assessments in Land Use Planning (Vol. Version 6). Available at: https://www.sepa.org.uk/media/jjwpxuso/climate-change-allowances-guidance_v6.pdf
[7] Marine Climate Change Impacts Partnership Website (https://www.mccip.org.uk/storms-and-waves)

**Table 10.4: Summary of the value/sensitivity/importance of receptors.**

| Receptor/Feature | Value/ Sensitivity/ Importance | Reasoning |
|---|---|---|
| Operational waters and sediment of Ardersier Port | Medium | Coastal waterbody within active harbour facility used by commercial vessels and not internationally designated. |
| Wider coastal waters and sediment of Hilton of Cadboll to Whiteness Head | High | Coastal waterbody has a WFD overall classification of 'Good' and designated RAMSAR, SSSI, SPA, and SAC. |
| Whiteness Head SSSI | High | Whiteness Head SSSI is designated for coastal geomorphology, coastal features (saltmarsh, sand dunes and shingle) and marine features (sandflats). |
| Inner Moray Firth RAMSAR | High | The Inner Moray Firth RAMSAR Site is designated for its internationally important wetland habitats (including intertidal mudflats, sandflats, saltmarsh, sand dunes, shingle bar, and eelgrass beds). |

## 10.5 POTENTIAL IMPACTS

The proposed works involve the following key activities which have the potential to impact coastal processes and geomorphology within the site and surrounds:

- Capital dredging of the inner harbour extension;
- Construction activities (port infrastructure including quay wall, launch pocket, rock armour and mattress);
- Island extension activities; and
- Port operations.

The potential impacts on coastal processes and geomorphology include:

- Changes to tidal levels and currents;
- Changes to the wave climate;
- Changes to the sediment transport processes; and
- Associated impacts to key geomorphological features.

Impacts on water quality during construction and operational stages of the proposed development are outlined within Section 9.5 of EIAR Chapter 9 (Hydrology and Hydrogeology).

The potential interactions between coastal processes and geomorphology impacts and ecology, including associated designations, are assessed within EIAR Chapter 11 (Marine Mammals), EIAR Chapter 13 (Ornithology) and EIAR Appendix 5.8.

The following sections consider and assess the potential impacts.

### 10.5.1 Construction

In terms of construction phase impacts to coastal processes and geomorphology it is considered that the final stages of construction, with the capital dredge and associated infrastructure essentially complete, would produce the most significant impacts. Therefore, this is the construction condition that has been considered within this assessment and the associated coastal modelling study. Key construction stage impacts of the proposed works on coastal processes and geomorphology are assessed under the following headings:

- Tidal levels and currents;
- Wave climate;
- Sediment transport; and
- Geomorphology.

Tidal Levels and Currents

The proposed works could result in alterations to local tidal levels and currents. Hydrodynamic modelling has been undertaken for existing (baseline) and proposed development scenarios and is described within EIAR Appendix 10.3 of this EIAR. The model scenarios have simulated a period of astronomical tidal cycle including both neap and spring tides. Comparison of model results highlights that there will be no significant impact on tidal levels or phasing, except to increase low water tidal range within the dredge zone where deposition has occurred in the harbour under existing (baseline) conditions. The difference in modelled water level between existing and proposed conditions is insignificant, generally less than 1 cm throughout model simulation duration.

Comparison of statistical maximum current speed has been undertaken between the existing and proposed model scenarios. Only minor reductions in maximum current speed are predicted at the transition from the existing baseline dredge pocket into the expanded deeper dredge pocket (-12.4 mCD). Whilst the modelling results indicate that the proposed dredging will produce minor localised changes in current velocities within the dredge extent, it is considered that these variations are insignificant in terms of both the local and wider hydrodynamic regime of the Moray Firth, with post development velocities of a similar nature to those observed elsewhere.

Comparison of statistical maximum current speed has also been undertaken between two island extension options and the proposed development scenario. The results highlight that neither of the potential island extension options is predicted to have a significant impact on tidal currents versus the proposed development scenario.

Wave Climate

The proposed works could result in alterations to the local wave climate. Spectral wave modelling has been undertaken for existing (baseline) and proposed development scenarios and is described within EIAR Appendix 10.3 of this EIAR. The model scenarios have simulated a period of hindcast wave and wind conditions across an astronomical tidal cycle including both neap and spring tides. Comparison of existing and proposed scenario statistical maximum significant wave height through the simulation duration highlights only a minor increase in wave height predicted along the quay within the proposed port extension dredge pocket. Analysis of the model results and input parameters highlights that peak wave heights in this area occur during winds from the west and northwest, aligned with the harbour entrance and quay. Waves would be able to penetrate further into the harbour through the navigation channel and dredge pocket with wind from this direction. Elsewhere, outside the immediate vicinity of the proposed dredge zone the modelling indicates that the proposed development will have no significant impact on wave climate.

Sediment Transport

The proposed works could result in alterations to local sediment transport processes. Coupled hydrodynamic, spectral wave and sand transport modelling has been undertaken for the existing (baseline) and proposed development scenarios and is described within EIAR Appendix 10.3 of this EIAR. The model scenarios have simulated sand transport under a period of average conditions followed by a significant storm event from the key north-eastern sector (Storm Ciaran, 2023). Comparison of existing and proposed scenario bed level change (cumulative deposition and erosion) and the end of the scenario simulations highlights that no significant difference is predicted between the baseline and post extension scenarios. The deepening of the inner harbour is not predicted to impact the key sediment transport

processes or pathways, particularly those associated with the active spit extension and intertidal Whiteness Sands.

Due to the large volume of sediment currently available within the local coastal system, it is considered that the removal of the proposed extension dredge budget will not be significant in terms of the wider system. Observed trends, model results and the conceptual understanding of local sediment transport processes all indicate that potential impacts to sediment transport and coastal morphology will be insignificant and localised in extent. The key longshore feed of sediment along the spit will continue, with change limited to the footprint and immediate vicinity of the extension works.

Patterns of bed level change in the two island extension scenarios have been compared to the proposed port extension results, highlighting that the island extension options are predicted to only result in localised impacts to sand transport. Given the lack of impact to tidal currents, predictions of additional localised deposition under island extension option scenarios are considered to be primarily a result of provision of additional shelter from wave action.

Geomorphology

EIAR Appendix 10.3 of this EIAR presents the coastal processes assessment for the proposed port extension development. As described in the previous sections, the associated coastal modelling study finds that the proposed port extension is unlikely to result in any significant change to the key coastal processes of tides, waves and sediment transport. Where changes have been predicted from existing (baseline) conditions, these are minor and predominantly within the immediate vicinity of the extension dredge zone. The proposed port extension with dredging of the inner harbour is therefore not predicted to result in any significant impact to surrounding key geomorphological features or designations.

### 10.5.2 Operation

Key operational stage impacts of the proposed works on coastal processes and geomorphology are assessed under the following headings:

- Tidal levels and currents;
- Wave climate;
- Sediment transport; and
- Geomorphology.

Tidal Levels and Currents

The impact of the proposed development during the operational phase on tidal levels and currents is considered to be the same as during the final construction phase, where the full footprint of the proposed development would be in place.

Wave Climate

The impact of the proposed development during the operational phase on wave climate is considered to be the same as during the final construction phase, where the full footprint of the proposed development would be in place.

Sediment Transport

The impact of the proposed development during the operational phase on sediment transport processes is considered to be the same as during the final construction phase, where the full footprint of the proposed development would be in place.

Geomorphology

The impact of the proposed development during the operational phase on geomorphology is considered to be the same as during the final construction phase, where the full footprint of the proposed development would be in place.

## 10.6 MITIGATION AND ENHANCEMENT

### 10.6.1 Embedded mitigation

The development of the design has been an iterative process. The environment team has worked in close collaboration with the infrastructure design team to avoid or reduce environmental impacts through the design. This is referred to as embedded mitigation (or design interventions). The principles of the design and mitigation hierarchy outlined in EIAR Chapter 2 (Methodology) have been followed. The first principle being to avoid potential adverse effects, if at all practicable, before seeking to minimise or mitigate for any unavoidable impacts. Embedded mitigation for the proposed development is reported in EIAR Chapter 3 (Project Description) which also includes a description of the design alternatives that have been considered, including the environmental factors which have influenced the decision-making. Mitigation measures will seek to reduce impacts during both construction and operation phases. Any effects which cannot be mitigated or reduced are referred to as residual effects.

### 10.6.2 Mitigation

Mitigation is included in the Outline Construction Environmental Management Document (CEMD). The Outline CEMD will be developed into the Construction Environmental Management Plan (CEMD) for approval by the Highland Council, with subordinate Construction Environmental Management Plans (CEMPs) for implementation during construction. Further information on the Outline CEMD is provided within EIAR Chapter 3 (Project Description). EIAR Chapter 15 (Schedule of Mitigation and Enhancements) provides a summary of the mitigations identified within this EIAR.

A suitably qualified Environmental Clerk of Works (EnvCoW) will monitor as appropriate the construction works to ensure that the CEMP and associated mitigation measures are being implemented effectively.

### 10.6.3 Construction Mitigation Measures

This section summarises the mitigation required during the construction of the proposed development. Unless stated all mitigation is considered to be embedded as it follows best practice measures and/or is required to achieve compliance with legislation. Mitigation measures of relevance during construction are included within the Outline CEMD.

Construction will be carried out using industry best practice and in accordance with implementation of the requirements identified in the Outline CEMD. Construction information is presented in Chapter 3 (Project Description).

<u>General Management</u>

An Outline CEMD will be produced to ensure that the mitigation measures outlined in the EIAR are followed during the proposed construction works. The Outline CEMD will be developed into a Construction Environment Management Plan (CEMP) and will include surface water management and pollution prevention measures (e.g. Pollution Prevention Plan) and will be in place during construction and operation. The CEMD will remain a live document and will be continually updated as the work progresses. The Outline CEMP is a practical tool to facilitate the management of environmental mitigation measures and to provide a clear roadmap of the key roles and responsibilities during construction, and is detailed further within EIAR Appendix 3.2 of EIAR Chapter 3 (Project Description).

Best practice will be adopted throughout all phases of development, following current guidance. The programme of works, including timing, direction and method of capital dredge, will be planned, monitored and managed to minimise the potential negative environmental impacts through a specific CEMP.

The Port of Ardersier's Marine Environmental Policy sets out the principles applied to reduce the risks and impacts of port related activities on the environment. These principles flow down through the port environmental management documents.

Sediment Management

It is considered that dredging would be undertaken in line with the conditions of the marine licence and associated Best Practicable Environmental Option (BPEO) report.

### 10.6.4 Operation Mitigation Measures

General Management

The Port Operational Environmental Management Plan (POEMP) is already in place for the consented site, this will be updated for the operational phase should the extension gain consent. Best practice will be followed throughout the operational phase, with reference to the SEPA Guidance for Pollution Prevention (GPPs), and best practice guidance.

### 10.6.5 Enhancements

Proposals include extension of the Tern Island to the immediate west of the navigation channel for the benefit of the local bird population. More details on this are provided within EIAR Chapter 3 (Project Description), EIAR Chapter 13 (Ornithology) and EIAR Chapter 15 (Schedule of Mitigation and Enhancement).

### 10.6.6 Monitoring

The Applicant shall undertake a planned programme of compliance monitoring to verify the effectiveness of the project's environmental management during construction. Monitoring plans will be established and implemented with the agreement of THC, SEPA, NatureScot and Marine Scotland.

Specific auditing and monitoring plans will be developed by the Principal Contractor and will cover the following:

- The contractor's own Environmental Management System and project monitoring plans;
- The CEMD, schedule of mitigation register, relevant legislation and industry good practice;
- All construction activity;
- Roles and responsibilities for those undertaking audits and monitoring;
- Frequency of inspection activities (i.e. daily, weekly, monthly);
- Process to deal with corrective actions/non-compliance; and
- Reporting procedures (including non-compliance).

## 10.7 ASSESSMENT OF SIGNIFICANT EFFECTS

This section assesses the level and significance of the residual effects of the proposed development on coastal processes and geomorphology receptors during both construction and operation with the

mitigation described in Section 10.6 in place. The residual effects are presented in Table 10.5 and Table 10.6

Table 10.5 summarises the assessment of significance of effect of the proposed development upon coastal processes and geomorphology receptors during construction.

**Table 10.5: Summary of assessment of significance of effect during construction**

| Receptor | Value/ Sensitivity/ Importance | Potential impact (in the absence of mitigation) | Mitigation | Residual effect |
|---|---|---|---|---|
| Operational waters and sediment of Ardersier Port | Medium | • Changes to local tidal levels and currents | CEMP Marine Environmental Policy | Negligible |
| | | • Changes to the local wave climate | CEMP Marine Environmental Policy | Negligible |
| | | • Changes to the sediment transport processes | CEMP Marine Environmental Policy | Negligible |
| | | • Associated impacts to key geomorphological features | CEMP Marine Environmental Policy | Negligible |
| Wider coastal waters and sediment of Hilton of Cadboll to Whiteness Head | High | • Changes to local tidal levels and currents | CEMP Marine Environmental Policy | Negligible |
| | | • Changes to the local wave climate | CEMP Marine Environmental Policy | Negligible |
| | | • Changes to the sediment transport processes | CEMP Marine Environmental Policy | Negligible |
| | | • Associated impacts to key geomorphological features | CEMP Marine Environmental Policy | Negligible |
| Whiteness Head SSSI | High | • Changes to local tidal levels and currents | ~~one~~CEMP Marine Environmental Policy | Negligible |
| | | • Changes to the local wave climate | ~~one~~CEMP Marine Environmental Policy | Negligible |
| | | • Changes to the sediment transport processes | CEMP Marine Environmental Policy | Negligible |

| Receptor | Value/ Sensitivity/ Importance | Potential impact (in the absence of mitigation) | Mitigation | Residual effect |
|---|---|---|---|---|
| | | • Associated impacts to key geomorphological features | CEMP Marine Environmental Policy | Negligible |
| Inner Moray Firth RAMSAR | High | • Changes to local tidal levels and currents | CEMP Marine Environmental Policy | Negligible |
| | | • Changes to the local wave climate | CEMP Marine Environmental Policy | Negligible |
| | | • Changes to the sediment transport processes | CEMP Marine Environmental Policy | Negligible |
| | | • Associated impacts to key geomorphological features | CEMP Marine Environmental Policy | Negligible |
| | | • Changes to local tidal levels and currents | CEMP Marine Environmental Policy | Negligible |

Table 10.6 summarises the assessment of significance of effect of the proposed development upon coastal processes and geomorphology receptors during operation.

**Table 10.6: Summary of assessment of significance of effect during operation**

| Receptor | Value/ Sensitivity/ Importance | Potential impact (in the absence of mitigation) | Mitigation | Residual effect |
|---|---|---|---|---|
| Operational waters and sediment of Ardersier Port | Medium | • Changes to local tidal levels and currents | OEMP Marine Environmental Policy | Negligible |
| | | • Changes to the local wave climate | OEMP Marine Environmental Policy | Negligible |
| | | • Changes to the sediment transport processes | OEMP Marine Environmental Policy | Negligible |
| | | • Associated impacts to key geomorphological features | OEMP Marine Environmental Policy | Negligible |

| Receptor | Value/ Sensitivity/ Importance | Potential impact (in the absence of mitigation) | Mitigation | Residual effect |
|---|---|---|---|---|
| Wider coastal waters and sediment of Hilton of Cadboll to Whiteness Head | High | • Changes to local tidal levels and currents | OEMP Marine Environmental Policy | Negligible |
| | | • Changes to the local wave climate | OEMP Marine Environmental Policy | Negligible |
| | | • Changes to the sediment transport processes | OEMP Marine Environmental Policy | Negligible |
| | | • Associated impacts to key geomorphological features | OEMP Marine Environmental Policy | Negligible |
| Whiteness Head SSSI | High | • Changes to local tidal levels and currents | OEMP Marine Environmental Policy | Negligible |
| | | • Changes to the local wave climate | OEMP Marine Environmental Policy | Negligible |
| | | • Changes to the sediment transport processes | OEMP Marine Environmental Policy | Negligible |
| | | • Associated impacts to key geomorphological features | OEMP Marine Environmental Policy | Negligible |
| Inner Moray Firth RAMSAR | High | • Changes to local tidal levels and currents | OEMP Marine Environmental Policy | Negligible |
| | | • Changes to the local wave climate | OEMP Marine Environmental Policy | Negligible |
| | | • Changes to the sediment transport processes | OEMP Marine Environmental Policy | Negligible |

| Receptor | Value/ Sensitivity/ Importance | Potential impact (in the absence of mitigation) | Mitigation | Residual effect |
|---|---|---|---|---|
| | | | | |
| | | • Associated impacts to key geomorphological features | OEMP Marine Environmental Policy | Negligible |
| | | • Changes to local tidal levels and currents | OEMP Marine Environmental Policy | Negligible |

## 10.8 STATEMENT OF SIGNIFICANCE

Overall, the effects of the proposed development on coastal processes and geomorphology are **not considered to be significant.**

## 10.9 CUMULATIVE EFFECTS

A review of proposed and existing developments was undertaken within 15 km of the application site. For coastal processes and geomorphology the assessment focused on a Zone of Influence (ZOI) surrounding the application site incorporating the harbour, intertidal extents including saltmarsh, and receiving coastal waterbody (Hilton of Cadboll to Whiteness Head coastal water body).

Two active ports are present within 10km of the application site (The Port of Nigg and Cromarty Firth). Both ports discharge into the Cromarty Firth, which is classified as a different coastal waterbody (Outer Cromarty Firth) than that of the proposed development. Given the distance from the site and the nature of the surrounding geography and bathymetry, it is not expected there would be a significant cumulative effect on coastal processes and geomorphology from these developments.

The cumulative effects on coastal processes and geomorphology would therefore be **Negligible**.

# ARDERSIER PORT ENERGY TRANSITION FACILITY PORT EXTENSION

Haventus

November 2025

# Chapter 11 Marine Mammals

# Ardersier Port Extension

| | |
|---|---|
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# 11 MARINE MAMMALS

## 11.1 INTRODUCTION

This chapter presents information required by the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 and the Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 to be provided in the Environmental Impact Assessment Report (EIAR) to enable the identification and assessment of likely significant effects on marine mammals.

The approach to this assessment follows the methodology set out in the EIA Scoping Report (SCOP-0062) and is in accordance with the Scoping Opinion (25/00226/SCOP) produced by The Highland Council and Scoping Opinion received from the Marine Directorate in June 2025. EIAR Chapter 4 (Consultation) contains further information on how each of the matters raised in the Scoping Opinion have been addressed.

The overarching legislation, policy and guidance relating to Marine Mammals in Scotland and relevant to this assessment of the proposed development are presented in EIAR Appendix 11.1.

The assessment has been undertaken in accordance with the methodology as presented in EIAR Appendix 11.2 which includes the assumptions and limitations of the assessment, and EIAR Appendix 11.3 includes the marine mammal study area and key data sources used in the marine mammal assessment. EIAR Chapter 3 (Project Description) contains a detailed description of the proposed development. This chapter is supported by the following EIAR Appendices:

- EIAR Appendix 11.1: Legislation, Policy and Guidance
- EIAR Appendix 11.2: Marine Mammal Assessment Methodology
- EIAR Appendix 11.3: Ardersier ETF Extension Marine Mammal Baseline Characterisation
- EIAR Appendix 11.4: Ardersier ETF Extension Marine Mammal Impact Assessment
- EIAR Appendix 11.5: Underwater Noise Modelling Report
- EIAR Appendix 11.6: Report to Inform the Appropriate Assessment (RIAA) - Marine Mammal Designated Sites
- EIAR Appendix 11.7: Marine Mammal Mitigation Plan (MMMP).
- EIAR Appendix 11.8: Cetacean baseline distribution, occurrence and behaviour in the Moray Firth SAC

## 11.2 CONSULTATION

Responses in relation to the statutory consultation undertaken are presented in the EIAR Chapter 4 (Consultation). Following production of the EIA Scoping Report the following consultation has been undertaken.

Ongoing statutory and non-statutory consultation and incorporation of feedback is an integral part of developing a robust EIAR. The EIA Scoping Report (SCOP-0062) was submitted to the Marine Directorate – Licensing Operations Team (MD-LOT) who issued a detailed response to the Scoping Report's content in the June 2025 Scoping Opinion covering its own opinion on the Scoping Report as well as the statutory and non-statutory consultees' advice on each topic. Scoping responses on for the topic of Marine Mammals can be found in EIAR Chapter 4 (Consultation).

## 11.3 METHODOLOGY

This section provides a summary of the assessment methodology for marine mammals. Further detail is provided in EIAR Appendix 11.2.

### 11.3.1 General Approaches

This assessment has been conducted based on the existing baseline environment (presented in EIAR Appendix 11.3 and EIAR Chapter 3 (Project Description).

Impacts have been assessed for two key, distinct phases of the proposed development; construction, and operations & maintenance (O&M). The EIA methodology for marine mammals is consistent with that provided in the EIA Scoping Report (SCOP-0062).

A summary of the proposed approach to the Marine Mammals assessment that has been considered in the EIAR is outlined below.

### 11.3.2 Assessment of Auditory Injury (PTS) and Disturbance from Piling, and Dredging Activities

Modelling of underwater noise across the proposed development has been undertaken for all potential noise sources (impulsive and continuous) and is used to determine the potential risk of auditory injury and disturbance/displacement effects caused by underwater noise. The methods used to assess the impacts from impulsive noise sources (e.g., piling activities which take place for the construction of mooring dolphins) are fully described in EIAR Appendix 11.5. For the assessment of non-impulsive, continuous noise sources such as vibro-piling, vessel noise and dredging, the underwater noise model incorporated measured source level data to predict auditory injury impact ranges.

For disturbance from piling, Outputs from the underwater noise modelling have been combined with marine mammal density information to quantify the number of marine mammals that are predicted to be impacted by the proposed development using dose-response functions[1,2]. The numbers of animals impacted are presented as proportions of the relevant management units[3] (MUs) (entire MU and UK portion). An assessment of vessel disturbance from dredging activities on marine mammals has made drawing on the results of studies of harbour porpoise responses (5 km effective deterrence range (EDR)) to construction vessel traffic by Benhemma-Le Gall *et al.* (2021)[4] and Benhemma-Le Gall *et al.* (2023)[5], and from bottlenose dolphin responses (1 km EDR) to vessels by New *et al.* (2013)[6], Pirotta *et al.* (2015a), Pirotta *et al.* (2015b)[7,8].

Full details on the methodologies applied to the assessment of auditory injury (PTS) and disturbance from piling and dredging activities can be found in EIAR Appendix 11.2.

### 11.3.3 Assessment of Disturbance from Vessels

Assessments made on the impacts of vessel disturbance are based on the most up-to-date scientific evidence on the effect of construction, and/or O&M vessels on marine mammals, and is a quantitative assessment. For example, for vessels primarily associated with material deliveries, a 2 km effective deterrence range[9] (EDR) has been applied to harbour porpoise, a 1 km EDR to seals, a 0.4 km EDR for

[1] Graham *et al.* (2017) Beatrice Offshore Wind Farm: An interim estimate of the probability of porpoise displacement at different unweighted single-pulse sound exposure levels. Prepared by the University of Aberdeen for Beatrice Offshore Windfarm Ltd.
[2] Whyte *et al.* (2020) Estimating the effects of pile driving sounds on seals: Pitfalls and possibilities. J Acoust Soc Am **147**:3948
[3] Management Unit (MU) typically refers to a geographical area in which the animals of a particular species are found to which management of human activities is applied.
[4] Benhemma-Le Gall *et al.* (2021) Broad-scale responses of harbor porpoises to pile-driving and vessel activities during offshore windfarm construction. Frontiers in Marine Science **8**:664724.
[5] Benhemma-Le Gall *et al.* (2023) Vessel noise prior to pile driving at offshore windfarm sites deters harbour porpoises from potential injury zones. Environmental Impact Assessment Review **103**:107271
[6] New *et al.* (2013) Modelling the biological significance of behavioural change in coastal bottlenose dolphins in response to disturbance. Functional Ecology **27**:314-322.
[7] Pirotta *et al.* (2015a) Predicting the effects of human developments on individual dolphins to understand potential long-term population consequences. Proc. R. Soc. B **282**:20152109
[8] Pirotta *et al.* (2015b) Quantifying the effect of boat disturbance on bottlenose dolphin foraging activity. Biological Conservation **181**:82-89.
[9] An Effective Deterrent Range (EDR) is a radius where marine animals are significantly disturbed by underwater noise, not necessarily completely deterred.

bottlenose dolphins and a 0.25 km EDR for minke whale. Full details on the assessment methodology of disturbance from vessels is outlined in EIAR Appendix 11.2 and EIAR Appendix 11.4.

### 11.3.4 Assessment of Collision Risks from Vessels

The assessment of potential impacts other than underwater noise such as vessel collision risks is qualitative and based on the best available evidence of these impact pathways considered alongside the proposed development design envelope, location and species scoped-in to the assessment. Full details on the assessment methodology of collision risk from vessels is outlined in EIAR Appendix 11.2.

### 11.3.5 Assessment of Indirect Impacts on Prey Availability

The assessment of indirect impacts on prey availability is qualitative, using studies which focus on marine mammal prey species in the Moray Firth, and the potential risks of pollutant release and/or contamination impacts on marine mammal prey items.

### 11.3.6 Cumulative Effects Assessment (CEA)

For marine mammals, the approach to CEA is holistic and combines all potential sources of underwater noise including UXO clearance and pile driving at other construction projects (e.g., offshore wind projects) together with disturbance from vessels, and any other marine construction developments (e.g., ports and harbours) that are planned within the Moray Firth. For each project screened into the CEA, an assessment was made of the number of animals which may be impacted on any one day, based on reported levels of impacts in published EIARs where available and, where not, on various assumptions relating to impact footprints. Full details on the CEA methodology for marine mammals is outlined in EIAR Appendix 11.2.

### 11.3.7 Assessment of Significance

The criteria for determining the significance of effects is a two-stage process which involves defining the sensitivity of the receptors and the magnitude of the impacts. This section describes the criteria applied in this chapter to assign values to the sensitivity of receptors to the magnitude of potential impacts.

#### Sensitivity

The criteria for defining sensitivity for Marine Mammals receptors are provided below in Table 11.1. The value of the receptor is not included in the definition of sensitivity as all marine mammals are considered to have a high value. It is considered that since marine mammals are either listed under Annex IV of the Habitats Directive as EPS of Community Interest and are in need of strict protection and/or are listed in the under Annex II of the Habitats Directive as species of Community Interest, the value of the receptor is inherently considered through various legislation. In addition to the EIA process, there is legislation and regulatory mechanisms (HRA/EPS) to ensure additional and comprehensive assessment to specific species because of their value/importance. Further, the sensitivity of marine mammal receptors should be defined by their potential vulnerability to an impact from the proposed development, their recoverability and their tolerance. This ensures that the potential risks to individuals and populations are based around evidence on the behavioural adaptability of marine mammals, and the likelihood of changes to vital, reproduction and survival rates of these species from specific impacts. The definitions of sensitivity are based upon SMRU Consulting's professional judgement and experience.

**Table 11.1: Definition of Terms Relating to Receptor Sensitivity.**

| Sensitivity | Definition Used in this Chapter |
|---|---|
| High | Adaptability: No ability to avoid or adapt to an impact so that individual survival and reproduction rates are affected. |

| Sensitivity | Definition Used in this Chapter |
|---|---|
| | Tolerance: No tolerance – Effect will cause a change in both individual reproduction and survival rates.<br>Recoverability: No ability for the animal to recover from any impact on vital rates (reproduction and survival rates). |
| Medium | Adaptability: Limited ability to avoid or adapt to an impact so that individual survival and reproduction rates may be affected.<br>Tolerance: Limited tolerance – Effect may cause a change in both individual reproduction and survival of individuals.<br>Recoverability: Limited ability for the animal to recover from any impact on vital rates (reproduction and survival rates). |
| Low | Adaptability: Reasonable ability to avoid or adapt to an impact so that individual reproduction rates may be affected but survival rates not likely to be affected.<br>Tolerance: Some tolerance – Effect unlikely to cause a change in both individual reproduction and survival rates.<br>Recoverability: Ability for the animal to recover from any impact on vital rates (reproduction and survival rates). |
| Negligible | Adaptability: Receptor is able to avoid or adapt to an impact so that individual survival and reproduction rates are not affected.<br>Tolerance: Receptor is able to tolerate the effect without any impact on individual reproduction and survival rates.<br>Recoverability: Receptor is able to return to previous behavioural states/activities once the impact has ceased. |

### Magnitude

The magnitude of an impact is based on its duration and spatial extent. Data sources, feedback received from consultation, and expert judgement are used to inform the assessment of magnitude for impacts to Marine Mammals receptors. The criteria for defining magnitude are defined in Table 11.2

**Table 11.2: Definition of Terms Relating to Magnitude of an Impact.**

| Magnitude | Definition Used in this Chapter |
|---|---|
| High | Extent/Duration: The impact occurs over a large spatial extent and over long-term duration, with the potential to affect a large proportion of a receptor population.<br>Probability/frequency: The effect is highly likely to occur and/or will occur at a high frequency.<br>Consequence: The effect could affect a large enough proportion of the population to alter the long-term trajectory of the population in the long term. |
| Medium | Extent/Duration: The impact occurs over a medium spatial extent and over medium-term duration, with potential affect a moderate proportion of a receptor population.<br>Probability/frequency: The effect is likely to occur and/or will occur at a moderate frequency.<br>Consequence: The effect could affect a moderate proportion of the population although not large enough to alter the population trajectory in the long term. |
| Low | Extent/Duration: The impact is localised and temporary or short-term, with potential to result in a noticeable effect on a small proportion of a receptor population.<br>Probability/frequency: The effect may occur but at low frequency. |

| Magnitude | Definition Used in this Chapter |
|---|---|
| | Consequence: The effect could affect a small proportion of the population, and the population trajectory would not be altered. |
| Negligible | Extent/Duration: The impact is highly localised and short-term, with potential to result in very slight or imperceptible changes to a receptor population.<br>Probability/frequency: The effect is very unlikely to occur; if it does, it will occur at a very low frequency.<br>Consequence: The effect will not alter the population trajectory. |

### Significance

The significance of the effect upon Marine Mammals receptors is determined by correlating the sensitivity of the receptor and the magnitude of the impact. On this basis potential impacts as assessed as either negligible, minor, moderate or major significance. For the purposes of this assessment, any effects with a significance level of major and/or moderate are considered significant in EIA terms, while those of minor and/or negligible are deemed non-significant.

Where the potential for significant effects is identified, additional mitigation measures are proposed and an assessment of residual effects carried out. It should be noted that significant residual effects need not be unacceptable or irreversible.

**Table 11.3: Matrix Used for Assessment of the Significance of the Effect.**

| **Significance of Effect** | | **Sensitivity of Receptor** | | | |
|---|---|---|---|---|---|
| | | *Negligible* | *Low* | *Medium* | *High* |
| **Magnitude of Effect** | *Negligible* | Negligible | Negligible | Negligible | Negligible |
| | *Low* | Negligible | Negligible | Minor | Moderate |
| | *Medium* | Negligible | Minor | Modertate | Major |
| | *High* | Negligible | Moderate | Major | Major |

## 11.4 BASELINE CONDITIONS

The study area for marine mammals varies depending on the species, as each species requires individual consideration based on differing ecology and behaviour. The marine mammal study area has therefore been defined at two spatial scales; a regional scale study area and the local scale study area. The regional scale study area encompasses a wider geographic context in terms of species presence, estimated densities and abundance (i.e.: the relevant Management Units), whilst the local study area consists of the waters surrounding the Port of Ardersier development site, namely the Inner Moray Firth.

EIAR Appendix 11.3 confirmed the presence of five marine mammal species regularly present within the area of the proposed development. These include bottlenose dolphin, harbour and grey seal, harbour porpoise, and minke whale. There are a range of density estimates available from various surveys and

data sources, as outlined in EIAR Appendix 11.3 for each species. Only the most robust and relevant density estimates have included in this EIAR for quantitative impact assessment. These are provided in Table 11.4.

**Table 11.4: Species, management unit (MU) size and density estimates for use in impact assessment for the proposed development.**

| Species | MU | MU size | UK MU Size | MU Ref | Density (#/km$^2$) | Density Ref |
|---|---|---|---|---|---|---|
| Bottlenose dolphin | Coastal East Scotland | 234 | | Arso Civil *et al.* (2025)[10] | Density surface scaled from Thompson et al. (2015)[11] | |
| Harbour seal | Moray Firth | 1,365 | | SCOS (2024)[12] | Grid cell specific | Carter *et al.* (2025)[13] |
| Grey seal | Moray Firth | 5,384 | | SCOS (2024)[12] | Grid cell specific | Carter *et al.* (2025)[13] |
| Harbour porpoise | North Sea | 346,601 | 159,632 | IAMMWG (2023)[14] | 0.2813 | SCANS IV (Gilles *et al.*, 2023)[15] |
| | | | | | 0.186 | Grid cell closest to the port (Gilles *et al.*, 2025)[16] |
| Minke whale | Celtic and Greater North Sea | 20,118 | 10,288 | IAMMWG (2023)[14] | 0.0116 | SCANS IV (Gilles *et al.*, 2023)[15] |
| | | | | | 0.008 | Grid cell closest to the port (Gilles *et al.*, 2025)[16] |

## 11.5 POTENTIAL IMPACTS

The assessment of potential impacts has been conducted in accordance with EIAR Appendix 11.2, and based upon the existing baseline environment (presented in EIAR Appendix 11.3. Full details on the assessments undertaken for each impact pathway, as listed in Sections 11.3.2 – 11.3.5 are provided in EIAR Appendix 11.4.

Table 11.5 details the key proposed development Design Parameters of relevance to the assessment for marine mammal receptors.

[10] Arso Civil *et al.* (2025) Monitoring the Scottish east coast bottlenose dolphin population during a southward range expansion: Final report to Forth and Tay windfarm developers.
[11] Thompson *et al.* (2015) Integrating passive acoustic and visual data to model spatial patterns of occurrence in coastal dolphins. ICES Journal of Marine Science **72(2)**:651-660.
[12] SCOS (2024) Scientific Advice on Matters Related to the Management of Seal Populations: 2024
[13] Carter *et al.* (2025) Updated Habitat-Based At-Sea Distribution Maps for Harbour and Grey Seals in Scotland. Sea Mammal Research Unit, University of St Andrews.
[14] IAMMWG (2023) Review of Management Unit boundaries for cetaceans in UK waters (2023). JNCC Report 734, JNCC, Peterborough, ISSN 0963-8091
[15] Gilles *et al.* (2023) Estimates of cetacean abundance in European Atlantic waters in summer 2022 from the SCANS-IV aerial and shipboard surveys.
[16] Gilles *et al.* (2025) Spatial models of cetacean density in European Atlantic waters based on SCANS-IV summer 2022 survey data

**Table 11.5: Proposed development Design Parameters used to inform the impact assessment for marine mammal receptors**

| Impact | Project details | Timeline |
|---|---|---|
| | ***Construction*** | |
| Auditory injury and disturbance from pile driving of mooring dolphins | • Impact pile driving for 3 mooring dolphins<br>• **Pile diameter:** 1.2 meters<br>• **Maximum hammer energy:** 294 kJ<br>• **Total number of piles**: 12<br>• **Total number of piling days:** 12<br>• **Number of piles installed per day:** 1<br>• **Duration of each pile installation:** 10 hours<br>• **Duration of soft start:** 20 minutes<br>• **Initial soft start strike rate:** 6 strikes per minute (spm) (20% of max)<br>• **Maximum strike rate:** 30 spm | • 12 piling days between 2026 and 2028 |
| Auditory injury and disturbance from dredging and soil disposal | • Cutter Suction Dredge (CSD) modelled and assessed under worst-case scenario for auditory injury<br>• Disturbance assessment has considered CSD, Trailer-Suction Hopper Dredgers (TSHD) and Split Hopper Barges (SHB)<br>• Expected soil disposal sites: Inverness, Sutors or Burghead | • Dredging and soil disposal is expected to be taking place over a 10 week period between March and September (sometime between 2027 – 2029) |
| Vessel disturbance and collision | **Peak vessel activity:**<br>• during spoil disposal operations (between Ardersier and Inverness, Sutors or Burghead)<br>• up to 13–23 barge movements per day may be required to transport dredged material offshore<br>• maximum of ~450 additional vessel movements within the Inner Moray Firth over a 10 week period when considering material delivery by barge, and spoil disposal operations | • Construction activities are planned to take place between 2026 and 2028, with dredging activities (licensed separately) set to take place between 2027 – 2029 |
| *Operation* | | |
| Vessel disturbance and collision | • **Vessel movements:** Vessel traffic during the operational phase is anticipated to be 400 vessel calls per year as a maximum worst-case scenario (Haventus, 2025).<br>• **Vessel speed:** While some of the vessels expected to operate are capable of reaching speeds up to 13 knots, most are expected to transit at typical speeds around 10 knots.<br>• **Vessel types, primarily large vessels servicing offshore industries, including:** Heavy Load Carriers (>150 m): 7 different vessel types arriving on-site, in total, per year, Heavy Lift Vessels (>100 m): 4 different vessel types arriving on-site, in total, per year, Jack-up Barges | • Vessel activity levels will be sustained over a long-term duration (50 years) |

| Impact | Project details | Timeline |
|---|---|---|
| | (>80 m): 7 different vessel types in total, General Cargo Vessels (>140 m): 2 different vessel types arriving on-site, in total, per year, Bulk Carrier (150 m): 1 vessel type arriving on-site, in total, per year, Semi-submersible (137 m): 1 vessel type arriving on-site, in total, per year | |

### 11.5.1 Construction

Key construction stage impacts of the proposed development on Marine Mammals includes:

- Auditory injury (PTS) from piling of mooring dolphins
- Auditory injury (PTS) associated with dredging and spoil disposal activities
- Disturbance from piling of mooring dolphins
- Disturbance associated with dredging and spoil disposal activities
- Disturbance associated with increased vessel traffic
- Collision risks associated with increased vessel traffic
- Indirect impacts on prey availability

### 11.5.2 Operation

Key operational stage impacts of the proposed development on Marine Mammals includes:

- Collision risks associated with increased vessel traffic
- Disturbance associated with increased vessel traffic
- Indirect impacts on prey availability
- Long term habitat changes, displacement and/or barrier effects

## 11.6 MITIGATION AND ENHANCEMENT

### 11.6.1 Embedded mitigation

The development of the design has been an iterative process. The environment team has worked in close collaboration with the infrastructure design team to avoid or reduce environmental impacts through the design. This is referred to as embedded mitigation (or design interventions). The principles of the design and mitigation hierarchy outlined in EIAR Chapter 2 (Methodology) have been followed. The first principle being to avoid potential adverse effects, if at all practicable, before seeking to minimise or mitigate for any unavoidable impacts. Embedded mitigation for the proposed development is reported in EIAR Chapter 3 (Project Description) which also includes a description of the design alternatives that have been considered, including the environmental factors which have influenced the decision-making. Mitigation measures will seek to reduce impacts during both construction and operation phases. Any effects which cannot be mitigated or reduced are referred to as residual effects.

For marine mammal receptors, the embedded mitigation commitments adopted by the proposed development are presented in Table 11.6.

**Table 11.6: Embedded mitigation commitments relevant to marine mammal receptors**

| Embedded Mitigation | Embedded mitigation commitment measures |
|---|---|
| Bunkering Procedures, and Port Oil Spill Contingency Plans | Development of a Bunkering Procedures, and Port Oil Spill Contingency Plans identify potential pollution sources and how the Port of Ardersier will respond to these spill events. |
| Marine Mammal Mitigation Plan (MMMP) | A Marine Mammal Mitigation Plan will be developed, which will be specific to piling and dredging activities. The mitigation measures within the MMMP will be informed by the following:<br><br>• The design principles of the proposed development and secured under Marine Licence consent conditions; and<br>• JNCC (2010) Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise.<br><br>For piling activities, a 500 m mitigation zone (MZ) is considered sufficient to ensure that instantaneous PTS can be effectively mitigated.<br><br>For dredging activities the JNCC protocol currently provides a disproportionate level of mitigation for the proposed dredging works, which is not justified by the perceived risk to marine mammals. It is proposed that there shall be no distance-specific MZ around the dredge vessel. Instead, it is proposed that prior to dredging operations commencing, the MMO will be required to conduct a pre-dredging search of the entire Phase 2 dredging area. This ensures that the inner harbour area is monitored for the presence of seals (the species most likely to be present within the inner harbour area) and other marine mammals.<br><br>The MZ that should be monitored during spoil disposal operations on the approach to, and at the spoil disposal site, is a 200 m MZ established around the spoil disposal vessel.<br><br>Full details can be found in EIAR Appendix 11.7. |
| Construction Environmental Management Plan (CEMP) | A CEMP will be developed and shall include port related oil spill contingency plans. This CEMP will also include information on chemical usage, waste management, and any port related environmental policies. |
| Navigational Risk Assessment (NRA) | An NSRA has been developed, which details the types and numbers of vessels involved in the proposed development work. A NRA shall also be implemented for the operational & maintenance phase of the project. The NRA shall employ mandatory pilotage which ensures vessels are guided safely through the harbour, reducing the risk of collision and accidents. An inhouse traffic management system, as well as coordination with nearby ports and maritime authorities shall manage vessel traffic and prevent congestion. As part of the NRA, implementation of vessel movement plans and marine management strategies shall be required to protect local wildlife. |
| Marine Environmental Policy | The Port of Ardersier's Marine Environmental Policy sets out the measures required to reduce the risks and impacts of port related activities on the environment to a level as low as reasonably practical. Measures include, but are not limited to: |

| Embedded Mitigation | Embedded mitigation commitment measures |
|---|---|
| | • Setting measurable environmental objectives and targets supported by a management programme that measures and monitors performance;<br>• Involve and consult interested parties on environmental issues where appropriate;<br>• Systematically identify and assess environmental risks associated with port related activities;<br>• Strive to achieve continual improvement in environmental management systems and performance. |
| Port Waste Management Plan (PWMP) | The PWMP was developed by the Port of Ardersier to ensure that waste generated at Ardersier Port is managed responsibly, sustainably, and in accordance with relevant legislation and best practices. The goal is to reduce environmental impact, promote resource efficiency, and maintain compliance with the Waste Framework Directive and national waste regulations. |

### 11.6.2 Additional Mitigation Measures

The requirement and feasibility of any additional commitments is dependent on the significance of the effects upon marine mammals. Additional commitments (which require further activity to achieve anticipated outcome- often secured through planning conditions and/or management plans) are incorporated to reduce potential significant effects to environmentally acceptable levels following initial assessment. The additional mitigation measures, if any, required as part of the development proposed development are outlined in section 11.7 and are described in detail in EIAR Appendix 11.4. Each additional mitigation measure relating to marine mammals shall be consulted upon with statutory consultees throughout the EIA process (e.g., through relevant representations).

### 11.6.3 Mitigation

Mitigation is included in the Outline Construction Environmental Management Document (CEMD). The Outline CEMD will be developed into the Construction Environmental Management Plan (CEMP) for implementation during construction. Further information on the Outline CEMD is provided within EIAR Chapter 3 (Project Description). EIAR Chapter 15 (Schedule of Mitigation and Enhancements) provides a summary of the mitigations identified within this EIAR.

#### Construction Mitigation Measures

Table 11.7 summarises all mitigation measures required during the construction of the proposed development. Mitigation measures of relevance during construction are included within the Outline CEMD and EIAR Chapter 15 (Schedule of Mitigation and Enhancements).

Construction will be carried out using industry best practice and in accordance with implementation of the requirements identified in the Outline CEMD. Construction information is presented in EIAR Chapter 3 (Project Description).

**Table 11.7: Mitigation measures of relevance to marine mammals, that are included in the Outline CEMD**

| Mitigation | Mitigation Type |
|---|---|
| Bunkering Procedures, and Port Oil Spill Contingency Plans | Embedded |
| Marine Mammal Mitigation Plan (MMMP) | Embedded |
| Construction Environmental Management Plan (CEMP) | Embedded |
| Navigational Safety Risk Assessment (NRA) | Embedded |
| Marine Environmental Policy | Embedded |
| Port Waste Management Plan (PWMP) | Embedded |
| Port Environmental Management Plan (POEMP) | Embedded |

#### Operational Mitigation Measures

An NRA will be developed, which will detail the types and numbers of vessels during the operations of the proposed development.

### 11.6.4 Enhancements

No enhancements have been identified for marine mammal receptors.

### 11.6.5 Monitoring

No monitoring measures have been identified for marine mammal receptors.

## 11.7 ASSESSMENT OF SIGNIFICANT EFFECTS

The assessment of potential impacts has been conducted in accordance with EIAR Appendix 11.2 and based upon the existing baseline environment (presented in EIAR Appendix 11.3).

Full details on the assessments undertaken for each impact pathway, as listed in Sections 11.3.2 – 11.3.5 are provided in EIAR Appendix 11.4. While EIAR Appendix 11.4 assesses the level and significance of the residual effects of the proposed development on marine mammal receptors during both construction and operation, in detail, this section of the EIAR Chapter provides only a summary of the potential construction and operational impacts of the proposed development for marine mammals. The assessment of significant effects takes into account the mitigation measures as listed in Section 11.6.

### 11.7.1 Construction Impacts

The environmental impacts arising from the construction of the proposed development, relating to marine mammals, are as follows:

- Auditory injury (PTS) associated with piling (vibro and impact) for installation of mooring dolphins;
- Auditory injury (PTS) associated with dredging and spoil disposal activities;
- Disturbance associated with piling (vibro and impact) for installation of mooring dolphins;
- Disturbance associated with dredging and spoil disposal activities;
- Disturbance associated with increased vessel traffic;
- Collision risks associated with increased vessel traffic; and
- Indirect impacts on prey availability.

Each construction phase impact has been assessed against the detailed project design envelope, as described in EIAR Chapter 3 (Project Description). A detailed description of the potential effect on Marine Mammal pathways and receptors caused by each identified impact is given in EIAR Appendix 11.4.

For the purpose of this EIAR Chapter, Table 11.8 summarises the assessment of significance of effect of the proposed development upon marine mammal receptors during construction.

**Table 11.8 Summary of assessment of significance of effect during construction**

| Impact Pathway | Receptor | Sensitivity | Mitigation | Magnitude of Impact | Residual effect |
|---|---|---|---|---|---|
| Auditory injury (PTS) from piling | Harbour porpoise, bottlenose dolphins, grey seals, harbour seals | Low | MMMP CEMP | Negligible | Negligible Non-Significant |
| | Minke whales | Medium | | Negligible | Negligible Non-significant |
| Auditory injury (PTS) from dredging and spoil disposal activities | Harbour porpoise, bottlenose dolphins, grey seals, harbour seals | Low | MMMP CEMP | Negligible | Negligible Non-Significant |
| | Minke whales | Medium | | Negligible | Negligible Non-Significant |
| Disturbance from piling | Harbour porpoise, Harbour seal, Minke whale | Low | MMMP CEMP | Negligible | Negligible Non-Significant |
| | Bottlenose dolphin | Low | | Low | Negligible Non-Significant |
| | Grey seal | Negligible | | Negligible | Negligible Non-Significant |
| Disturbance from dredging and spoil disposal activities | Harbour porpoise, seals at-sea, Minke whale | Low | MMMP CEMP | Negligible | Negligible Non-Significant |
| | Bottlenose dolphin | Medium | | Low | Minor Non-Significant |
| | Seals hauled-out | Medium (Harbour seals, breeding Grey seals)<br><br>Low (non-breeding Grey seals) | | Negligible | Negligible Non-Significant |

| Impact Pathway | Receptor | Sensitivity | Mitigation | Magnitude of Impact | Residual effect |
|---|---|---|---|---|---|
| Disturbance from increased vessel traffic | Harbour porpoise, Seals at-sea | Low | MMMP CEMP | Negligible | Negligible Non-Significant |
| | Bottlenose dolphins | Low | | Low (Non-dredging phase) | Negligible (non-dredging phase) |
| | | | | Medium (Dredging phase) | Minor (dredging phase) Non-Significant |
| | Seals hauled-out | Low (outside breeding/moult) | | Low | Negligible (outside breeding/moult) Non-Significant |
| | | Medium (during breeding/moult) | | Low | Minor (during breeding/moult) Non-Significant |
| | Minke whale | Medium | | Low | Minor Non-Significant |
| Collision risks from increased vessel traffic | All marine mammals | High | MMMP CEMP | Negligible | Negligible Non-Significant |
| Indirect impacts on prey availability | All marine mammals | Low | MMMP CEMP | Negligible | Negligible Non-Significant |

### 11.7.2 Operations & Maintenance Impacts

The environmental impacts arising from the operations and maintenance of the proposed development, relating to marine mammals, are as follows:

- Collision risk impacts associated with increased vessel traffic due to the proposed development during operations and maintenance;
- Disturbance impacts associated with increased vessel traffic due to the proposed development during operations and maintenance (including disturbance to seal haul-outs);
- Indirect impacts on prey availability; and
- Long term habitat changes, displacement and/or barrier effects.

Each operations and maintenance phase impact has been assessed against the detailed project design envelope, as described in EIAR Chapter 3 (Project Description). A detailed description of the potential effect on Marine Mammal pathways and receptors caused by each identified impact is given in EIAR Appendix 11.4.

For the purpose of this EIAR Chapter, Table 11.9 summarises the assessment of significance of effect of the proposed development upon marine mammal receptors during operations and maintenance.

**Table 11.9 Summary of assessment of significance of effect during operation**

| Impact Pathway | Receptor | Sensitivity | Mitigation | Magnitude of Impact | Residual effect |
|---|---|---|---|---|---|
| Collision risks from increased vessel traffic | All marine mammals | High | NRA<br>Marine Environmental Policy | Negligible | Negligible Non-Significant |
| Disturbance from increased vessel traffic | Harbour porpoise, Bottlenose dolphins, Seals at-sea | Low | NRA<br>Marine Environmental Policy<br>POEMP | Negligible | Negligible Non-Significant |
| | Seals hauled-out | Low (outside breeding/moult)<br><br>Medium (during breeding/moult) | | | |
| | Minke whale | Medium | | | |
| Indirect impacts on prey availability | All marine mammals | Low | MMMP<br>Bunkering Procedures, and Port Oil Spill Contingency Plans | Negligible | Negligible Non-Significant |
| Long term habitat changes, displacement and/or barrier effects | Harbour porpoise, Bottlenose dolphins, Minke whale | Low | MMMP<br>POEMP | Negligible | Negligible Non-Significant |
| | Grey seals, Harbour seals | Low (outside breeding/moulting)<br><br>Medium (during breeding/moulting) | | Negligible | Negligible Non-Significant |

## 11.8 CUMULATIVE EFFECTS ASSESSMENT

### 11.8.1 Construction

The environmental impacts arising from the construction of the proposed development, acting cumulatively with other projects, and relating to marine mammals, are as follows:

- Disturbance associated with piling (vibro and impact) for installation of mooring dolphins;
- Disturbance associated with dredging and spoil disposal activities;
- Disturbance associated with increased vessel traffic.

A detailed description of the potential effect on Marine Mammal pathways and receptors caused by each identified impact is given in EIAR Appendix 11.4.

For the purpose of this EIAR Chapter, Table 11.10 summarises the assessment of significance of effect of the proposed development upon marine mammal receptors during construction cumulatively with other projects.

**Table 11.10 Summary of assessment of significance of effect during construction cumulatively with other projects**

| Impact Pathway | Receptor | Sensitivity | Mitigation | Magnitude of Impact | Residual effect |
|---|---|---|---|---|---|
| Disturbance from construction including piling and dredging | Harbour porpoise | Low | MMMP CEMP | Low | Negligible Non-Significant |
| | Bottlenose dolphin, Harbour seal | Low | | Medium | Minor Non-Significant |
| | Minke whale | Negligible to Low | | Low | Negligible Non-Significant |
| | Grey seal | Negligible to Low | | Medium | Negligible to Minor Non-Significant |
| Disturbance from increased vessel traffic | Harbour porpoise, Bottlenose dolphin, Harbour seal, Grey seal | Low | NRA CEMP | Low | Negligible Non-Significant |
| | Minke whale | Medium | | Low | Minor Non-Significant |
| | Seals hauled-out | Grey seal during breeding/moult: Medium | | Low | Grey seal during breeding/moult: Minor Non-Significant |
| | | Grey seal outside of breeding/moult: Low | | | Grey seal during breeding/moult: Negligible Non-Significant |
| | | Harbour seal: Medium | | | Harbour seal: Minor Non-Significant |

### 11.8.2 Operations & Maintenance

The environmental impacts arising from the operations and maintenance of the proposed development, acting cumulatively with other projects, and relating to marine mammals, are as follows:

- Disturbance associated with increased vessel traffic; and
- Disturbance to seal haul-out sites.

A detailed description of the potential effect on Marine Mammal pathways and receptors caused by each identified impact is given in EIAR Appendix 11.4.

For the purpose of this EIAR Chapter, Table 11.11 summarises the assessment of significance of effect of the proposed development upon marine mammal receptors during operations and maintenance cumulatively with other projects.

**Table 11.11 Summary of assessment of significance of effect during operations & maintenance cumulatively with other projects**

| Impact Pathway | Receptor | Sensitivity | Mitigation | Magnitude of Impact | Residual effect |
|---|---|---|---|---|---|
| Disturbance from increased vessel traffic | Harbour porpoise, Grey seal | Low | NRA Marine Environmental Policy | Low | Negligible Non-Significant |
| | Bottlenose dolphin, Harbour seal | Low | | Medium | Minor Non-Significant |
| | Minke whale | Medium | | Low | Minor Non-Significant |
| Disturbance to seal haul-out sites | Seals during breeding/moulting season | Medium | MMMP Marine Environmental Policy POEMP | Low | Minor Non-significant |
| | Seals outside breeding/moulting season | Low | | | Negligible Non-Significant |

## 11.9 STATEMENT OF SIGNIFICANCE

An assessment of the potential impacts of the proposed development on marine mammal receptors during both construction and operations & maintenance phases has been undertaken following the methodology presented in EIAR Appendix 11.2 and based on the existing environmental baseline established in EIAR Appendix 11.3.

During the construction phase, impact pathways such as auditory injury (PTS), behavioural disturbance, collision risk, and indirect effects on prey availability were assessed for a range of marine mammal species, including harbour porpoise, bottlenose dolphin, minke whale, and grey and harbour seals. Receptor sensitivities range from negligible to high. Across all impact pathways, the magnitude of effect was assessed as negligible or low with the exception for bottlenose dolphins during the dredging phase, which were assessed as medium. No significant residual effects are predicted for any species, and thus, all, impacts are assessed as **non-significant** in EIA terms. Embedded mitigation, such as a MMMP and NRA has been incorporated into the project design to reduce the potential for adverse effects.

During the operations and maintenance phase, potential impacts relating to increased vessel traffic, collision risk, prey availability, and long-term habitat changes were similarly assessed. Despite some receptors (e.g. seals during breeding/moulting, and minke whales) having medium sensitivity to specific pressures, the predicted magnitude of impact remains low or negligible. **No significant** effects were identified.

In summary, following detailed quantitative assessment and with the application of embedded mitigation measures, **no significant** adverse effects on marine mammals are expected from the proposed development during either construction or operation.

# ARDERSIER PORT ENERGY TRANSITION FACILITY PORT EXTENSION

Haventus

November 2025

# Chapter 12 Terrestrial Ecology

# Ardersier Port Extension

| | |
|---|---|
| Revision Number: | Final |
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# 12 TERRESTRIAL ECOLOGY

## 12.1 INTRODUCTION

This chapter presents information required by the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 and the Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 to be provided in the Environmental Impact Assessment Report (EIAR) to enable the identification and assessment of likely significant on terrestrial ecology.

The approach to this assessment follows the methodology set out in the EIA Scoping Report (SCOP-0062) and is in accordance with the Scoping Opinion (25/00226/SCOP) produced by The Highland Council. EIAR Chapter 4 (Consultation) contains further information on how each of the matters raised in the Scoping Opinion have been addressed.

The overarching legislation, policy and guidance relating to terrestrial ecology in Scotland and relevant to this assessment of the proposed development are presented in EIAR Appendix 12.1.

The assessment has been undertaken in accordance with the methodology as set out in Section 12.3 below and in EIAR Appendix 12.2 which includes the study area, data sources used and the assumptions and limitations of the assessment. EIAR Chapter 3 (Project Description) contains a detailed description of the proposed development. This chapter is supported by the following EIAR appendices:

- EIAR Appendix 12.1: Legislation, policy and guidance
- EIAR Appendix 12.2: Methodology
- EIAR Appendix 12.3: Desk Study
- EIAR Appendix 12.4: Mitigation
- EIAR Appendix 12.5: Bat Report (GLTA / Statics)
- EIAR Confidential Appendix 12.6: Badger Report
- EIAR Appendix 12.7: Red Squirrel Report
- EIAR Appendix 12.8: Pine marten Report
- EIAR Appendix 12.9: Otter Report
- EIAR Appendix 12.10: Great Crested Newt Report
- EIAR Appendix 12.11: Reptiles Report
- EIAR Appendix 12.12: Water vole Report
- EIAR Appendix 12.13: Phase 1 and Habitat Condition Assessment Report
- EIAR Appendix 12.14: Habitats, Vegetation and GWDTE Report
- EIAR Appendix 12.15: National Vegetation Classification Report

Due to the potential risk of persecution, site-specific data relating to badgers is considered sensitive and is therefore not included within the main body of this report. Detailed information is provided separately in Confidential EIAR Appendix 12.6. The confidential appendix must not be published or made publicly accessible unless all references to badger sett locations have been fully redacted, in accordance with legal and ethical obligations under wildlife protection legislation.

## 12.2 CONSULTATION

Responses in relation to the statutory consultation undertaken are presented in the EIAR Chapter 4 (Consultation). Following production of the EIA Scoping Report the following consultation has been undertaken.

Consultation on terrestrial ecology was undertaken following receipt of the Scoping Opinion from The Highland Council (THC). A supplementary meeting was held to outline the proposed ecological survey programme and discuss key ecological considerations.
Key outcomes included:

- **Compensatory Planting**: THC confirmed that off-site compensatory commercial woodland planting would offset the significance of commercial woodland habitat loss. The proposed planting scheme was discussed with NatureScot in July and August 2025, and a suitable site is being identified.
- **Priority Invertebrates**: THC acknowledged that although the Highland Nature Biodiversity Action Plan (HNBAP) lists 25 priority invertebrate species, the site does not support suitable habitat for these species. The EnviroCentre (2024) Protected Species Survey Report concluded that the site lacks the structural and floristic diversity required by these species, including key microhabitats such as bare ground mosaics, nectar-rich swards, and undisturbed wetland margins.
- **Species Scoped Out**: Dingy Skipper *Erynnis tages* and Small Blue *Cupido minimus* were considered but scoped out due to absence of suitable habitat (e.g. sand dunes, coastal grasslands) within the site and consented port footprint.
- **Habitat Context**: The site is dominated by commercial Scots pine plantation, gorse scrub, and modified grassland, which are structurally unsuitable for notable invertebrate assemblages. Invertebrates were therefore robustly scoped out from further assessment.

The assessment follows the methodology outlined in the EIA Scoping Report (ETF Proposed Extension EIA Scoping – Jan 2025 v7_ISSUED) and responds to the Scoping Opinion issued by The Highland Council (THC 25_00226_SCOP-SCOPING_OPINION-3557435). A detailed response to the Scoping Opinion is provided in EIAR Chapter 4 (Consultation).

## 12.3 METHODOLOGY

The Ecological Impact Assessment (EcIA) has been undertaken in accordance with the CIEEM Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (Version 1.3, 2024)[1]. The assessment integrates desk-based research and field survey data to identify and evaluate likely significant ecological effects of the proposed development.

**Scope and Zone of Influence (ZoI)**:
The ZoI was defined to capture direct and indirect effects beyond the project boundary. Desk studies included data from the National Biodiversity Network (NBN) Gateway, NatureScot SiteLink / Scotland's Environment Map, and aerial imagery, with search radii of:

- 10 km for internationally designated sites (SAC, SPA, Ramsar);
- 2 km for nationally designated sites (SSSI), protected species, and Local Wildlife Sites;
- 2 km for biological records; and
- 1 km for ancient woodland.

**Valuation of Ecological Features**:
Features were assessed for importance, value, and sensitivity using geographic criteria (International, National, Regional, County, Local, Site). Factors considered included:

- Conservation status and legal protection;
- Habitat rarity, connectivity, and irreplaceability;
- Species population size, distribution, and vulnerability; and
- Role in ecosystem function and potential for restoration.

[1] Chartered Institute of Ecology and Environmental Management (CIEEM). (2024). *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*. Version 1.3. Winchester: CIEEM.

**Impact Assessment**:
Impacts were characterised by magnitude, duration, reversibility, and timing. The significance of residual effects was determined after applying the mitigation hierarchy (avoidance, mitigation, compensation, enhancement), with reference to conservation objectives and geographic scale.

Full details of the methodology, including evaluation criteria and supporting tables, are provided in EIAR Appendix 12.2.

**Significance Matrix:**
The significance of ecological effects has been assessed in accordance with CIEEM EcIA guidance (2018; updated 2023), which recommends considering both the importance of the ecological feature and the magnitude of the predicted impact. The matrix below provides a structured approach to assist professional judgment, supported by clear definitions for transparency.
Definitions
Importance (Value of Ecological Feature):

- International: Critical for global biodiversity (e.g., Ramsar site, SAC of global relevance).
- National: Key to maintaining UK biodiversity (e.g., SSSI, nationally rare species).
- Regional: Important within a region or county (e.g., Local Biodiversity Action Plan priority habitat).
- County: Important within a single county or administrative area.
- Local: Contributes to local ecological networks or green infrastructure.

Site: Features of value only within the development site or its immediate vicinity. Magnitude of Impact:

- Major: Permanent or long-term loss or severe degradation of feature integrity.
- Moderate: Partial loss or significant alteration, reversible only in the long term.
- Minor: Small-scale, short-term, or reversible change with limited effect on integrity.
- Negligible: No measurable effect on structure, function, or viability.

Significance of Effect:

- Significant: Likely to influence decision-making or require mitigation/compensation.
- Not Significant: No material influence on decision-making; minor or negligible effect.

**Table 12.1: Significance Matrix**

| Importance | Major | Moderate | Minor | Negligible |
|---|---|---|---|---|
| International | Very High (Significant) | High (Significant) | Moderate (May be Significant) | Negligible |
| National | High (Significant) | Moderate (Significant) | Low (Not Significant) | Negligible |
| Regional | Moderate (Significant) | Low–Moderate | Low | Negligible |
| County | Low–Moderate | Low | Negligible | Negligible |
| Local | Low | Negligible | Negligible | Negligible |
| Site | Negligible | Negligible | Negligible | Negligible |

## 12.4 BASELINE CONDITIONS

### 12.4.1 Desk Study

A desk study was undertaken to identify designated sites within the vicinity of both the terrestrial site and the dredge channel. Sites designated for ornithological interest are detailed separately in EIAR Chapter 13 (Ornithology), and are therefore not discussed further in this chapter. A summary of internationally designated sites within 10 km, as well as nationally and locally designated sites within 2 km Sites designated solely for terrestrial ecological features, which are unlikely to be affected by dredging activities, were excluded from the dredge channel assessment to maintain relevance. Full details of the desk study are presented in EIAR Appendix 12.3.

### 12.4.2 Field Surveys

Habitats

The HED UKHab survey encompassed the wider consented development area; however, this section focuses specifically on terrestrial habitats that will be directly affected within the proposed extension area. The habitats identified within the site are summarised in Table 12.1 and illustrated in Figure 12.1. Alongside the HED habitat survey, a Habitat Condition Assessment (HCA) was undertaken to evaluate the quality of individual habitat parcels. This assessment followed the Statutory Biodiversity Metric Condition Assessment methodology (DEFRA, 2024)[2], which applies defined criteria for each habitat type to determine its condition category. This metric provides a standardised approach for assessing habitat quality relative to its optimal state.

A second National Vegetation Classification (NVC) survey was undertaken specifically to assess Groundwater Dependent Terrestrial Ecosystems (GWDTE) within the site. The results of this survey are presented in EIAR Appendix 12.14, which supersedes any data for the same parcel of land previously covered in the original NVC survey (EIAR Appendix 12.15). Full survey results, including species lists, are provided in the Appendices referenced in Section 12.1.

[2] Department for Environment, Food and Rural Affairs (DEFRA). (2024). *Biodiversity Metric 4.0: Technical Supplement*. London: DEFRA.

**Figure 12.1: UK Hab Habitat Plan**

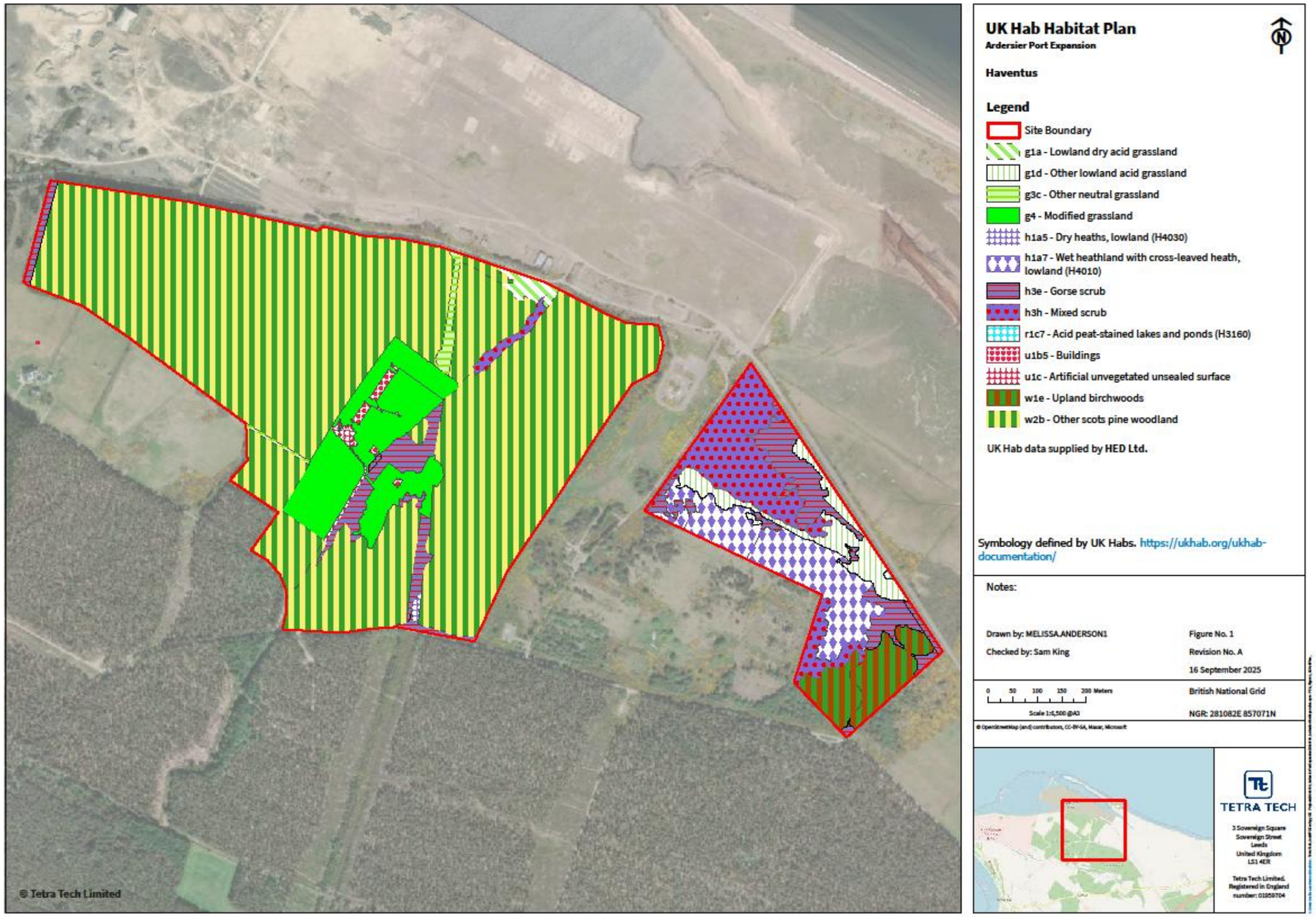

**Table 12.2: Habitats.**

| Habitat (UKHab code) | Habitat Condition Assessment | Description | Conservation status / Designation context |
|---|---|---|---|
| Building (u1b5) | Not applicable | House, barns, and outbuildings used for pheasant rearing. | Site – Not a habitat of conservation importance (however, supports European Protected Species (EPS) bat maternity roost). |
| Gorse scrub (h3e) | Good to Moderate | Dense gorse with native undergrowth and structured glades. | Site – Common and widespread; not listed as a priority habitat in SBL or Highland Local Biodiversity Action Plan (LBAP). |
| Other Scot's Pine woodland (w2b) | Poor | Commercial plantation, single age class, no regeneration. | Plantation Scots pine (non-native origin); not SBL Native Pinewood priority habitat; poor condition. |
| Other neutral grassland (g3c) | Poor to Moderate | Semi-improved grassland on old track; limited species diversity. | Site – May include species-rich swards; not explicitly listed but can support biodiversity. |
| Lowland dry acid grassland (g1a) | Moderate | Flooded grassland with some indicator species; rabbit grazing. | National (Scotland) – Listed in the SBL as a Priority Habitat. |
| Mixed scrub (h3h) | Good to Moderate | Mosaic of gorse, broom, and heather with scattered trees. | Site – Not a priority habitat; typical of successional or disturbed areas. |
| Modified grassland (g4) | Poor | Managed grass and clover; short sward, species-poor. | Negligible – Intensively managed and species-poor. |
| Dry heaths; lowland (h1a5) | Good | Small heath patch with heather and bilberry; undisturbed. | National (UK) – Annex I habitat and Priority Habitat in the SBL. |
| Acid peat-stained lakes and ponds (r1c7) | Fairly Poor | Peat-stained pond with submerged vegetation; no floating plants. | National (UK) – Annex I habitat and Priority Habitat in the SBL. |
| Upland birchwood (w1e) | Moderate | Birch woodland with moss and lichens; limited age diversity, no veteran trees. | National (Scotland) – Listed as a Priority Habitat in the SBL and Highland LBAP. |
| Other lowland acid grassland (g1d) | Moderate | Flooded grassland on low soils; transitional habitat. | National (Scotland) – Included under broader acid grassland types in the SBL. |

| Habitat (UKHab code) | Habitat Condition Assessment | Description | Conservation status / Designation context |
|---|---|---|---|
| Wet heathland with cross-leaved heath; lowland (h1a7) | Good | Wet heath with cross-leaved heath, bilberry, heathers, and sphagnum moss. | National (UK) – Annex I habitat and Priority Habitat in the SBL. |

Protected and notable species

Protected and notable species identified as a receptor for the site are also detailed in Table 12.3.

**Table 12.3: Protected and notable species.**

| Species | Field Survey Result | Geographic importance |
|---|---|---|
| Badger | Detailed field survey information is provided separately in Confidential EIAR Appendix 12.6. | National (UK) – Protected under UK legislation. |
| Otter | Suitable habitat present, but no signs of activity recorded. | International- European Protected Species. |
| Water vole | Suitable habitat, but no signs; predators present; no historic records within 1 km. | National (UK) – Protected under UK legislation. |
| Pine marten | Presence confirmed via scat and camera traps; no dens found; suitable denning features present (e.g. dreys, cavities, disused setts). | National (UK) – Protected under UK legislation. |
| Red squirrel | 36 dreys (34 assessed as active, 2 assessed as inactive); good habitat connectivity; healthy population confirmed. | National (UK) – Protected under UK legislation. |
| Bats | Potential Roost features (PRFs) in trees; no tree roosts; two confirmed roosts located in Juniper Cottage Buildings 2 and 3 (Common & Soprano Pipistrelle); multiple species recorded. | International - European Protected Species. |
| GCN and Common Amphibians | 7 ponds surveyed; all negative for GCN eDNA; poor habitat suitability; historic records nearby. Two and 2 common toads recorded. | International – GCN are a European Protected Species. |
| Reptiles | 10 common lizards; small, fragmented population. | Local - Confirmed presence of common lizard and toad; small and fragmented population supports local-level importance. |
| Invasive species | No Invasive Non-native Species (INNS) were observed within the site. | Negligible. |

### 12.4.3 Ecological Receptors Scoped Out

**Table** 12.4 summarises the ecological features that have been scoped out from further assessment and the reasoning behind the decision.

**Table 12.4 Ecological receptors scoped out from further assessment.**

| Ecological Receptor | Reason |
|---|---|
| Inner Moray Firth – Ramsar<br><br>c.20m north of the site<br><br>c.50m of the Dredged Channel | The Inner Moray Firth Ramsar Site is designated for its internationally important wetland habitats (including intertidal mudflats, sandflats, saltmarsh, sand dunes, shingle bar, and eelgrass beds) and for supporting significant populations of waterbirds. However, there are no direct or indirect terrestrial impact pathways between the proposed development and the Ramsar site's qualifying wetland features, as confirmed by desk study and field survey.<br><br>All ornithological interests (osprey, common tern, waterbird assemblages) are fully assessed in EIAR Chapter 13 (Ornithology), ensuring no duplication of assessment. The terrestrial works do not affect the hydrology, physical integrity, or ecological connectivity of the Ramsar habitats. Embedded mitigation measures (such as bunds, silt fencing, and pollution controls) further ensure that any residual risk of indirect effects (e.g., sediment runoff, water quality changes) is negligible. |
| Moray Firth – SAC<br><br>c.730m north of the site<br><br>c.250 m of the Dredged Channel | The Moray Firth Special Area of Conservation (SAC) is designated under the EU Habitats Directive for features of international conservation importance, notably bottlenose dolphins and subtidal sandbanks. While SACs are of high international value and highly sensitive to underwater noise, water quality changes, and physical disturbance, the qualifying features of this site are marine ecological receptors. As such, the Moray Firth SAC has been scoped out of the terrestrial ecology chapter, with all relevant impacts fully assessed in EIAR Chapter 11 (Marine Mammals). This ensures that the internationally important Annex I and II features, and the site's role in the Natura 2000 and OSPAR MPA networks, are appropriately addressed within the correct specialist chapter. |
| Whiteness Head - SSSI<br><br>c.20 m northeast and c.250 northwest of the site<br><br>c.50m of the Dredged Channel | Whiteness Head is a Site of Special Scientific Interest (SSSI) designated for features of national conservation value and protected under UK legislation. While the site is highly sensitive to hydrological and geomorphological changes, sedimentation, and disturbance, its qualifying features are not relevant to terrestrial ecology receptors. Accordingly, Whiteness Head SSSI has been scoped out of the terrestrial ecology chapter, with all potential impacts on its nationally important features addressed in the relevant specialist chapters; EIAR Chapter 10 (Coastal Processes & Geomorphology); EIAR Chapter 11 (Marine Mammals); and EIAR Chapter 13 (Ornithology). This approach ensures that the statutory protection and conservation significance of the site are fully considered within the appropriate context. |
| Ardersier Glacial Deposits – SSSI<br><br>c.1.6 km southwest of the site | This SSSI, designated for its nationally rare Quaternary geological and geomorphological features. However, due to its location over 1.6 km from the proposed development and the absence of hydrological connectivity, no direct or indirect impact pathways have been identified. As such, this receptor has been scoped out of further assessment. |

| Ecological Receptor | Reason |
|---|---|
| Kildrummie Kaines – SSSI<br><br>c.3.6 km southeast of the site | This site is designated for both its Quaternary geomorphological features and nationally scarce biological habitats, each highly sensitive to hydrological changes. However, given its distance of over 3.6 km from the proposed development and the absence of hydrological connectivity, no impact pathways have been identified. Consequently, this receptor has been scoped out of further assessment. |
| Rosemarkie and Shandwhich Coast – SSSI<br><br>c.5.6 km west of the site | This site is valued for its diverse geological features, as well as important coastal habitats such as maritime cliffs, and sand dunes. However, with no identified impact pathways and a separation distance of over 5.6 km from the proposed development, this receptor has been scoped out of further assessment. |
| The Dens – SSSI<br><br>c.6.6 km west of the site | This site is designated for its nationally important mass movement geomorphology. However, as the site lies over 6.6 km from the proposed works and no impact pathways have been identified, it has been scoped out of further assessment. |
| Cawdor Wood – SSSI<br><br>c.7.2 km south of the site | This site is designated for its nationally important upland oak woodland and lichen assemblages. However, as the site is located over 7.2km from the proposed development and lacks hydrological or ecological connectivity, no impact pathways have been identified. Therefore, this receptor has been scoped out of further assessment. |
| Cawdor Wood – SAC<br><br>c.7.2 km south of the site | This site is designated for its Annex I habitat “old sessile oak woods with Ilex and Blechnum,”. However, due to its location over 7.2 km from the proposed development and the absence of hydrological connectivity, no direct or indirect impact pathways have been identified. Therefore, this receptor has been scoped out of further assessment. |
| Culbin Bar – SAC<br><br>c. 8.8 km east of the site | Culbin Bar SAC has been scoped out of the terrestrial ecology chapter, with all potential impacts on its nationally important features addressed in the relevant specialist chapters: EIAR Chapter 10 (Coastal Processes & Geomorphology). The Annex I habitats at Culbin Bar and Lower River Spey, Spey Bay—including 1220 Perennial vegetation of stony banks—are of high conservation value and represent unique shingle complexes in Scotland. However, this site is located over 8.8 km from the proposed works and is not hydrologically or physically connected to the dredging or piling zones. No plausible impact pathway has been identified between the project and the qualifying features of this site. As such, this receptor has been robustly scoped out of further assessment in the terrestrial ecology chapter. |
| Culbin Sands Forest and Findhorn Bay SSSI<br><br>c.7.8 km east of the site | No impact pathway identified. Site is >7.8 km away and not connected to dredging or piling zones. As such, this receptor has been scoped out of further assessment. |
| Longman and Castle Stuart Bays SSSI | No impact pathway identified. Site is >7.3 km away and not hydrologically connected to the works, therefore, this receptor has been scoped out of further assessment. |

| Ecological Receptor | Reason |
|---|---|
| c.7.3 km southwest of the site | |
| Ancient woodland – I.D. 6357 | Although close to the site boundary, this parcel is of plantation origin and does not support semi-natural ancient woodland features. No direct or indirect impacts are anticipated due to embedded buffer zones and lack of connectivity to construction areas. |
| Ancient woodland – I.D. 7052 | Located outside the Zone of Influence (ZoI) for terrestrial works. No hydrological or ecological connectivity to the proposed development footprint. Plantation origin further reduces sensitivity. |
| Ancient woodland – I.D. 3634 | Too distant to be affected by construction or operational activities. No pathways for disturbance, pollution, or fragmentation. Plantation origin and lack of qualifying ancient woodland indicators support exclusion. |
| Building u1b5 | Buildings on site have been scoped out because, as physical structures, they are not considered an ecological receptor of intrinsic value under EcIA methodology. Their ecological relevance arises solely from supporting bat roosts, which are European Protected Species (EPS) and therefore assessed separately as a high-sensitivity receptor in this chapter. This approach avoids duplication and ensures that the assessment focuses on the species and their legal protection rather than the built fabric, which does not independently contribute to biodiversity value. |
| Modified grassland g4 | Intensively managed and species-poor; not considered of conservation importance. |
| Great crested newt | Seven ponds were surveyed, and habitat suitability for GCN was evaluated as ranging from Poor to Below Average based on standard assessment criteria. The eDNA analysis conducted on water samples from each pond returned negative results, indicating no detectable presence of GCN at the time of sampling. |
| Water vole | Although the survey area contains suitable habitats for resting, foraging, and commuting, no field signs indicative of water vole presence were recorded during the surveys. Evidence of key predators was observed, including plucks, both recent and historic nests, and incidental sightings of raptors such as Buzzards. Anecdotal reports also suggest the presence of domestic cats and pine martens within the area. Supporting these findings, no historical records of water vole have been identified within a 1 km radius of the proposed development, based on available online databases. |
| Invasive species | No Invasive Non-native Species (INNS) were recorded within the site. |
| Groundwater Dependent Terrestrial Ecosystems (GWDTE) | The habitat-focused survey confirms that, while some habitats (e.g. M6c–M23b mosaic and MG10a neutral grassland) are listed as potentially groundwater-dependent, site-specific assessment found these areas to be surface water dependent rather than true GWDTE. This is supported by the local hydrogeology, shallow depressions, proximity to drains, and absence of groundwater discharge or chemical indicators. Therefore, GWDTE are not present in a site-specific context and can be robustly scoped out of the EcIA chapter, as their inclusion is not justified by the baseline evidence. |

### 12.4.4 Important Ecological Features

This section qualifies the Important Ecological Features of the assessment and assigns their importance following judgement or evidence of their value or sensitivity in relation to the proposed development.

- Importance is taken from a schedule of geographic criteria and can relate to quality or extent of designated sites or habitats, to habitat/species rarity, to the extent to which they are threatened throughout their range, or to their rate of decline.
- Value is defined as a judgement of conservation value or contribution to conservation objectives.
- Sensitivity is defined as sensitivity to an environmental change.

**Table 12.5 Summary of the value/sensitivity/importance of receptors.**

| Feature, Distance, Orientation | Importance | Reasoning |
|---|---|---|
| Gorse scrub (h3e)<br><br>Onsite | Site | Gorse scrub is common and widespread in the region and is not listed as a priority habitat in the SBL or LBAP. It is structurally valuable for some generalist species but is highly resilient and regenerates quickly after disturbance. Its loss would not affect conservation objectives at any scale above the site. Therefore, value, sensitivity, and importance are all low. |
| Other Scot's Pine woodland (w2b)<br><br>Onsite | Local | Although Scots Pine woodland is listed as a Priority Habitat on the Scottish Biodiversity List (SBL) and in the Highland LBAP, and would typically be considered of national value, the woodland in question is a commercial plantation of poor condition, lacking structural diversity and natural regeneration. Plantation pine is not nationally scarce, is regionally abundant and not irreplaceable. |
| Other neutral grassland (g3c)<br><br>Onsite | Site | This semi-improved grassland has limited species diversity and is not listed in the SBL. It may support generalist fauna but lacks conservation priority. The habitat is degraded and resilient to disturbance, so sensitivity is low. Its limited ecological function and lack of priority status mean it is of low importance. |
| Lowland dry acid grassland (g1a)<br><br>Onsite | Local | This habitat is listed as a Priority Habitat in the SBL and supports acid-tolerant flora and bryophytes. However, the patch within the site is small, fragmented, and of moderate condition, with limited species diversity. While it is sensitive to soil disturbance and hydrological changes, it does not represent a significant or irreplaceable example of the habitat. |
| Mixed scrub (h3h)<br><br>Onsite | Site | Mixed scrub is a mosaic of gorse, broom, and heather, typical of successional or disturbed areas. It is not a priority habitat and has limited conservation value. It is low in sensitivity due to its ability to regenerate and adapt to environmental changes. Its structural diversity is noted, but lack of priority status means low importance. |
| Dry heaths; lowland (h1a5)<br><br>Onsite | Local | This habitat is an Annex I habitat under the Habitats Directive and a Priority Habitat in the SBL, which would usually indicate national or even international value. However, the patch within the site is relatively small and isolated, though in good condition. Its sensitivity is high due to slow recovery and vulnerability to fragmentation, but its overall importance is at the local scale, as it does not represent a significant proportion of the national resource and is not directly connected to larger, more significant heathland habitats. |

| Feature, Distance, Orientation | Importance | Reasoning |
|---|---|---|
| Acid peat-stained lakes and ponds (r1c7)<br><br>Onsite | Local | These ponds are ecologically distinct and qualify as Annex I and SBL Priority Habitats. Their rarity and aquatic biodiversity confer value, but their condition is poor, lacking aquatic vegetation. Local importance is assigned due to its semi-natural character. |
| Upland birchwood (w1e)<br><br>Onsite | County | Upland birchwood is a Priority Habitat in the SBL and Highland LBAP, supporting protected species and contributing to biodiversity and connectivity. Birch species are not regionally scarce and so a county level of importance is applied. |
| Other lowland acid grassland (g1d)<br><br>Onsite | Local | Included under broader acid grassland types in the SBL, this habitat supports transitional flora. It is a habitat which is fairly widespread in the region, but not present in all areas |
| Wet heathland with cross-leaved heath; lowland (h1a7)<br><br>Onsite | Local | This Annex I and Scottish Biodiversity List (SBL) Priority Habitat is in good condition but is sensitive to hydrological changes and slow to recover, making it vulnerable to disturbance. While it is relatively widespread and semi-natural in the local area, a National Vegetation Classification (NVC) survey confirmed that no peatland, deep peat, or Groundwater Dependent Terrestrial Ecosystems (GWDTEs) are present. Full results are provided in EIAR Appendix 12.13. |
| Badger<br><br>Onsite | Site | Badger are a common and widespread species, widespread across the region. They are moderately sensitive to disturbance, especially during breeding and foraging, and are vulnerable to habitat fragmentation due to reliance on sett networks and territorial behaviour. |
| Otter<br><br>Onsite | Local | Otter are EPS and legally protected, but no field signs or confirmed activity were found during the survey. As a species they are considered ubiquitous to British waterways and can be expected to be present in the wider landscape. They are sensitive to disturbance when using resting sites and holts. |
| Pine marten<br><br>Onsite | County | Pine marten were confirmed present on site via scat and camera trap footage. The site offers habitat with suitable denning features, supporting a county value. Pine marten are highly sensitive to disturbance, especially during breeding, and rely on specific denning features. In a period of species recovery at a UK level, the highland region is considered to host a healthy population. |
| Red squirrel<br><br>Onsite | County | The site supports a healthy population with 36 active dreys recorded. Red squirrel are legally protected and vulnerable to habitat loss, supporting county value. They are highly sensitive to disturbance and habitat fragmentation, especially during breeding and foraging. In a period of species recovery at a UK level, the highland region is considered to host a healthy population. |
| Bats<br><br>Onsite | County | Multiple bat species were recorded, including confirmed maternity roosts of common and widespread species. Bats are EPS and listed in the Highland LBAP, supporting county value. If future evidence indicates the roosts are of exceptional size or conservation status, this should be reviewed. They are highly sensitive to disturbance, particularly from lighting, noise, and habitat fragmentation during breeding. |

| Feature, Distance, Orientation | Importance | Reasoning |
|---|---|---|
| Reptiles<br><br>Onsite | Site | Confirmed presence of common lizard and toad supports local value. These species are widespread but legally protected. They are moderately sensitive to habitat disturbance and fragmentation, especially during breeding and hibernation. |

## 12.5 POTENTIAL IMPACTS

This section describes predicted ecological impacts and resultant effects during the construction and operation phases of the proposed development on designated sites, habitats, and species.

### 12.5.1 Construction

During the construction phase of the proposed development, the main impacts on the site will include the permanent loss of habitat; the potential for habitat damage, injury or direct mortality of protected and notable species, and disturbance of protected and notable species (i.e. noise, lighting, visual).

Habitats

The construction phase will result in the direct loss and fragmentation of multiple habitat types, including Annex I and Priority Habitats such as lowland dry acid grassland, wet heathland, and dry heaths. The dominant habitat types that will be lost to facilitate the development are Other Scot's Pine woodland, Mixed scrub, and Wet heathland with cross-leaved heath; lowland. Soil stripping, vegetation clearance, and construction access will cause physical disturbance, loss of structural diversity, and disruption of hydrological regimes. These impacts are likely to be long-term and irreversible, especially for habitats with slow recovery potential such as wet heathland and dry heaths.

Protected, Priority and Notable Species

Construction activities associated with the proposed development present significant risks to a range of protected and notable species. The removal of buildings will directly affect bats through the loss of confirmed roosts (located in Juniper Cottage Buildings 2 and 3). The clearance of habitats used by bats, badger (10 total setts), red squirrel (36 dreys recorded), pine marten (numerous suitable denning features present), and reptiles will result in the permanent loss of important commuting, foraging, and resting site habitats within the terrestrial extension area. In addition, construction traffic poses a risk of injury or mortality to fauna moving through the site, and elevated levels of noise and artificial lighting during works may displace species or alter their behaviour within retained adjacent habitat.

### 12.5.2 Operation

During the operational phase, the site will function as an industrial landscape with minimal landscaping. The primary ecological considerations relate to potential indirect effects from operational activities, including noise, lighting, and vehicle movements associated with routine maintenance.

Designated Sites

- Artificial lighting associated with security and operational requirements may result in light spill towards adjacent habitats, potentially affecting nocturnal species. Lighting will be directional and designed to minimise spill beyond the site boundary in accordance with best practice outlined in EIAR Chapter 5 (Additional Information and Assessments).

Habitats

- The operational footprint will remain largely hardstanding and industrial in character, with limited landscaped areas. Habitat management will focus on maintaining and enhancing retained and created habitats.
- No additional land-take or habitat loss is expected during operation. Habitat continuity with surrounding areas will be maintained, which includes measures to control invasive species and promote native vegetation.

Protected, Priority and Notable Species

- Noise and lighting during operation may influence the behaviour of species such as bats, pine marten, and red squirrel in adjacent habitats. However, lighting will be controlled to minimise spill, and operational activity will primarily occur during daylight hours, reducing potential disturbance to nocturnal species.
- Routine maintenance activities are limited in frequency and scale and are not expected to result in disturbance, injury, or mortality of protected species.
- Habitat management measures, including the retention of woodland edges and scrub, will continue to provide foraging and commuting opportunities for bats, red squirrels, and other species.
- No operational impacts are anticipated on amphibians, reptiles, as no further habitat clearance will occur post-construction.

## 12.6 Mitigation And Enhancement

### 12.6.1 Embedded mitigation

The proposed development design has been an iterative process. The environment team has worked in close collaboration with the infrastructure design team to avoid or reduce environmental impacts through the proposed design. This is referred to as embedded mitigation (or design interventions). The principles of the design and mitigation hierarchy outlined in EIAR Chapter 2 (Methodology) have been followed.

The first principle being to avoid potential adverse impacts, if at all practicable, before seeking to minimise or mitigate for any unavoidable impacts. Embedded mitigation for the proposed development is reported in EIAR Chapter 3 (Project Description) which also includes a description of the design alternatives that have been considered, including the environmental factors which have influenced the decision-making. Mitigation measures will seek to reduce impacts during both construction and operation phases. Any effects which cannot be mitigated or reduced are referred to as residual effects.

### 12.6.2 Mitigation

Mitigation is included in the Outline Construction Environmental Management Document (CEMD). The Outline CEMD will be developed into the Construction Environmental Management Plan (CEMP) for implementation during construction. Further information on the Outline CEMD is provided within EIAR Chapter 3 (Project Description). EIAR Chapter 15 (Schedule of Mitigation and Enhancements) provides a summary of the mitigations identified within this EIAR.

A suitably qualified Environmental Clerk of Works (EnvCoW) will monitor as appropriate the construction works to ensure that the CEMP and associated mitigation measures are being implemented effectively.

Additional mitigation measures will address impacts during construction and operation. Any effects that cannot be fully mitigated are identified as residual effects in Section 12.7. A summary of embedded, construction-phase, and operational mitigation measures, including species protection, habitat management plan (HMP), habitat compensation, pollution control, and monitoring, is provided in EIAR Appendix 12.4.

Avoidance

**Principle**: Prevent impacts before they occur, through design and planning.

- Iterative proposed development design to avoid sensitive habitats and species (see “Embedded Mitigation”).
- Where practicable, schedule works outside sensitive periods for qualifying ecological features to avoid disturbance.

- Retaining habitat margins and boundary features (e.g., scrub, woodland) wherever practicable to maintain ecological connectivity.
- Sett closure works will only occur between 1st July and 30th November (inclusive), outside the period when dependent young are present, and under licence where required.
- Pre-works checks by an experienced ecologist to avoid direct injury or mortality to protected species.

Reduce

**Principle:** Reduce the scale or intensity of unavoidable impacts.

- Ecological monitoring and guidance during works in sensitive periods.
- Avoid intense disturbance and apply species-specific standoff/temporal controls where relevant.
- Establishing buffer zones and sediment controls to prevent runoff to adjacent designated sites.
- Directional lighting to reduce visual disturbance (see EIAR Appendix 5.2).
- Retaining boundary woodland blocks and maintaining connectivity for woodland species.
- Staggering forestry operations to encourage dispersal of protected species.

Mitigation (On-site Measures)

**Principle:** Implement measures to remedy or offset impacts during and after works.

- Implementation of the Outline Construction Environmental Management Document (CEMD), subsequent CEMP, and HMP.
- Toolbox Talks and translocation procedures for unexpected species encounters.
- ECoW (Ecological Clerk of Works) supervision for compliance with Species Protection Plans (SPPs).
- Pollution prevention measures: bunded fuel storage, spill kits, designated refuelling areas.
- Installation of artificial refugia and translocation for reptiles prior to vegetation clearance.
- Installation of bat boxes, pine marten den boxes, and red squirrel drey boxes in retained habitats.
- Habitat restoration along woodland edges (e.g., selective thinning, deadwood creation).

Compensation (Off-site or Additional Measures)

**Principle:** Compensate for residual impacts that cannot be avoided, reduced or mitigated.

- Off-site compensatory planting to replicate lost Scot's Pine commercial woodland, with up to 10% native broadleaf component and habitat features.
- Creation of compensatory wetland and heathland habitats within a 2ha on-site donor area (located within the site), which is currently at concept stage.
- Artificial sett creation for badger, bat barn for maternity roost replacement, and enhancement of retained woodland for pine marten and red squirrel (final locations will be confirmed in the Habitat Management Plan in accordance with licensing requirements for protected species).

### 12.6.3 Enhancements

No specific enhancement measures are proposed.

### 12.6.4 Monitoring

Monitoring

**Principle:** Ensure effectiveness of mitigation and compensation through ongoing monitoring and adaptive management.

- Annual monitoring of artificial features (bat boxes, dens, dreys) for occupancy and condition.
- Seasonal surveys for key species (bats, red squirrel, pine marten).

- Vegetation surveys to assess native planting and seedbank establishment.
- Adaptive management based on monitoring results.

## 12.7 ASSESSMENT OF SIGNIFICANT EFFECTS

This section assesses the level and significance of the residual effects of the proposed development on terrestrial ecology receptors during both construction and operation with the mitigation described in Section 12.6 in place. Residual effects are the predicted ecological impacts that remain after mitigation measures have been applied, and are considered significant if they affect the integrity, conservation status, or viability of ecological receptors, in line with CIEEM EcIA Guidelines (2024)**Error! Bookmark not defined.**.

### 12.7.1 Construction phase

**Table** 12**.**6 and **Table** 12**.**7 summarise the important ecological features, potential impact pathways in the absence of mitigation, proposed mitigation to address the effect, and any residual impacts during the construction phase.

Habitats

**Table 12.6 Habitat impact assessment for the construction phase.**

| Ecological Receptor | Geographic importance | Impact pathway/s and effect on ecological receptor without mitigation | Proposed avoidance / mitigation | Likely significant residual effects |
|---|---|---|---|---|
| Gorse scrub (h3e) | Site | • Direct loss due to clearance. | • Retain boundary scrub where practicable;<br>• Incorporate scrub species in landscaping. | Minor adverse effects at Site level |
| Other Scot's Pine woodland (w2b) | Local | • Direct loss of plantation woodland. | • Retain boundary woodland habitats and augment to enhance structural and plant diversity;<br>• Compensatory off-site woodland planting. | No likely significant effects at Local level |
| Other neutral grassland (g3c) | Site | • Direct loss of semi-improved grassland. | • Retain margins in buffer strips<br>• Seed mixes in landscaping to replicate structure;<br>• Habitat restoration in retained areas. | Minor adverse effects at site level |
| Lowland dry acid grassland (g1a) | Local | • Direct loss of habitat;<br>• Soil disturbance;<br>• Direct loss of acid-tolerant flora and bryophytes. | • Retain patches in buffer zones;<br>• Seed mixes in landscaping to replicate structure;<br>• Restoration post-construction. | Minor adverse effects at Local level |
| Mixed scrub (h3h) | Site | • Direct loss of mosaic scrub;<br>• Direct loss of structural diversity. | • Where practicable, the objective will be to recreate suitable habitat using a 2 ha on-site donor area. The detailed design and implementation measures will be set out in the Habitat Management Plan (HMP);<br>• Where practicable, include mosaic structure in landscaping;<br>• Incorporate scrub species in landscaping. | Minor adverse effects at Site level |
| Dry heaths; lowland (h1a5) | Local | • Direct loss of Annex I habitat;<br>• Fragmentation;<br>• Slow recovery potential. | • Where practicable, the objective will be to recreate suitable habitat using a 2 ha on-site donor area. The detailed design and implementation measures will be set out in the HMP. | Minor adverse effects at Local level |
| Acid peat-stained lakes and ponds (r1c7) | Local | • Direct loss of aquatic habitat;<br>• Changes to hydrology and water chemistry. | • Retain pond in located in the eastern boundary;<br>• The objective will be to seek to recreate acid peat-stained lakes and ponds within a 2-hectare on-site donor area, thereby contributing to the restoration of | Minor adverse effects at Local level |

| Ecological Receptor | Geographic importance | Impact pathway/s and effect on ecological receptor without mitigation | Proposed avoidance / mitigation | Likely significant residual effects |
|---|---|---|---|---|
| | | | wetland habitat. The detailed design and implementation measures will be set out in the HMP. | |
| Upland birchwood (w1e) | County | • Direct loss of mature woodland structure and associated biodiversity during construction. | • Where practicable (i.e. along the western boundary) retain boundary woodland;<br>• Include birchwood planting within the compensatory off-site woodland planting;<br>• Maintain connectivity. | Minor adverse effects at County level |
| Other lowland acid grassland (g1d) | Local | • Habitat removal;<br>• Soil disturbance;<br>• Direct loss of transitional flora. | • Where practicable, retain margins;<br>• Re-use soils in habitat creation;<br>• Habitat restoration in retained areas. | Minor adverse effects at Local level |
| Wet heathland with cross-leaved heath (h1a7) | Local | • Direct loss of Annex I habitat;<br>• Hydrological disruption;<br>• Slow recovery. | • The objective will be to seek to recreate Wet heathland with cross-leaved heath within a 2-hectare on-site donor area. Detailed design will be detailed in the HMP. | Minor adverse effects at Local level |

Protected, Priority and Notable Species

**Table 12.7 Protected, priority and notable species impact assessment for the construction phase.**

| Ecological Feature | Geographic importance | Impact pathway/s and effect on ecological receptor without mitigation | Proposed avoidance / mitigation | Likely significant residual impacts |
|---|---|---|---|---|
| Badger | Site | • Damage or destruction of setts (Detailed sett information is provided separately in Confidential EIAR Appendix 12.6)<br>• Disturbance to badgers through increased noise, lighting, and site activity<br>• Displacement of badgers from foraging areas<br>• Increased potential for road mortality due | • Prepare and implement a Badger Species Protection Plan (SPP) before works.<br>• Repeat pre-construction survey within 3 months of works to confirm presence/activity.<br>Avoidance<br>• Maintain ⩾30 m buffers around active setts (100 m for high-noise/vibration works).<br>• Where practicable, schedule disruptive works outside 1 Dec–30 Jun where practicable.<br>• Retain commuting corridors and avoid sett destruction where practicable.<br>Mitigation | No likely significant effects at Site level |

| Ecological Feature | Geographic importance | Impact pathway/s and effect on ecological receptor without mitigation | Proposed avoidance / mitigation | Likely significant residual impacts |
|---|---|---|---|---|
| | | to increased volumes of construction traffic. | • If seasonal constraints cannot be avoided and buffers aren't practicable, obtain a NatureScot licence and implement a Badger SPP.<br>• Appoint an ECoW for Toolbox Talks and compliance monitoring.<br>• Where required, install badger gates, and signage; enforce speed limits; direct lighting away from setts and corridors.<br>Compensation<br>• Provide artificial setts under licence, informed by bait-marking surveys if required.<br>• Where practicable, reinstate habitat connectivity post-construction; monitor sett activity and foraging behaviour.<br>• Improve on- and off-site foraging habitat (e.g., grasslands). | |
| Otter | Local | • Potential damage or destruction of holts / resting place<br>• Disturbance to otter through increased noise, lighting, and Site activity<br>• Displacement of otter from traditional foraging areas<br>• Increased potential for road mortality due to increased volumes of construction traffic. | • Prepare and implement an Otter SPP during works.<br>• Repeat pre-construction survey within 3 months of works to confirm otter presence/activity within 200 m of the site.<br>• Deliver Toolbox Talks to site teams on otter protection measures. | Not significant at a Local level |
| Pine marten | County | • Potential damage or destruction of dens / resting place<br>• Disturbance to pine marten through increased noise, lighting, and site activity<br>• Displacement of otter from traditional foraging areas<br>• Increased potential for road mortality due to increased volumes of construction traffic. | • Prepare and implement a Pine Marten Species Protection Plan (SPP) before works.<br>• Repeat pre-construction survey within 3 months of works to confirm presence/activity.<br><br>Avoidance<br>• Survey suitable habitats using camera/thermal aids; maintain 30 m buffers for non-breeding dens and 100 m for breeding dens.<br>• Where practicable, avoid disturbance during March–August; schedule felling outside this period.<br><br>Mitigation | Minor adverse effect at County level |

| Ecological Feature | Geographic importance | Impact pathway/s and effect on ecological receptor without mitigation | Proposed avoidance / mitigation | Likely significant residual impacts |
|---|---|---|---|---|
| | | | • If seasonal constraints cannot be avoided and buffers aren't practicable or dens must be removed, obtain a NatureScot licence and follow the SPP.<br>• Deliver Toolbox Talks; implement emergency procedures; enforce speed limits and signage; soft-start machinery; consider licensed translocation under the Scottish Code.<br><br>Compensation<br>• Enhance retained woodlands; install artificial dens/nest boxes; collaborate on conservation translocations. | |
| Red squirrel | County | • Direct loss of nesting and foraging habitat through vegetation clearance and felling of Scots pine and Mixed woodland.<br>• Destruction of active dreys, which are used for shelter and breeding.<br>• Loss of habitat connectivity, reducing movement between woodland blocks and increasing isolation.<br>• Increased disturbance from construction activities, noise, and human presence.<br>Without mitigation, the development would result in:<br>• Local population decline due to loss of shelter, food sources, and breeding sites.<br>• Displacement of individuals into suboptimal or already occupied habitats, increasing competition and mortality. | Prepare and implement a Red Squirrel Species Protection Plan (SPP) before works.<br><br>Avoidance<br>• Where practicable, schedule felling outside Feb–Sept where practicable; appoint an ECoW to monitor dreys and advise on avoidance/licensing.<br>**Mitigation**<br>• If seasonal constraints cannot be avoided and destruction of dreys cannot be avoided, obtain a NatureScot licence and follow the SPP.<br>• Where practicable, maintain trees around the perimeter of the proposed extension area (at least 10m) to provide a connecting pathway to any adjacent woodland.<br>• Deliver Toolbox Talks; implement emergency procedures; enforce speed limits and signage; stagger felling and soft-start machinery; repeat pre-construction surveys within 3 months; consider licensed translocation under the Scottish Code.<br>**Compensation**<br>• Plant new woodland to compensate for woodland loss; enhance retained woodlands; install artificial dreys/nest boxes in retained habitats and new woodland | Minor adverse effect at County level |

| Ecological Feature | Geographic importance | Impact pathway/s and effect on ecological receptor without mitigation | Proposed avoidance / mitigation | Likely significant residual impacts |
|---|---|---|---|---|
| | | • Potential breach of legal protections, as red squirrels are protected under the Wildlife and Countryside Act 1981, making it an offence to disturb or destroy active dreys. | creation; collaborate on conservation translocations if required. | |
| Bats | County | The following activities are associated with the proposed extension of the port re-development area:<br>• Felling operations;<br>• Demolition of structures; increased workforce and mechanised plant movement within 30m of a confirmed roost; and<br>• Increased nuisances associated with construction activity (e.g., dust, light, noise pollution). Such activities are anticipated to pose significant direct and indirect impacts to roosting bats, including but not limited to damage/destruction of roosts; severe injury or fatality to roosting bats; and disturbance to roosting, commuting and foraging bats. | Prepare and implement a Bat Species Protection Plan (SPP) before works.<br><br>Avoidance<br>• Where practicable, schedule outside occupancy periods (May–Sept for summer roosts; Nov–Mar for hibernacula).<br>**Mitigation**<br>• If works within occupancy periods are unavoidable, obtain a NatureScot licence and follow the SPP.<br>• For roost loss, secure a derogation licence, time works for bat absence, and supervise demolition by a licence holder.<br>• Site-specific: Juniper Cottage Buildings 2 and 3 require derogation licences; exclusions in April or Sept–Oct; provide compensatory roosts in advance and monitor effectiveness.<br>• Deliver Toolbox Talks; implement emergency stop-work procedures; schedule works in daylight; avoid plant movement near dusk/dawn; direct lighting away from roosts or screen as needed; retain ⩾10 m tree belts; conduct pre-felling PRF checks within 3 months; inspect PRF trees April–Sept; repeat surveys if >18 months elapse.<br>**Compensation**<br>• Install a purpose-built bat roost (“bat barn”) designed to support a maternity colony.<br>• Install bat boxes (e.g., Schwegler types) and integrate roost features into new structures; translocate PRF-bearing timber to retained trees; create new PRFs in retained trees; plant insect-friendly vegetation; maintain connectivity via | No likely significant effects at County level |

| Ecological Feature | Geographic importance | Impact pathway/s and effect on ecological receptor without mitigation | Proposed avoidance / mitigation | Likely significant residual impacts |
|---|---|---|---|---|
| | | | corridors/underpasses; reuse suitable timber in new structures. | |
| Reptiles | Site | Habitat clearance will result in the loss of suitable habitat for common lizards and common toads, including basking areas, refugia, and hibernacula.<br><br>Destruction of refugia and hibernation sites may cause direct mortality or injury to reptiles sheltering within.<br><br>Disturbance during active or hibernation periods could lead to displacement, stress, or death.<br><br>Fragmentation of habitat may reduce connectivity and isolate individuals from viable populations.<br><br>Effect on Ecological Receptors:<br>Without mitigation, the development would cause:<br>• Direct harm or killing of reptiles, breaching protections under the Wildlife and Countryside Act 1981.<br>• Local population decline due to loss of shelter and breeding habitat.<br>• Reduced ecological function of the site for reptile species. | **Mitigation**<br>• Implement a SPP and deliver Toolbox Talks.<br>• Install reptile mats before clearance, allow settling time, then check and translocate reptiles to a suitable adjacent receptor site under ecologist supervision.<br>• Soft-dismantle refugia by hand under ecologist supervision; relocate reptiles if found (April–Sept).<br>**Compensation**<br>• Create reptile refugia in woodland compensation scheme; enhance retained habitat (e.g., varied sward grasslands, south-facing banks). | Minor adverse effect at Site level |

### 12.7.2 Operational phase

This section assesses the level and significance of residual effects on terrestrial ecological receptors during the operational phase of the proposed development, with all mitigation measures described in Section 12.6 in place. Residual effects are considered significant if they affect the integrity, conservation status, or viability of ecological receptors.

**Table 12.8 Assessment of Significant Effects at Operational Phase.**

| Ecological Feature | Geographic importance | Impact pathway/s and effect on ecological receptor without mitigation | Proposed avoidance / mitigation | Likely significant residual impacts |
|---|---|---|---|---|
| Retained Habitats (Woodland edges, scrub, grassland) | Local / County | Indirect disturbance (incursion, lighting, noise); risk of invasive species | Habitat Management and Enhancement<br>• Where practicable, recreate suitable habitat using a 2 ha on-site donor area; detailed design and implementation will be set out in the Habitat Management Plan (HMP).<br>• Implement habitat creation or restoration measures.<br><br>Control of Invasive Species<br>• Monitor and manage invasive non-native species.<br><br>Promotion of Native Vegetation<br>• Use locally appropriate native species in planting schemes.<br><br>Species Protection Plans<br>• Prepare and implement species-specific protection plans as detailed in the mitigation appendix (e.g., bats, badgers, otters, red squirrels).<br><br>Species-Specific Measures<br>• Maintain compensatory bat roost features.<br>• Monitor and maintain artificial dreys (for red squirrels). | Not significant |
| Bats | County | Light spill, noise, disturbance | | Not significant |
| Red Squirrel | County | Noise, lighting, disturbance | | Not significant |
| Pine Marten | County | Noise, lighting, disturbance | | Not significant |
| Badger | Site | Noise, lighting, disturbance | | Not significant |
| Amphibians & Reptiles (Common lizard, common toad) | Local / Site | None (no further habitat clearance) | | Not significant |

| Ecological Feature | Geographic importance | Impact pathway/s and effect on ecological receptor without mitigation | Proposed avoidance / mitigation | Likely significant residual impacts |
|---|---|---|---|---|
| Other Protected/Notable Species | Local / Site | Occasional disturbance | • Monitor and maintain artificial dens (for otters).<br>• Monitor and maintain artificial setts (for badgers).<br><br>Lighting Control<br>• Implement sensitive lighting design to maintain dark corridors and reduce disturbance.<br><br>Retention of Key Features<br>• Retain woodland edges and commuting corridors.<br><br>Traffic and Access Management<br>• Maintain designated speed-controlled routes to reduce wildlife collisions. | Not significant |
| Habitats (General) | Local / County | Indirect disturbance; risk of invasives | • Habitat management;<br>• Control of invasives | Not significant |

## 12.8 CUMULATIVE EFFECTS

Cumulative effects have been assessed by reviewing all consented and proposed developments within a 15 km Zone of Influence (ZoI), as detailed in EIAR Chapter 13 (Ornithology) and the EIAR Chapter 14 (Cumulative Effects). Each project was screened for potential to affect the same Important Ecological Features (IEFs) as the proposed development, considering both spatial and temporal overlap. No other developments were identified that would result in overlapping habitat loss, fragmentation, or disturbance to the same IEFs during the same period. Embedded mitigation and compensation measures further reduce the potential for cumulative effects. Therefore, no significant cumulative effects are predicted.

## 12.9 STATEMENT OF SIGNIFICANCE

The assessment of likely significant effects on terrestrial ecology from the proposed development has been undertaken in accordance with the CIEEM Guidelines for Ecological Impact Assessment in the UK and Ireland (2024)[1]. The significance of effects has been determined with reference to the value and sensitivity of ecological features, the magnitude and duration of predicted impacts, and the effectiveness of proposed mitigation, compensation, and enhancement measures.

**Construction Phase**:
With the implementation of the mitigation hierarchy (avoidance, reduction, mitigation, compensation), the majority of residual effects on important terrestrial ecological features are assessed as **not significant** at their respective geographic scales. Direct losses of habitats, including areas of Scots pine plantation, lowland dry acid grassland, wet heathland, and dry heaths, are unavoidable, but these are either of limited extent, of lower conservation value due to condition, or are subject to robust compensatory planting and habitat creation schemes. The loss of plantation woodland and upland birchwood is offset by off-site compensatory planting, agreed with statutory consultees, and designed to deliver equivalent or greater ecological functionality in the medium to long term.
For protected and notable species (bats, badger, red squirrel, pine marten, reptiles), the application of species-specific protection plans, licensing, and compensatory measures (e.g., artificial roosts, setts, dreys, and den boxes) ensures that the risk of significant adverse effects is minimised. **No significant residual effects** are predicted for these species at the county or site level, provided that all mitigation and compensation measures are implemented as described.

**Operational Phase**:
During operation, the site will be managed as an industrial landscape with retained and enhanced habitat margins. The principal risks relate to indirect disturbance (lighting, noise, vehicle movements), but these are controlled through embedded design measures and ongoing habitat management. No further land-take or habitat loss is anticipated. Residual effects on retained habitats and species are assessed as **not significant** at all geographic scales, with ongoing monitoring and adaptive management in place to ensure the effectiveness of mitigation.

**Cumulative Effects**:
A review of other developments within the zone of influence has not identified any projects likely to result in significant cumulative effects on important ecological features, either in combination with the proposed development or as part of wider landscape-scale impacts.

**Conclusion**:
In summary, with the full implementation of the mitigation, compensation, and monitoring measures set out in this chapter and its appendices, the proposed development is **not predicted to result in any significant residual adverse effects** on terrestrial ecological receptors at the international, national, county, or local scale.

The proposed development accords with the requirements of the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017, the Marine Works (Environmental

Impact Assessment) (Scotland) Regulations 2017, and relevant biodiversity policy objectives, including National Planning Framework 4 (NPF4).

NPF4 places the climate and nature crises at the heart of planning policy and requires that all national, major, and EIA developments deliver significant biodiversity enhancement, leaving nature in a demonstrably better state than before development. The proposed development aligns with NPF4 Policy 3 (Biodiversity) by applying the mitigation hierarchy, incorporating habitat creation and enhancement measures, and committing to long-term management and monitoring.

**No significant residual adverse effects** are predicted, and the proposed development includes compensatory planting and habitat enhancement that provide opportunities for biodiversity gain, consistent with NPF4's objective to secure positive effects for biodiversity and strengthen ecological connectivity.

This conclusion is based on the best available evidence and professional judgement, in line with the CIEEM EcIA Guidelines (2024). Any uncertainties or limitations in the assessment have been addressed through the application of the precautionary principle and the commitment to ongoing monitoring and adaptive management.

# ARDERSIER PORT ENERGY TRANSITION FACILITY PORT EXTENSION

Haventus

November 2025

# Chapter 13 Ornithology

# Ardersier Port Extension

| | |
|---|---|
| Revision Number: | Final |
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# 13 ORNITHOLOGY

## 13.1 INTRODUCTION

This chapter presents information required by the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 and the Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 to be provided in the Environmental Impact Assessment Report (EIAR) to enable the identification and assessment of likely significant effects on ornithology.

The approach to this assessment follows the methodology set out in the EIA Scoping Report (SCOP-0062) and is in accordance with the Scoping Opinion (25/00226/SCOP) produced by The Highland Council. EIAR Chapter 4 (Consultation) contains further information on how each of the matters raised in the Scoping Opinion have been addressed.

The overarching legislation, policy and guidance relating to ornithology in Scotland and relevant to this assessment of the proposed development are presented in EIAR Appendix 13.1.

The assessment has been undertaken in accordance with the methodology as set out in Section 13.3 below and in Appendix 13.2 which includes the study area, data sources used and the assumptions and limitations of the assessment. EIAR Chapter 3 (Project Description) contains a detailed description of the proposed development. This chapter is supported by the following EIAR appendices:

- EIAR Appendix 13.1: Legislation, policy and guidance
- EIAR Appendix 13.2: Methodology
- EIAR Appendix 13.3: Desk Study
- EIAR Appendix 13.4: Mitigation
- EIAR Appendix 13.5: Pinewood Birds Report
- EIAR Appendix 13.6: Breeding Birds Report
- EIAR Confidential Appendix 13.7: Raptors Report
- EIAR Appendix 13.8: Wader Monitoring Report
- EIAR Appendix 13.9: Report to Inform Appropriate Assessment (RIAA) – Habitats Regulations Assessment Stage 1 Screening for Likely Significant Effect and Stage 2 Appropriate Assessment
- EIAR Appendix 13.10: Literature Review (displacement and collision risk, species sensitivity, behavioural adaptation)

Due to the potential risk of disturbance and illegal persecution, site-specific data relating to certain raptor species is considered environmentally sensitive and has therefore been excluded from the main body of this report. Detailed information is provided separately in Confidential EIAR Appendix 13.7. This appendix must not be published or made publicly accessible unless all references to nest locations, flight lines, and roost sites have been fully redacted, in accordance with legal and ethical obligations under the Wildlife and Countryside Act 1981 (as amended) and the Nature Conservation (Scotland) Act 2004. These Acts make it an offence to intentionally or recklessly disturb Schedule 1 species while nesting, or to harass species listed on Schedules 1A and A1.

This chapter assesses likely significant effects on ornithological receptors under the EIA Regulations, while screening for Likely Significant Effect (LSE) and Appropriate Assessment (AA) for Habitats sites is provided in EIAR Appendix 13.9. The RIAA, applying the People over Wind principle and securing enforceable measures through the Construction Environmental Management Plan (CEMP)/Habitat Management Plan (HMP), lighting and vessel protocols, and Ecological Clerk of Works (ECoW) oversight, concludes no adverse effect on site integrity (AEoI) for the Inner Moray Firth Special Protection Area

(SPA) & Ramsar and Moray Firth SPA. The proposed development also includes assembly and tow-out of floating offshore wind turbines, introducing near-shore vessel movements; the RIAA specifically addresses tow-out impacts on the Inner Moray Firth SPA and Moray Firth SPA and confirms no AEoI with vessel-management protocols in place. This EcIA therefore signposts integrity conclusions to EIAR Appendix 13.9 and focuses on EIA significance in parallel.

HRA/EIA signposting and avoidance of duplication. HRA-specific evidence, analysis and the integrity test for Habitats sites are consolidated in EIAR Appendix 13.9. This chapter only:

(i) summarises pathways and receptors where that helps the EIA narrative, and
(ii) signposts to EIAR Appendix 13.9 for the full HRA reasoning and enforceable measures.

To avoid duplication, any HRA-critical measures are referenced here at high level and secured in the Outline CEMD → CEMP/HMP and method statements, with the detailed HRA justification remaining in EIAR Appendix 13.9.

The study area includes both the terrestrial extension land proposed for development (comprising woodland, scrub, and grassland habitats) and the adjacent marine environment affected by proposed dredging activities. The Zone of Influence (ZoI) has been defined to capture direct and indirect effects on ornithological features, including designated sites and important bird populations.

## 13.2 CONSULTATION

Responses in relation to the statutory consultation undertaken are presented in the EIAR Chapter 4 (Consultation). Following production of the EIA Scoping Report the following consultation has been undertaken.

Following receipt of the Scoping Response from THC, a supplementary meeting was held at which the proposed programme of ecological study was outlined (28th May 2025). It was further clarified that compensatory woodland planting would occur off-site, which would reduce the significance of the habitat removal effect at a county level.

The scope and approach to the Ornithology assessment have been informed by:

(i) the Marine Directorate, Licensing Operations Scoping Opinion for the Ardersier Port Extension (June 2025), which sets out the expected EIA content, scope decisions and the need for clear mitigation and monitoring measures; and
(ii) (ii) subsequent client and consultee feedback relayed through the project correspondence. Key points relevant to this chapter are the requirement to present a transparent EIA scope (what is assessed and why) and to provide a measurable Schedule of Mitigation with any associated monitoring.

Consistent with the Marine Directorate, Licensing Operations Team Scoping Opinion, ornithology is scoped into HRA (screening and AA) for the Inner Moray Firth SPA & Ramsar and Moray Firth SPA, with marine mammals and associated designated sites addressed separately under EIAR Chapter 11 (Marine Mammals) / Marine Licence HRA. This scope and the regulatory test of site integrity are documented in EIAR Appendix 13.9 and underpin the signposting used in this chapter.

A literature review on displacement and collision risk for SPA species (EIAR Appendix 13.9) has been used to support the assessment approach and assumptions.

The design and location of compensatory planting were consulted upon with NatureScot in July and August 2025, whereby a suitable location for the planting project was agreed in a manner that would not raise an objection from this natural heritage consultee.

## 13.3 METHODOLOGY

The Ornithological Impact Assessment has been undertaken in accordance with the CIEEM Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (Version 1.3, 2024)[1]. The assessment combines desk-based research with targeted bird surveys to identify and evaluate likely significant effects of the proposed development on ornithological receptors.

**Scope and Zone of Influence (ZoI):**
The ZoI was defined to encompass direct and indirect effects on bird populations, including potential disturbance, displacement, and habitat loss. Desk studies drew on data from the National Biodiversity Network (NBN) Gateway[2], MAGIC[3], local bird records, and aerial imagery. Search radii were applied as follows:

- 10 km for internationally designated sites (Special Protection Areas (SPA), Special Areas of Conservation (SAC), Ramsar sites);
- 2 km for nationally designated sites (SSSI) and locally designated sites relevant to ornithology; and
- 2 km for ornithological records from local recording centres and national databases.

**Valuation of Ornithological Receptors:**
Bird species and assemblages were evaluated for importance, value, and sensitivity using geographic criteria (International, National, Regional, County, Local, Site). Key considerations included:

- Conservation status (e.g., Annex I Birds Directive, Schedule 1 Wildlife and Countryside Act, Birds of Conservation Concern);
- Population size, distribution, and vulnerability;
- Functional role of habitats for breeding, foraging, roosting, or migration; and
- Connectivity to designated sites and wider ecological networks.

**Impact Assessment:**
Potential impacts were characterised by magnitude, duration, reversibility, and timing, with specific attention to seasonal sensitivity (e.g., breeding and overwintering periods). The significance of residual effects was determined following application of the mitigation hierarchy (avoidance, mitigation, compensation, enhancement) and assessed against relevant conservation objectives at the appropriate geographic scale.

Full details of survey methods, evaluation criteria, and supporting data are provided in EIAR Appendix 13.2.

**Significance Matrix:**
The significance of ecological effects has been assessed in accordance with CIEEM EcIA guidance (2018; updated 2023), which recommends considering both the importance of the ecological feature and the magnitude of the predicted impact. The matrix below provides a structured approach to assist professional judgment, supported by clear definitions for transparency.
Definitions
Importance (Value of Ecological Feature):

- International: Critical for global biodiversity (e.g., Ramsar site, SAC of global relevance).
- National: Key to maintaining UK biodiversity (e.g., SSSI, nationally rare species).
- Regional: Important within a region or county (e.g., Local Biodiversity Action Plan priority habitat).
- County: Important within a single county or administrative area.

[1] Chartered Institute of Ecology and Environmental Management (CIEEM). (2024). *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*. Version 1.3. Winchester: CIEEM.
[2] National Biodiversity Network (NBN). (2025). NBN Atlas. Available at: https://records.nbnatlas.org/explore/your-area
[3] Department for Environment, Food & Rural Affairs (defra). (2025). MagicMaps. Available at: https://magic.defra.gov.uk/MagicMap.html

- Local: Contributes to local ecological networks or green infrastructure.

Site: Features of value only within the development site or its immediate vicinity. Magnitude of Impact:

- Major: Permanent or long-term loss or severe degradation of feature integrity.
- Moderate: Partial loss or significant alteration, reversible only in the long term.
- Minor: Small-scale, short-term, or reversible change with limited effect on integrity.
- Negligible: No measurable effect on structure, function, or viability.

Significance of Effect:

- Significant: Likely to influence decision-making or require mitigation/compensation.
- Not Significant: No material influence on decision-making; minor or negligible effect.

**Table 13.1: Significance Matrix**

| Importance | Major | Moderate | Minor | Negligible |
|---|---|---|---|---|
| International | Very High (Significant) | High (Significant) | Moderate (May be Significant) | Negligible |
| National | High (Significant) | Moderate (Significant) | Low (Not Significant) | Negligible |
| Regional | Moderate (Significant) | Low–Moderate | Low | Negligible |
| County | Low–Moderate | Low | Negligible | Negligible |
| Local | Low | Negligible | Negligible | Negligible |
| Site | Negligible | Negligible | Negligible | Negligible |

Assumptions for disturbance and displacement of intertidal waders and waterfowl are supported by a client-provided literature review on collision and displacement of SPA species; species-specific parameters (e.g., sensitivity to visual/noise disturbance, typical flight/flush distances, and likely avoidance) are drawn from that review and applied conservatively where site-specific data are limited.

Potential effects that are principally marine ecology or hydrology in nature (e.g., changes to water quality; underwater noise; coastal processes) are addressed in those chapters. This chapter only assesses ornithological effects via terrestrial/intertidal pathways and provides cross-references where relevant.

## 13.4 BASELINE CONDITIONS

### 13.4.1 Desk Study

A desk study was undertaken to identify designated sites of ornithological interest within the vicinity of both the site and the dredge channel. A summary of internationally designated sites within 10 km, as well as nationally and locally designated sites within 2 km. Sites designated solely for ornithological features, which are unlikely to be affected by dredging activities, were excluded from the dredge channel assessment to maintain relevance. Full details of the desk study are presented in EIAR Appendix 13.3.

### 13.4.2 Field Surveys

Bird species identified as receptors for the site are listed in **Table** 13.2. It should be noted that during the survey seasons, substantial construction activity was underway for the consented port development, which may have influenced bird distribution and behaviour. Full details of the survey results, along with associated figures, are provided in the Appendices referenced in Section 1.1.

**Table 13.2 Bird species**

| Species | Field Survey Result | Conservation status / Designation context |
|---|---|---|
| Breeding birds | 42 species recorded (333 individuals) in 2025, including 10 red/amber-listed (BoCC 2021) and 3 UKBAP priority species: skylark (*Alauda arvensis*), song thrush (*Turdus philomelos*), and yellowhammer (*Emberiza citrinella*). Scrubland to SE supports high passerine diversity; Scots pine plantation supports corvids and raptors. | County/Regional (diverse assemblage, red/amber-listed and UKBAP species present). |
| Raptors | Detailed field survey information is provided separately in Confidential EIAR Appendix 13.7. | County/National (presence of Schedule 1, suitable woodland habitat). |
| Pinewood birds | 20 species (2025), including Schedule 1 crested tit (*Lophophanes cristatus*) and common crossbill (*Loxia curvirostra*), red-listed woodcock (*Scolopax rusticola*), and 3 amber-listed. Breeding evidence for several species. | National (Schedule 1, red/amber-listed, pinewood specialists). |
| Waders (SPA/SSSI assemblage) | Oystercatcher (*Haematopus ostralegus*) (max 535), curlew (*Numenius arquata*) (max 132), bar-tailed godwit (*Limosa lapponica*) (max 305), knot (*Calidris canutus*) (max 387), redshank (*Tringa totanus*) (max 76), etc. High tide roosts mapped. Disturbance events: peregrine, dog walkers, kayakers, wildfowlers. | International/National (SPA/SSSI qualifying features). |

### 13.4.3 Ecological Receptors Scoped Out

**Table** 13.3 summarises the ecological features that have been scoped out from further assessment and the reasoning behind the decision.

**Table 13.3 Ecological receptors scoped out from further assessment.**

| Ecological Receptor | Reason |
|---|---|
| Moray and Nairn Coast SPA | This site is located approximately 8.2 km east of the proposed development. It is designated for osprey, bar-tailed godwit, pink-footed goose, greylag goose, redshank, and large waterfowl assemblages. There are no direct or indirect hydrological, habitat, or disturbance pathways between the proposed devlopment and this SPA, due to the substantial separation distance, prevailing land use, and absence of functional connectivity for qualifying species. The distance far exceeds typical disturbance ranges for these features, and no evidence exists of regular movement or ecological linkage with the project area. In line with CIEEM EcIA Guidelines (2024) and EIA Regulations, this SPA is robustly scoped out of further assessment as no likely significant effects are predicted. |
| Moray and Nairn Coast Ramsar<br><br>c. 8.2km east from the site<br><br>c. 8.2km east from the site | The Ramsar site, overlapping the SPA and also c. 8.2 km east, is designated for its wetland habitats, rare plants and invertebrates, and large waterbird assemblages. There is no hydrological or functional pathway for impact from the proposed works, given the distance and lack of connectivity. The qualifying features are not susceptible to disturbance or pollution at this range. Consistent with CIEEM (2024) and UK government guidance, the Ramsar site is scoped out as no plausible impact pathway exists and no likely significant effects are predicted. |
| Cromarty Firth SPA | Located c. 8.6 km north of the site, this SPA is designated for osprey, common tern, whooper swan, bar-tailed godwit, greylag goose, and large waterfowl assemblages. The |

| Ecological Receptor | Reason |
|---|---|
| c. 8.6km north from the site | separation distance, intervening land, and lack of hydrological or ecological connectivity mean there is no plausible pathway for disturbance or impact. The qualifying features do not use the project area, and the site is well beyond the range of any direct or indirect effects. In accordance with CIEEM EcIA Guidelines (2024) and EIA Regulations, this SPA is robustly scoped out of further assessment. |
| Loch Flemington SPA c. 4.7km south from the site | This SPA is approximately 4.7 km south of the site and is designated for breeding Slavonian grebe. The loch is a discrete, enclosed waterbody with no hydrological or ecological connection to the proposed development or dredge channel. Slavonian grebe is a site-faithful breeder and does not use habitats near the project area. There is no plausible pathway for disturbance, pollution, or habitat loss. Following CIEEM (2024) and EIA Regulations, Loch Flemington SPA is robustly scoped out as no likely significant effects are predicted. |
| Rosemarkie and Shandwick Coast SSSI<br><br>c.5.6 km west of the site | Both sites are hydrologically connected, but are unlikely to be impacted by disturbance, habitat loss, or waterborne pollution due to the separation distance. This site supports important coastal habitats and breeding cormorant populations. While hydrological connectivity exists between this site and the proposed development, there are no direct or indirect pathways for disturbance, habitat loss, or waterborne pollution that could affect bird populations at this distance. The separation distance (>5.6 km) exceeds the typical disturbance range for the qualifying bird species, and there is no evidence of functional connectivity for birds between the two sites. |
| Longman and Castle Stuart Bays SSSI<br><br>c.7.3 km southwest of the site | This site supports wetland and estuarine bird assemblages. Although it is hydrologically connected to the proposed works, the >7.3 km separation distance means there is no plausible pathway for disturbance, habitat loss, or water quality impacts affecting birds. The site lies outside the ZoI for noise, visual, or construction disturbance. |

The separation distances between the proposed development and the Moray and Nairn Coast SPA/Ramsar (8.2 km), Cromarty Firth SPA (8.6 km), and Loch Flemington SPA (4.7 km) exceed published disturbance distances for the qualifying bird species of these sites. Goodship & Furness (2022, NatureScot Research Report 1283)[4] provide a comprehensive review of disturbance distances for waterbirds and waders, reporting typical flush or disturbance distances in the range of 50–500 m, with even the most sensitive species rarely exceeding 1 km. Desk study and field survey data (EIAR Appendix 13.3) confirm that while some qualifying species are present locally, there is no evidence of regular movement or functional linkage between the project area and the populations of these distant designated sites. This is further supported by the 2024–25 wader monitoring (EIAR Appendix 13.7), which found that disturbance responses in SPA/SSSI wader species at Ardersier were only observed in response to localised stimuli (e.g., machinery, people, or predators) and did not extend beyond a few hundred metres. Similarly, the breeding bird survey (EIAR Appendix 13.5) recorded no evidence of displacement or regular movement between the proposed development and the distant SPAs/Ramsar. Therefore, there is no plausible impact pathway, and the rationale for scoping out these sites is robust, transparent, and consistent with CIEEM EcIA Guidelines (2024) and EIA Regulations.

[4] Goodship, N.M. & Furness, R.W. (2022). Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species. NatureScot Research Report 1283.

### 13.4.4 Important Ecological Features

This section qualifies the Important Ecological Features of the assessment and assigns their importance following judgement or evidence of their value or sensitivity in relation to the proposed development.

**Table 13.4 Summary of the value/sensitivity/importance of receptors.**

| Feature, Distance, Orientation | Importance | Reasoning |
|---|---|---|
| Moray Firth – SPA<br><br>c.730 m north of the site<br><br>c.730 m north of the site<br><br>c.250 m of the Dredged Channel | International | The SPA supports internationally important non-breeding populations of divers, grebes (*Podicipedidae*), sea ducks, and shags (*Gulosus aristotelis*). While the SPA lies within the broader ZoI of the proposed works, there is direct hydrological pathway that could result in waterborne pollution affecting these species, and disturbance effects, such as noise or vessel movement, could potentially affect foraging or roosting birds using the SPA, depending on proximity and activity levels. |
| Inner Moray Firth – SPA<br><br>c.20 m north of the site<br><br>c.50 m of the Dredged Channel | International | The SPA supports internationally important non-breeding populations of divers, grebes, sea ducks, and shags. These bird populations are sensitive to disturbance, sedimentation, and changes in habitat structure. While the SPA lies within the broader ZoI of the proposed works, there is no direct hydrological pathway that would result in waterborne pollution affecting these species. However, the proximity of the site means that construction or operational impacts, such as noise, vessel movement, or changes in sediment dynamics, could directly affect the SPA's ornithological features, particularly foraging or roosting birds. |
| Inner Moray Firth – Ramsar<br><br>c.20 m north of the site<br><br>c.50 m of the Dredged Channel | International | Ramsar site overlaps with the SPA and supports the same waterbird assemblages. There is direct hydrological and habitat connectivity for birds, and the site is sensitive to disturbance, pollution, and habitat alteration. |
| Whiteness Head - SSSI<br><br>c.20 m northeast and c.250 m northwest of the site<br><br>c.50m of the Dredged Channel | National | SSSI notified for non-breeding bar-tailed godwit and knot, both of which use intertidal habitats adjacent to the site. These bird populations are sensitive to disturbance, sedimentation, and changes in habitat structure. The proximity of the site means that construction or operational impacts could directly affect the SSSI's ornithological features. |
| Breeding Birds<br><br>Onsite | County / Regional | The site supports a diverse assemblage of breeding birds, including red- and amber-listed species and UKBAP priorities. These populations are sensitive to habitat loss, fragmentation, and disturbance, especially during the breeding season. The value is elevated due to the presence of species of conservation concern. |
| Raptors | County / National | Vantage point and walkover surveys confirmed the presence of several raptor species in the wider area surrounding the proposed development. |

| Feature, Distance, Orientation | Importance | Reasoning |
|---|---|---|
| Onsite | | Detailed field survey information is provided separately in Confidential EIAR Appendix 13.7. |
| Pinewood birds<br><br>Onsite | National | The pinewood supports Schedule 1 and red/amber-listed species (crested tit, crossbill, woodcock), which are sensitive to woodland management and disturbance. The site is important for maintaining local populations of these specialists. |

## 13.5 POTENTIAL IMPACTS

This section provides an assessment of the potential impacts of the proposed development on ornithological receptors, considering both direct and indirect effects during the operational phases.

### 13.5.1 Construction

**Construction disturbance (terrestrial/intertidal)**
The primary pathway is visual/noise disturbance from construction plant, personnel and temporary lighting affecting foraging and roosting waders on adjacent intertidal habitats. Risk is highest during high-tide periods (when roost options are limited) and in cold weather. Without mitigation, short-term behavioural displacement and temporary reductions in feeding efficiency could occur.

Applicability across ornithological receptors. Unless stated otherwise, the disturbance pathways described (noise, visual presence, lighting and human activity) and the corresponding controls apply to all relevant bird groups assessed in this chapter, including onsite breeding birds, raptors/Schedule 1, and pinewood specialists, with receptor-specific sensitivities and legal protections addressed in their dedicated subsections and in EIAR Chapter 15 (Schedule of Mitigation and Enhancements).

**Designated Sites and Qualifying Bird Features**

<u>Inner Moray Firth SPA/Ramsar & Whiteness Head SSSI</u>

- **Direct impacts**: There is a risk of disturbance to SPA/SSSI qualifying wader and waterbird assemblages (oystercatcher, curlew, bar-tailed godwit, knot, redshank) using intertidal and adjacent habitats, particularly during high tide roosts. Construction activities (e.g. piling, dredging, vehicle movement) may cause displacement, reduced foraging efficiency, or abandonment of key roosts.
- **Indirect impacts**: Sediment plumes, turbidity, and accidental pollution could degrade intertidal feeding habitats, affecting prey availability and habitat quality for SPA/SSSI birds.
- **Functional connectivity**: The site is directly connected to the SPA/SSSI for birds, with regular movement of individuals between feeding and roosting areas. Disturbance or habitat alteration at Ardersier could have population-level effects if significant numbers are displaced or if key roosts are lost.

Disturbance (noise/visual/lighting/human presence) to SPA/Ramsar qualifying features on adjacent foreland/foreshore and any physical change to supratidal/intertidal areas are assessed in EIAR Appendix 13.9, Sections 5.1–5.6; subject to the enforceable measures specified there (bund screening, ECoW-verified roost buffers, temporal management at peak high-tide windows/cold snaps, directional/curfewed lighting, disciplined access, and CEMP/GPP pollution controls), these potential effects are mitigated such that residual effects are not significant in EIA terms.

<u>Moray Firth SPA</u>

- **Direct impacts**: Less direct risk to SPA bird features due to distance, but potential for disturbance to foraging seabirds and waterbirds from noise, vessel movement, or lighting.

- **Indirect impacts**: Any changes to water quality or sediment dynamics could have downstream effects, but these are considered low risk for seabird species.

**Onsite Breeding Birds and Raptors**
This section assesses the potential impacts on onsite breeding birds, including both general breeding species and raptors, which are considered separately due to their conservation status and specific sensitivities.

Assembly & Tow-out: near-shore Moray Firth SPA and Inner Moray Firth SPA

- **Impact pathway**: Assembly and tow-out of floating turbines, and associated tug/escort movements, present a temporary disturbance/displacement pathway for the SPAs qualifying features (non-breeding divers, grebes, sea ducks, shag).
- **Mitigation**: The vessel-management protocol - slow, predictable transits on agreed routes; timing to avoid peak periods where practicable; and on-water observation with adaptive response, specified in EIAR Appendix 13.9 Section 5.7 and secured through the CEMP/operational method statements.

Breeding Birds (including red/amber-listed and UKBAP species)

- **Direct impacts**: Clearance of woodland, scrub, and grassland will result in the loss of nesting, foraging, and sheltering habitat for a diverse assemblage of breeding birds. There is a risk of nest destruction, direct mortality of eggs/chicks, and reduced breeding success if clearance occurs during the breeding season.
- **Indirect impacts**: Increased noise, lighting and human activity may cause disturbance (e.g. reduced nest attendance, nest abandonment) and reduce productivity. Loss of habitat connectivity may fragment populations, especially for woodland and scrub specialists.
- The impact is likely to be significant at the county/regional level for red/amber-listed and UKBAP species if not mitigated.

Raptors (including Schedule 1 species)

- **Direct impacts**: Felling of woodland or disturbance near nest sites may destroy active nests or cause breeding failure for raptor species such as peregrine. Raptors are highly sensitive to disturbance, especially during the nesting period.
- **Indirect impacts**: Increased human disturbance, noise and lighting, together with edge effects and fragmentation, may reduce breeding success and the long-term viability of pinewood bird populations.
- The impact is likely to be significant at the county/national level for Schedule 1 raptors if not mitigated.

Pinewood Birds

**Direct impacts**: Loss or degradation of pinewood habitat will affect specialist species (crested tit, crossbill, woodcock) and have limited alternative habitat locally.

- **Indirect impacts**: Increased edge effects, disturbance, and fragmentation may reduce breeding success and long-term viability of pinewood bird populations.
- The impact is likely to be significant at the local level for pinewood specialists if not mitigated.

### 13.5.2 Operation

**Operational disturbance & lighting**

Operational lighting and episodic high-activity periods could cause repeated disturbance if not designed/managed; lighting design and operational controls are therefore included in EIAR Chapter 15 (Schedule of Mitigation and Enhancements).

**Designated Sites and Qualifying Bird Features**

- Direct impacts: Routine port operations (vehicle movement, lighting, noise) may cause intermittent disturbance to SPA/SSSI birds, particularly during sensitive periods (e.g. high tide roosts, wintering season).
- Indirect impacts: Artificial lighting may disrupt nocturnal behaviour or increase predation risk for ground-roosting birds. Ongoing human activity may reduce the suitability of adjacent habitats for sensitive species.
- With effective mitigation (e.g. directional lighting, restricted access), operational impacts are likely to be minor and not significant at the population level, but ongoing monitoring is required.

**Onsite Breeding Birds, Raptors, and Pinewood Birds**

- **Direct impacts**: No further habitat clearance is anticipated post-construction, but ongoing disturbance from maintenance, traffic, and human presence may reduce breeding success or deter recolonisation of restored habitats.
- **Indirect impacts**: Loss of mature woodland and scrub may have long-term effects on population viability for woodland and pinewood specialists, unless compensatory planting and habitat management are successful.
- Residual operational impacts are likely to be minor if mitigation and habitat compensation are fully implemented and maintained.

## 13.6 MITIGATION

### 13.6.1 Embedded mitigation

The proposed development design has been an iterative process. The environment team has worked in close collaboration with the infrastructure design team to avoid or reduce environmental impacts through the proposed design. This is referred to as embedded mitigation (or design interventions). The principles of the design and mitigation hierarchy outlined in EIAR Chapter 2 (Methodology) have been followed.

The first principle being to avoid potential adverse impacts, if at all practicable, before seeking to minimise or mitigate for any unavoidable impacts. Embedded mitigation for the proposed development is reported in EIAR Chapter 3 (Project Description) which also includes a description of the design alternatives that have been considered, including the environmental factors which have influenced the decision-making. Mitigation measures will seek to reduce impacts during both construction and operation phases. Any effects which cannot be mitigated or reduced are referred to as residual effects.

### 13.6.2 Mitigation

Mitigation is included in the Outline Construction Environmental Management Document (CEMD). The Outline CEMD will be finalised and will have subordinate task specific Construction Environmental Management Plans (CEMPs) as necessary for implementation during construction. Further information on the Outline CEMD is provided within EIAR Chapter 3 (Project Description). EIAR Chapter 15 (Schedule of Mitigation and Enhancements) provides a summary of the mitigations identified within this EIAR.

As part of the extant consented area, a 3 m bund has already been established to act as an avoidance strategy, specifically aimed at reducing negative effects on wader species. In addition, a further 2 m bund is proposed along the eastern boundary to provide additional visual screening and reduce potential disturbance to waders. Consideration is being given to the installation of an additional 2 m bund in strategic locations to further reduce line-of-sight impacts and maintain the effectiveness of this embedded mitigation feature. The proposed extension area does not introduce any new works beyond this bunded zone, thereby reinforcing the existing mitigation strategy.

The integrity conclusion in HRA EIAR Appendix 13.9 relies on the following being specific, effective and enforceable:

- maintenance of the ~3 m bund and installation of the additional ~2 m eastern bund;
- ECoW-verified roost buffers and adaptive scheduling to avoid peak high-tide windows/severe cold snaps where practicable;
- directional, shielded lighting with dimming/curfew regimes;
- disciplined access/traffic along shore-adjacent corridors;
  CEMP/GPP-aligned drainage, turbidity and pollution controls during earthworks and dredging. These will be detailed in the Outline CEMD → CEMP and HMP; compliance and adaptive management are monitored by the ECoW; and
- Vessel-management protocol for assembly & tow-out (slow, predictable transits along agreed routes; timing to avoid peak periods where practicable; on-water observation with adaptive response), as relied upon by EIAR Appendix 13.9 Section 5.7 for the Inner Moray Firth SPA/Ramsar and Moray Firth SPA integrity conclusion.

While secured to meet HRA requirements for SPA/Ramsar features, these measures also reduce construction and operational risks for raptors/Schedule 1, onsite breeding birds and pinewood specialists, and are implemented project-wide through the Outline CEMD → CEMP/HMP and RAMS.

Mitigation is included in the Outline CEMD. The Outline CEMD will be developed into a CEMP for implementation during construction. Further information on the Outline CEMD is provided within EIAR Chapter 3 (Project Description).

Additional mitigation measures will be implemented during construction and operation to protect all key ornithological receptors, including breeding and wintering birds, pinewood specialists, raptors, and the qualifying assemblages of designated sites (SPA, Ramsar, SSSI). Any residual effects that cannot be fully mitigated are identified in Section 1.7. A summary of embedded, construction-phase, and operational ornithological mitigation, including species protection plans, habitat management plan (HMP), habitat enhancement, disturbance controls, and monitoring for all relevant receptors, is provided in Technical EIAR Appendix 13.4.

Wader-specific measures

To address NatureScot's emphasis on waders and the MD-LOT Scoping Opinion requirement for clear mitigation and monitoring, the following targeted measures will supplement embedded design interventions:

- ECoW vantage watches and buffer setting: Prior to works near intertidal margins, the ECoW will confirm roost/foraging locations and set no-go/setback buffers, refining adaptively based on monitoring.
- Temporal management of highest-noise activities: Avoid clustering the noisiest tasks during peak high-tide periods and severe cold snaps, applying adaptive scheduling rather than blanket seasonal shut-downs.
- Traffic discipline near intertidal margins: Define access routes and speed limits to minimise repeated disturbance along sensitive edges; consolidate movements along pre-defined corridors.
- Directional/obtrusive-light control: Install downward-facing, shielded lighting with low spill towards intertidal areas, select appropriate CCT, and apply dimming/curfew regimes where practicable.

In-works monitoring and reporting: During early construction near sensitive areas, the ECoW will maintain short notes to monitor if triggers arise; a close-out memo will capture any adaptive refinements at phase end.

These measures complement the existing bunding, seasonal timing, and habitat management controls already described, ensuring compliance with the mitigation hierarchy and statutory guidance.

These targeted wader measures are the same measures the AA relies upon to exclude AEoI for Inner Moray Firth SPA & Ramsar; see EIAR Appendix 13.9 Sections 5.1–5.2.

Avoidance

**Principle:** Prevent impacts before they occur, through design and planning.

- Earth Bund Construction: A 3 m high earth bund has been constructed along the consented boundary to act as a physical barrier, reducing visual and acoustic disturbance to adjacent intertidal habitats and designated sites' wader assemblages.
- Retention of Key Habitats: Retention of woodland edges, scrub, and buffer zones adjacent to intertidal habitats to maintain habitat connectivity and reduce edge effects.
- Timing of Works: Where practicable, programme clearance and construction activities outside the main breeding season for birds (March–August) and outside peak high-tide roost periods for waders, wherever practicable.

Reduce

**Principle:** Reduce the scale or intensity of unavoidable impacts.

Noise and Visual Disturbance Management: Where physical screening is not practicable, implement an activity schedule to minimise disturbance. Sediment and Pollution Control: Implementation of robust silt fencing, bunding, and spill response protocols to prevent sediment plumes and pollution from reaching intertidal habitats.

- Pre-Works Checks: During the nesting bird season (typically March to August), a qualified ecologist will carry out pre-works nesting bird checks within 48 hours of any vegetation clearance. If active nests are found, works must cease within a minimum 10–50 m buffer (species-specific, following NatureScot guidance) until fledging is complete.
- Dissuasion (if required): Where early clearance is not possible, use non-lethal dissuasion (e.g. strimming, bird scarers) before the breeding season to discourage nesting in areas scheduled for disturbance.
- Raptor Nest Protection: Identify and map all active raptor and Schedule 1 nests prior to works. Implement species-specific exclusion zones.
- Timing of Felling: Schedule felling in areas of woodland with known or potential raptor nests outside the breeding season (April–August). If active raptor nests are identified, establish a suitable species-specific buffer within which no felling or disturbance will take place until the breeding season has concluded.
- Toolbox Talks: All site personnel to receive ornithology toolbox talks, including legal obligations and reporting protocols for nest discoveries.

Mitigation (On-site Measures)

**Principle:** Implement measures to remedy or offset impacts during and after works.

- Implementation of the Outline Construction Environmental Management Document (CEMD), subsequent CEMP, and Habitat Management Plan (HMP).
- Licensing: In the unlikely event that disturbance to Schedule 1 birds (including raptors) cannot be avoided through timing and exclusion zones, works will proceed only under a NatureScot Schedule 1 disturbance licence, with supervision by a specialist ornithologist.

Supervision: A suitably qualified ornithologist will advise and implement additional mitigation measures as required, ensuring compliance with legal protections and project commitments.

- Directional Lighting: Install downward-facing, shielded lighting to minimise light spill onto adjacent intertidal and woodland habitats, maintaining dark corridors for nocturnal and crepuscular (dawn and dusk active species) species.
- Habitat Management: Manage the retained buffer habitat to support key species by retaining mature conifers for crossbill, creating standing deadwood for crested tit, and considering specific habitat needs for woodcock.

Access Control: Avoid access to sensitive retained habitat areas (e.g., roosts, retained woodland) for all site personnel. These areas will be clearly demarcated with fencing and signage, and no entry will be permitted except by authorised ecological staff for monitoring purposes.

Compensation (Off-site or Additional Measures)

**Principle:** Compensate for residual impacts that cannot be avoided or mitigated.

- Compensatory Artificial Nest Sites: Where practicable and if required, compensatory provision of artificial nest sites for key bird species will be implemented.

### 13.6.3 Enhancements

No specific enhancement measures are proposed.

### 13.6.4 Monitoring

Monitoring

**Principle:** Ensure effectiveness of mitigation and compensation through ongoing monitoring and adaptive management.

- Post-Construction Monitoring: Monitoring of wader roosts, breeding bird territories, and raptor nest sites will be undertaken in accordance with the Habitat Management Plan (HMP) and reviewed annually as part of the HMP review process. Results will be assessed by a qualified ornithologist and reported to NatureScot and The Highland Council (THC).

Habitat Establishment Monitoring: Monitoring of habitat establishment and the use of artificial nest sites if required will be carried out as set out in the HMP and reviewed annually in line with the HMP review process.

Trigger points for action will be embedded within the HMP, which will be subject to annual review. For instance, if compensatory habitats do not establish as intended, additional measures, such as further habitat creation or enhanced exclusion zones, may be implemented in consultation with the relevant statutory agencies.

## 13.7 ASSESSMENT OF SIGNIFICANT EFFECTS

This section assesses the level and significance of the residual effects of the proposed development on terrestrial ecology receptors during both construction and operation with the mitigation described in section 1.6 and EIAR Appendix 13.4. Residual effects are the predicted ecological impacts that remain after mitigation measures have been applied, and are considered significant if they affect the integrity, conservation status, or viability of ecological receptors, in line with CIEEM EcIA Guidelines (2024)**Error! Bookmark not defined.**.

Residual EcIA effects reported below sit alongside the EIAR Appendix 13.9, which concludes no AEoI for Inner Moray Firth SPA & Ramsar and Moray Firth SPA when the specified measures are implemented. Where a pathway depends on coastal-process outcomes (e.g., dredge/armour hydrodynamics), this chapter cross-refers to EIAR Chapter 9 (Hydrology and Hydrogeology) and EIAR Appendix 13.9 for the condition precedent and monitoring commitments.

**Table 13.5 Assessment of Significant Effects for the construction phase.**

| Ecological Feature | Impact pathway/s and effect on ecological receptor without mitigation | Proposed avoidance / mitigation | Likely significant residual effects (i.e with mitigation) |
|---|---|---|---|
| **Construction phase** | | | |
| Shared measures (apply across receptors during operation; see Section 1.6 and EIAR Appendix 13.4; HRA-secured measures per EIAR Appendix 13.9):<br>• Maintain bund screening and visual/noise screening at sensitive interfaces;<br>• Directional/shielded/curfewed lighting with ongoing obtrusive-light control;<br>• Access controls and traffic discipline along shore-adjacent corridors;<br>• Pollution prevention and incident response in accordance with the CEMP;<br>• Vessel-management protocol for episodic assembly/tow-out activities (as per EIAR Appendix 13.9); and<br>• Monitoring and adaptive management via the ECoW/HMP to address any observed displacement or roost pressure.<br>These shared measures apply unless receptor-specific text states otherwise. | | | |

| Ecological Feature | Impact pathway/s and effect on ecological receptor without mitigation | Proposed avoidance / mitigation | Likely significant residual effects (i.e with mitigation) |
|---|---|---|---|
| Moray Firth SPA | • Potential disturbance to non-breeding populations of divers, grebes, sea ducks, and shags from noise, vessel movement, or lighting.<br>• Possible indirect effects via disturbance or water quality, including assembly & tow-out of floating turbines and associated vessel movements. | • Schedule high-disturbance works within proximity to the SPA (e.g., within 250 m) to avoid peak non-breeding periods for qualifying bird features where possible;<br>• If seasonal constraints cannot be avoided, a suitably qualified ornithologist should be present on site to advise and implement additional mitigation as required;<br>• Apply the vessel-management protocol in EIAR Appendix 13.9 (slow, predictable transits; agreed routes; timing to avoid peak periods; on-water observation with adaptive response);<br>• Visual/noise screening; monitor bird activity during construction;<br>• Maintain the existing 3 m bund as a physical screening/avoidance measure to reduce disturbance to waders;<br>• Pollution controls. | Not significant at international level |

| Ecological Feature | Impact pathway/s and effect on ecological receptor without mitigation | Proposed avoidance / mitigation | Likely significant residual effects (i.e with mitigation) |
|---|---|---|---|
| Inner Moray Firth SPA | • Disturbance and displacement of qualifying wader and waterbird assemblages (e.g. oystercatcher, curlew, bar-tailed godwit, knot, redshank) from high-tide roosts and feeding areas due to construction noise, vibration, human activity, and habitat loss.<br>• Direct hydrological and habitat connectivity means any disturbance or pollution could affect internationally important populations.<br>• Potential for reduced foraging efficiency, increased energy expenditure, and abandonment of key roosts.<br>• Possible indirect effects via disturbance or water quality, including assembly & tow-out of floating turbines and associated vessel movements. | • Maintain buffers near aquatic features;<br>• Establish and adhere to exclusion zones and timing of works to avoid sensitive periods;<br>• If seasonal constraints and exclusion zones cannot be avoided, a suitably qualified ornithologist should be present on site to advise and implement additional mitigation as required;<br>• Noise and visual screening;<br>• Robust sediment and pollution controls;<br>• Apply the vessel-management protocol in EIAR Appendix 13.9 (slow, predictable transits; agreed routes; timing to avoid peak periods; on-water observation with adaptive response);<br>• Habitat enhancement measures (e.g., restoration of any disturbed margins, management of retained buffer zones, and compensatory planting) as detailed in the Outline CEMD/CEMP;<br>• Post-construction monitoring and adaptive management. | Not significant at international level |
| Inner Moray Firth Ramsar | • As above; Ramsar site overlaps with SPA and supports the same waterbird assemblages.<br>• Direct hydrological and habitat connectivity means any disturbance or pollution could affect internationally important populations. | • As above, wetland protection and pollution prevention measures.<br>• As above, apply the vessel-management protocol. | Not significant at international level |
| Whiteness Head SSSI | • Disturbance to non-breeding bar-tailed godwit and knot, and potential degradation of sandflat, saltmarsh, and dune habitats from sedimentation, vibration, or pollution. | • Maintain buffers near aquatic features;<br>• Establish and adhere to exclusion zones and timing of works to avoid sensitive periods;<br>• If exclusion zones cannot be avoided, a suitably qualified ornithologist should be present on site to advise and implement additional mitigation as required. | Not significant at national level |

| Ecological Feature | Impact pathway/s and effect on ecological receptor without mitigation | Proposed avoidance / mitigation | Likely significant residual effects (i.e with mitigation) |
|---|---|---|---|
| Raptors (including Schedule 1 species) | • Destruction or disturbance of active nests due to felling or construction near nest sites.<br>• Displacement from traditional nesting or foraging grounds due to noise, lighting, and human activity.<br>• Loss of mature woodland reduces nesting opportunities. | • Mapping and protection of active nests with species-specific exclusion zones;<br>• Timing of felling outside breeding season;<br>• If seasonal constraints and exclusion zones cannot be avoided, a suitably qualified ornithologist should be present on site to advise and implement additional mitigation as required;<br>• If required, installation of artificial nest sites;<br>• Toolbox talks and supervision by specialist ornithologist. | Not significant at national/county level |
| Pinewood birds | • Loss or degradation of pinewood habitat, increased edge effects, disturbance, and fragmentation, leading to reduced breeding success and long-term viability. | • Retain selected mature conifers for species such as crossbill;<br>• Create standing deadwood/snags;<br>• Retain coarse woody debris;<br>• Manage dense understorey mosaics;<br>• Species specific nest boxes and where practicable standing deadwood proposed for crested tit and ;<br>• Adaptive management based on monitoring results. | Not significant at National level |

| Ecological Feature | Impact pathway/s and effect on ecological receptor without mitigation | Proposed avoidance / mitigation | Likely significant residual effects (i.e with mitigation) |
|---|---|---|---|
| Breeding birds (including red/amber-listed and UKBAP species) | • Clearance of woodland, scrub, and grassland will result in loss of nesting, foraging, and sheltering habitat for a diverse assemblage of breeding birds.<br>• Risk of nest destruction, direct mortality of eggs/chicks, and reduced breeding success if clearance occurs during the breeding season. Increased noise, vibration, and human activity may cause disturbance, leading to nest abandonment or reduced productivity.<br>• Loss of habitat connectivity may fragment populations, especially for woodland and scrub specialists. | • Vegetation clearance scheduled outside the core breeding season (March–August) where practicable; pre-works nesting bird check within 48 hours of clearance;<br>• If active nest found, apply species-specific buffers (10–50 m) and delay works until fledging;<br>• If early clearance is not possible, deploy non-lethal dissuasion prior to breeding in work areas.<br>• If seasonal constraints and exclusion zones cannot be avoided, a suitably qualified ornithologist should be present on site to advise and implement additional mitigation as required<br>• Retention of woodland edges and buffer zones where possible.<br>• Toolbox talks for all site staff. | Not significant at regional/county level |

With the embedded design measures (e.g., bunding, seasonal timing) and the additional targeted controls set out in Section 1.6 (including ECoW-led buffer setting, temporal management, lighting design, and traffic discipline), disturbance to waders using adjacent intertidal habitats is expected to reduce to short-term, intermittent behavioural responses. These responses are unlikely to result in a material reduction in feeding efficiency or population viability at the regional scale.

Residual significance is therefore assessed as Not Significant in EIA terms for the wader receptor group, provided that all measures in EIAR Chapter 15 (Schedule of Mitigation and Enhancements) are implemented and monitored as described. Should monitoring identify unexpected displacement or roost abandonment, adaptive measures will be considered.

**Table 13.6 Assessment of Significant Effects for the operational phase.**

| Ecological Feature | Impact pathway/s and effect on ecological receptor without mitigation | Proposed avoidance / mitigation | Likely significant residual effects (i.e with mitigation) |
|---|---|---|---|
| **Operational phase** | | | |
| Shared measures (apply across receptors during operation; see Section 1.6 and EIAR Appendix 13.4; HRA-secured measures per EIAR Appendix 13.9):<br>• Maintain bund screening and visual/noise screening at sensitive interfaces;<br>• Directional/shielded/curfewed lighting with ongoing obtrusive-light control;<br>• Access controls and traffic discipline along shore-adjacent corridors;<br>• Pollution prevention and incident response in accordance with the CEMP;<br>• Vessel-management protocol for episodic assembly/tow-out activities (as per EIAR Appendix 13.9); and<br>• Monitoring and adaptive management via the ECoW/HMP to address any observed displacement or roost pressure.<br>These shared measures apply unless receptor-specific text states otherwise**.** | | | |
| Moray Firth SPA | • Occasional disturbance to non-breeding seabirds and waterbirds from port lighting, vessel movement, or noise.<br>• Episodic assembly/tow-out activities. | • Maintain best practice lighting and noise management.<br>• Maintain tow-out vessel protocol per EIAR Appendix 13.9. | Not significant at international level |
| Inner Moray Firth SPA | • Intermittent disturbance to waders and waterbirds from operational noise, lighting, and vehicle movement.<br>• Potential for reduced roosting/foraging efficiency if disturbance is frequent or coincides with sensitive periods.<br>• Episodic assembly/tow-out activities. | • Directional shielded lighting;<br>• Maintain exclusion zones and access controls near sensitive roosts;<br>• All tow-out activities must adhere to the vessel management protocol, maintaining a speed of no more than 3–4 knots throughout the harbour area until clear of the site;<br>• Ongoing monitoring. | Not significant at international level |

| Ecological Feature | Impact pathway/s and effect on ecological receptor without mitigation | Proposed avoidance / mitigation | Likely significant residual effects (i.e with mitigation) |
|---|---|---|---|
| Inner Moray Firth Ramsar | • As above; Ramsar site overlaps with SPA and supports the same waterbird assemblages.<br>• Ongoing risk of disturbance or pollution from operational activities.<br>• Episodic assembly/tow-out activities. | • As above, with continued focus on wetland protection and pollution prevention.<br>• All tow-out activities must adhere to the vessel management protocol, maintaining a speed of no more than 3–4 knots throughout the harbour area until clear of the site. | Not significant at international level |
| Whiteness Head SSSI | Potential for disturbance to non-breeding bar-tailed godwit and knot from operational activities, and risk of habitat degradation from accidental pollution or lighting. | • Maintain operational buffers;<br>• Implement pollution prevention and rapid response protocols. | Not significant at national level |
| Breeding birds (including red/amber-listed and UKBAP species) | Ongoing disturbance from maintenance, traffic, and human presence may reduce breeding success or deter recolonisation of restored habitats. | • Maintain habitat buffers and access controls;<br>• Monitor breeding success and adapt management as needed. | Not significant at regional/county level |
| Pinewood birds (e.g. crested tit, crossbill, woodcock) | Ongoing disturbance from operational noise, lighting, and human activity may reduce breeding success or deter recolonisation of retained/compensatory pinewood habitat. Loss of mature woodland and increased edge effects may have long-term effects on population viability unless habitat management is successful. | • Retain and manage buffer woodland;<br>• Implement compensatory native pine planting;<br>• Install nest boxes/artificial sites;<br>• Monitor breeding activity and adapt management as needed.<br>• Where practicable, restrict access to sensitive retained woodland areas. | Not significant at national level |
| Onsite raptors (including Schedule 1 species) | Potential disturbance from operational noise, lighting, and human activity near retained woodland or nest sites. | • Maintain exclusion zones and access controls;<br>• Monitor nest activity;<br>• Adapt operational practices if disturbance is detected. | Not significant at national/county level |

## 13.8 STATEMENT OF SIGNIFICANCE

The assessment of likely significant effects on ornithological receptors from the proposed development has been undertaken in accordance with the CIEEM Guidelines for Ecological Impact Assessment in the UK and Ireland (2024)[1]. The evaluation considers both the construction and operational phases, with all proposed mitigation and compensation measures in place.

For tow-out and associated vessel movements, the integrity judgement for Inner Moray Firth SPA/Ramsar and Moray Firth SPA is provided in EIAR Appendix 13.9 Section 5.7, which concludes no AEoI with the vessel-management protocol secured.

**Summary of Residual Effects**

- **Internationally Important Sites (Inner Moray Firth SPA, Ramsar, Moray Firth SPA):**
  With the implementation of embedded and additional mitigation, including timing of works, exclusion zones, acoustic and visual screening, and robust pollution controls, **no significant residual effects** are predicted on the qualifying bird assemblages of these sites at the international scale. The conservation objectives for these designated sites are not undermined, and the structure, function, and population viability of qualifying features are maintained.

- **Nationally Important Sites (Whiteness Head SSSI):**
  The risk of disturbance or habitat degradation to SSSI features (notably non-breeding bar-tailed godwit and knot) is effectively mitigated through buffers, timing restrictions, and pollution prevention. **No significant adverse effects** remain at the national scale.

- **Onsite Breeding Birds (including red/amber-listed and UKBAP species):**
  The loss of breeding habitat and potential disturbance is mitigated through seasonal clearance, pre-works checks, retention of key habitats, and compensatory planting. With these measures, residual effects are **not significant** at the county/regional scale.

- **Raptors (including Schedule 1 species):**
  Potential impacts on raptors are addressed through nest mapping, exclusion zones, timing of works, and, where necessary, licensing and specialist supervision. **No significant residual effects** are predicted at the county/national scale.

- **Pinewood Birds (crested tit, crossbill, woodcock):**
  The retention and management of buffer woodland, compensatory planting, and targeted habitat management are expected to maintain the viability of pinewood specialists. Residual effects are **not significant** at the national level.

**Cumulative Effects:**
A review of other developments within the extended zone of influence (15 km) concluded that the proposed development is unlikely to give rise to significant cumulative effects on ornithological receptors, either alone or in combination with other projects, provided standard mitigation is implemented.

**Conclusion**
In accordance with the CIEEM EcIA Guidelines (2024), a significant effect is one that supports or undermines biodiversity conservation objectives for important ecological features or for biodiversity in general, at any geographic scale. For the proposed development, after the application of the mitigation hierarchy (avoidance, minimisation, mitigation, compensation), **no significant residual adverse effects** are predicted for any ornithological receptor at the relevant geographic scale. The integrity, conservation status, and viability of designated sites and important bird populations are maintained. Ongoing monitoring and adaptive management are recommended to ensure the continued effectiveness of mitigation and to address any unforeseen impacts.

## 13.9 CUMULATIVE EFFECTS

A review of other proposed and consented projects within the shared zone of influence (ZoI) found no substantial overlap in construction or operational impacts on key ornithological receptors. The screening process considered spatial and temporal overlap, as well as the nature of potential additive effects. Where minor overlaps were identified, standard mitigation measures (such as timing restrictions, buffers, and pollution controls) are expected to effectively limit any additive or synergistic impacts. As a result, **no significant cumulative effects** on important bird populations or designated sites are predicted.

# ARDERSIER PORT ENERGY TRANSITION FACILITY PORT EXTENSION

Haventus

November 2025

# Chapter 14 Cumulative Effects

# Ardersier Port Extension

| | |
|---|---|
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# 14 CUMULATIVE EFFECTS

## 14.1 INTRODUCTION

This chapter presents information required by the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 and the Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 to be provided in the Environmental Impact Assessment Report (EIAR) to enable the identification and assessment of likely significant cumulative effects.

The approach to this assessment follows the methodology set out in the EIA Scoping Report (SCOP-0062) and is in accordance with the Scoping Opinion (25/00226/SCOP) produced by The Highland Council. EIAR Chapter 4 (Consultation) contains further information on how each of the matters raised in the Scoping Opinion have been addressed.

Cumulative effects are generally described as either:

- intra-cumulative – where multiple different impacts from a proposed development result in a significant effect on the same single receptor or group of receptors; or
- inter-cumulative – where effects from several different developments combine together resulting in a significant cumulative effect.

Intra-cumulative effects are presented and assessed in this chapter. A summary of the inter-cumulative effects are presented in this chapter. Further detail on the inter-cumulative assessments can be found in EIAR Chapters 6-13. The methodologies for both intra and inter-cumulative are presented in EIAR Appendix 14.1.

EIAR Appendix 14.1 includes the study area, data sources used and the assumptions and limitations of the assessment. EIAR Chapter 3 (Project Description) contains a detailed description of the proposed development. This chapter is supported by the following EIAR Appendices:

- EIAR Appendix 14.1: Assessment Methodology
- EIAR Appendix 14.2: Other Developments

## 14.2 CONSULTATION

Responses in relation to the statutory consultation undertaken are presented in the EIAR Chapter 4 (Consultation). Following production of the EIA Scoping Report the following consultation has been undertaken.

The Highland Council was contacted in July 2025 to agree the long list of developments.

## 14.3 METHODOLOGY

This section provides a summary of the assessment methodology. Further detail is provided in EIAR Appendix 14.1.

### Legislation, Policy and guidance

In the absence of any industry-standard guidance for carrying out intra and inter - cumulative effects assessment in EIA, the assessment has been carried out in line with the UK Government Nationally

Significant Infrastructure Projects: Advice on Cumulative Effects Assessment[1] relevant to nationally significant infrastructure projects under the Planning Act 2008.

The following sources of guidance have also been used in this cumulative effects assessment:

- Scottish Government Planning Advice Note 1/2013 (Environmental Impact Assessment), updated May 2017;
- European Commission (2017): Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU);
- European Commission (1999): Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions;
- International Association for Impact Assessment (IAIA) Cumulative Effects Assessment Fast Tips (October 2017); and
- Institute of Environmental Management and Assessment (IEMA) (2020): Impact Assessment Outlook Journal -Demystifying Cumulative Effects (Volume 7, July 2020).
- Planning Inspectorate (2024) Nationally Significant Infrastructure Projects (NSIP): Advice on Cumulative Effects Assessment, updated March 2025.

The assessment includes a review of existing baseline conditions, consideration of any potential cumulative effects, and whether mitigation measures would be required to reduce any potentially significant cumulative effects.

The Zone of Influence (ZOI) for environmental topics is explained within EIAR Appendix 14.1. The ZOI is unique to each environmental factor and is the area within which significant cumulative effects may potentially occur.

The term ‘other developments’ refers to consented developments and those in construction.

The NSIP guidance sets out a staged approach for assessing potential inter-cumulative effects with other existing and/ or approved development which is detailed in EIAR Appendix 14.1. Significance criteria for other developments taken to Stage 4 (Assessment) are provided below.

### Significance Criteria

The significance criteria for cumulative effects (intra or inter) are detailed in Table 14.1.

**Table 14.1: Significance criteria in the assessment of cumulative effects**

| Significance | | Definition |
|---|---|---|
| Significant adverse or beneficial | Very Large (adverse or beneficial) | Where the cumulative intra or inter-project effects of the proposed development in association with other existing or more than likely / near certain future major development upon an individual or collection of environmental receptors would be highly significant. |
| | Large (adverse or beneficial) | Where the cumulative intra or inter-project effects of the proposed development in association with other existing or more than likely / near certain major ’other’ developments |

[1] Gov.uk (2025) Guidance: Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment Available at: https://www.gov.uk/guidance/nationally-significant-infrastructure-projects-advice-on-cumulative-effects-assessment [Accessed: 16.07.2025]

| Significance | | Definition |
|---|---|---|
| | | upon an individual or collection of environmental receptors would be significant. |
| | Moderate (adverse or beneficial) | Where the cumulative intra or inter-project effects of the proposed development in association with other existing or more than likely / near certain major development upon an individual or collection of environmental receptors would be noteworthy but not significant. |
| Not significant adverse or beneficial | Slight (adverse or beneficial) | Where the cumulative intra or inter-project effects of the proposed development in association with other existing or more than likely / near certain future major developments upon an individual or collection of environmental receptors would be slight. |
| Neutral | Neutral | Where the cumulative intra or inter-project effects of the proposed development in association with other existing or more than likely / near certain future major developments would balance. |

## 14.4 BASELINE CONDITIONS

As outlined in EIAR Chapter 1 (Introduction) planning permission in principle (PPiP) was sought and granted for the existing port at Ardersier. This existing port is considered to be part of the 'baseline' scenario for the purposes of this assessment.

### 14.4.1 Intra-cumulative effects

Baseline conditions for each environmental topic are described in the relevant EIAR Chapters 6 to 13.

### 14.4.2 Inter-cumulative effects

The existing and/ or approved developments to be assessed and included in the short list are presented in EIAR Appendix 14.2.

## 14.5 POTENTIAL IMPACTS

For intra-cumulative effects, receptors relevant to the cumulative assessment include:

Local residents and / or the wider community;
Construction workers (during the construction phase only);
Operation workers;
Ecological sites;
Protected species;
Landscape features;
Historic environment; and
Water environment.

Potential impacts for each environmental topic are described in the relevant EIAR Chapters 6 to 13.

## 14.6 MITIGATION AND ENHANCEMENT

### 14.6.1 Embedded mitigation

The proposed development design has been an iterative process. The environment team has worked in close collaboration with the infrastructure design team to avoid or reduce environmental impacts through the proposed design. This is referred to as embedded mitigation (or design interventions). The principles of the design and mitigation hierarchy outlined in EIAR Chapter 2 (Methodology) have been followed.

The first principle being to avoid potential adverse impacts, if at all practicable, before seeking to minimise or mitigate for any unavoidable impacts. Embedded mitigation for the proposed development is reported in EIAR Chapter 3 (Project Description) which also includes a description of the design alternatives that have been considered, including the environmental factors which have influenced the decision-making. Mitigation measures will seek to reduce impacts during both construction and operation phases. Any effects which cannot be mitigated or reduced are referred to as residual effects.

### 14.6.2 Mitigation

Mitigation arising from technical assessments is included in the Outline Construction Environmental Management Document (CEMD). The Outline CEMD will be developed into the finalised CEMD for implementation during construction, along with task specific CEMPs. Further information on the Outline CEMD is provided within EIAR Chapter 3 (Project Description). EIAR Chapter 15 (Schedule of Mitigation and Enhancements) provides a summary of the mitigations identified within this EIAR.

No further specific mitigation or enhancement measures were identified for cumulative effects within EIAR Chapters 6-13.

### 14.6.3 Enhancements

No specific enhancement measures were identified for cumulative effects within EIAR Chapters 6-13.

### 14.6.4 Monitoring

No specific monitoring measures were identified for cumulative effects within EIAR Chapters 6-13.

## 14.7 ASSESSMENT OF SIGNIFICANT EFFECTS

### 14.7.1 Inter-cumulative effects

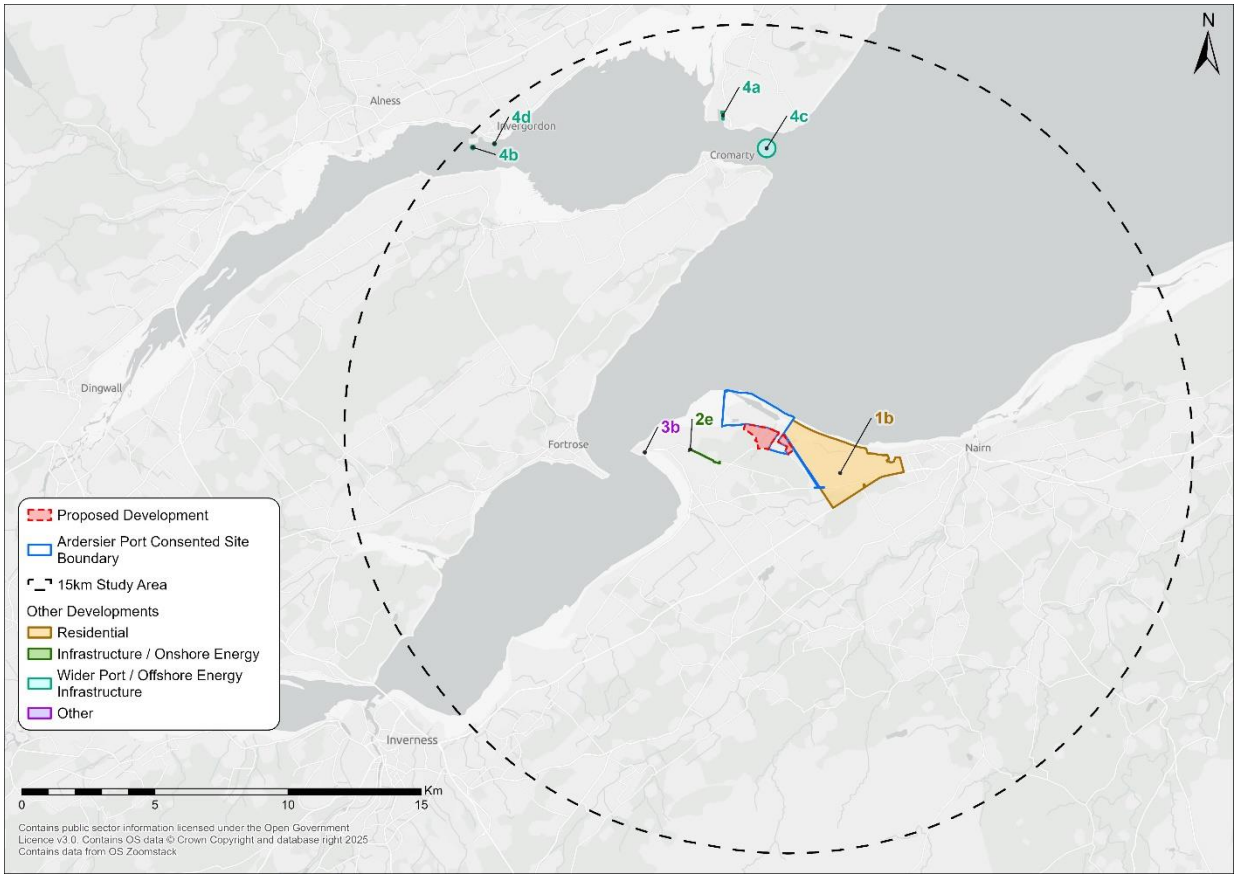
In total, 32 other developments in the long list were within the 15km ZoI (see EIAR Appendix 14.2 and accompanying Figure). Therefore, the criteria established in EIAR Appendix 14.1 were only applied to these other developments.

Each of the environmental specialists have reviewed the long list of developments and the short list reflects the totality of projects that were identified as relevant across all of the environmental topics. Table 14.2 outlines the list of other developments which have been included in the short list (i.e. Stage 2) based on the environmental specialists assessments. Figure 14.1 shows the other developments identified in the short list.

**Table 14.2: Short list of 'other developments' considered in the cumulative assessment**

| Development name and description | Planning application number | REF ID (as shown on Figure 14.1) |
|---|---|---|
| Mixed use development of 300 houses; tourism and heritage, equestrian and ecological centres; hotel and conference facilities; championship golf course, clubhouse and golf academy; community woodland and country park with associated infrastructure | 08/00080/OUTNA | 1b |
| Land 270m SE of Fort George, Ardersier: The installation of a Multi-Use Games Area with 3m high fencing (5m at goal ends) to include paths and ground drainage. | 18/00514/FUL | 3b |
| Land 585m SE of Kirkton, Ardersier: New span of 11kV overhead line to link existing spurs to reinforce network for new wastewater treatment works. Permission implemented and operational. | 20/01116/S37 | 2e |
| Land 430M NW Of Nigg Welding School Nigg Tain: Proposed Engineering works to form a new berthing quay on the east side of the Inner Dock at the Port of Nigg | 24/02674/FUL | 4a |
| Invergordon Service Base Phase 5 Development<br>Marine Licence – Construction – Invergordon Service Base Phase 5 Development – 00011084<br>Marine Licence – Capital Dredging and Sea Deposit – Invergordon Service Base Phase 5 Development – 00011085 | No reference available | 4b |
| Maintenance Dredging and Sea Disposal - Port of Nigg, Cromarty Firth - 00010122 | 10122 | 4c |
| Marine Licence - Maintenance Dredging - Port of Cromarty Firth - 00009232 | 00009232 | 4d |

**Figure 14.1: Location of other developments identified within a ZoI of 15km (short list)**




Each environmental specialists has assessed the long list of developments provided in EIAR Appendix 14.2. For EIAR Chapter 11 (Marine Mammals) additional developments to those in EIAR Appendix 14.2 were considered due to the mobility of the marine species. Further details is provided in EIAR Chapter 11 (Marine Mammals) and associated appendices.

The environmental specialists' cumulative assessments are provided within their respective chapters in EIAR Chapters 6 to 13. A summary of the findings is provided below:

- Airborne Noise**:** Of all the applications reviewed, only 08/00080/OUTNA has potential to have a cumulative effect. However, the necessary environmental assessments are unavailable, therefore it is **not possible to determine the cumulative effects.**
- Landscape, Seascape and Visual: Visibility interactions with the Mixed-Use Development at Delnies (08/00080/OUTNA) and the Invergordon Service Base are limited due to distance, intervening high ground, and differences in development scale. This results in no significant cumulative or sequential visual effects. No potentially significant cumulative landscape, seascape or visual effects with the proposed development have been identified.
- Historic Environment: Developments within 5km of the site, such as 18/00514/FUL and 20/01116/S37, were reviewed and found to have **no significant cumulative effects** on Fort George or unknown historic environment remains in conjunction with the proposed development.
- Hydrology and Hydrogeology**:** A review of developments within 15 km of the site focused on the surface water catchment area. The proposed mixed use development at Delnies (08/00080/OUTNA), over 4km away, would discharge into a different coastal waterbody and is

not expected to have a significant effect. Ports within the ZoI (Cromarty Firth and Nigg) discharge into different waterbodies, resulting in **negligible cumulative effects** on water quality.

- Coastal processes and geomorphology**:** For coastal processes and geomorphology the assessment focused on a Zone of Influence (ZOI) surrounding the application site incorporating the harbour, intertidal extents including saltmarsh, and receiving coastal waterbody (Hilton of Cadboll to Whiteness Head coastal water body). Two active ports are present within 10km of the application site (The Port of Nigg and Cromarty Firth). Both ports discharge into the Cromarty Firth, which is classified as a different coastal waterbody (Outer Cromarty Firth) than that of the proposed development. Given the distance from the site and the nature of the surrounding geography and bathymetry, there is **no significant cumulative** effect on coastal processes and geomorphology from these developments.
- Marine Mammals: The assessment reviewed disturbances from piling, dredging, vessel traffic, and seal haul-out sites. Potential effects identified are low or negligible, resulting in **no significant cumulative effects** on marine mammals during both construction and operations.
- Terrestrial Ecology: The cumulative assessment found no overlapping habitat loss, fragmentation, or disturbance to the same Important Ecological Features (IEFs). Embedded mitigation and compensation measures further reduce potential effects, predicting **no significant cumulative effects.**
- Ornithology: Reviews of other projects found no substantial overlap in impacts on key ornithological receptors. Minor overlaps are mitigated by standard measures like timing restrictions and buffers, predicting **no significant cumulative effects** on bird populations or designated sites.

Based upon the environmental specialists cumulative assessment of other development within a ZoI of 15km, it is concluded that it is unlikely that there will be inter-project effects, and no further assessment or mitigation is required, other than that outlined in the individual environmental topic assessments within the EIAR. Therefore, none of the other developments from the short list are progressed into Stage 4 (Assessment) as per the methodology outlined in EIAR Appendix 14.1.

### 14.7.2 Intra-cumulative effects assessment

A summary of the reported construction and operation intra-cumulative effects is provided in Table 14.2. The following environmental topics have no significant adverse or beneficial residual effects identified:

- EIAR Chapters 6 Airborne Noise,
- EIAR Chapter 7 Landscape, Seascape and Visual Effects,
- EIAR Chapter 9 Hydrology and hydrogeology,
- EIAR Chapter 10 Coastal processes and geomorphology,
- EIAR Chapter 11 Marine Mammals,
- EIAR Chapter 12 Terrestrial Ecology, and
- EIAR Chapter 13 Ornithology.

Only one environmental topic has identified significant residual effects as a result of the proposed development, and there are **no potential intra-cumulative effects** between environmental topics on receptors during construction or operation of the proposed development.

**Table 14.3: Potential intra-cumulative effects between environmental topics on receptors during construction and operation of the proposed development**

| Receptor/Feature | Environmental Topics | | | | | | | | Mitigation Proposed | Significance of intra-project effects |
|---|---|---|---|---|---|---|---|---|---|---|
| | Airborne Noise | Landscape, Seascape and Visual | Historic Environment | Hydrology and Hydrogeology | Coastal Processes and Geomorphology | Marine Mammals | Terrestrial Ecology | Ornithology | | |
| **Construction** | | | | | | | | | | |
| Unknown Historic Environment Assets | No predicted residual significant effects. | No predicted residual significant effects. | While the archaeological potential of the site is assessed as low, the magnitude of impact from construction would be high where such remains are present. The residual effect is assessed as **minor to major adverse** depending on the value of any assets encountered. This is considered to be **potentially significant.** | No predicted residual significant effects. | No predicted residual significant effects. | No predicted residual significant effects. | No predicted residual significant effects. | No predicted residual significant effects. | Specific historic environment mitigation measures are set out in the EIAR Chapter 8 (Historic Environment). | Significant cumulative effects on historic environmental receptors during operation are not expected as a result of the proposed development. |
| Deposits of Palaeoenvironmental Interest | | | Although previous development has likely disturbed some areas, undisturbed paleoenvironmental deposits may survive. The residual effect is assessed as **minor to major adverse** and is therefore **potentially significant.** | | | | | | Specific historic environment mitigation measures are set out in the EIAR Chapter 8 (Historic Environment). | Significant cumulative effects on historic environmental receptors during operation are not expected as a result of the proposed development. |
| **Operation** | | | | | | | | | | |

| Receptor/Feature | Environmental Topics | | | | | | | | Mitigation Proposed | Significance of intra-project effects |
|---|---|---|---|---|---|---|---|---|---|---|
| | Airborne Noise | Landscape, Seascape and Visual | Historic Environment | Hydrology and Hydrogeology | Coastal Processes and Geomorphology | Marine Mammals | Terrestrial Ecology | Ornithology | | |
| Fort George (ORCA 11, LB1721) | No predicted residual significant effects. | No predicted residual significant effects. | The temporary presence of offshore wind turbines under construction and floating bases would result in a **major short-term (temporary) adverse effect** on the setting of Fort George, a Category A Listed Building. This is considered **significant**. | No predicted residual significant effects. | No predicted residual significant effects. | No predicted residual significant effects. | No predicted residual significant effects. | No predicted residual significant effects. | Specific historic environment mitigation measures are set out in the EIAR Chapter 8 (Historic Environment). | Significant cumulative effects on historic environmental receptors during operation are not expected as a result of the proposed development. |

## 14.8 STATEMENT OF SIGNIFICANCE

This chapter presents a summary of the findings of the cumulative assessment of the proposed development. The assessment took account of the potential for significant cumulative effects (both inter and intra effects).

For intra-cumulative effects, only one environmental topic has identified significant residual effects as a result of the proposed development, and there are **no potential intra-cumulative effects** between environmental topics on receptors during construction or operation of the proposed development.

For the inter-cumulative assessment, 'other' developments in the Zone of Influence of 15km, including consented planning applications, were identified and cumulatively assessed by the environmental specialists. No other developments were taken beyond the short-list stage and information gathering stage (Stage 2 and 3). This was due to lack of environmental information available in the public domain to identify any potential effects of these future developments in isolation, and if these effects had the potential to be significant when considered in-combination with the proposed development. As such, **no significant inter-cumulative** effects have been identified for the proposed development.

# ARDERSIER PORT ENERGY TRANSITION FACILITY PORT EXTENSION

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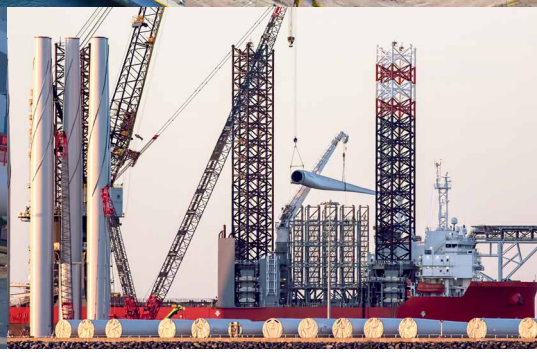
November 2025



# Chapter 15 Schedule of Mitigation and Enhancements

# Ardersier Port Extension

| | |
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| Revision Number | Final |
| Date | November 2025 |
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| Technical Reviewer | Campbell Fleming |

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# 15 SCHEDULE OF MITIGATION AND ENHANCEMENTS

## 15.1 INTRODUCTION

The proposed development design has been an iterative process. The environment team has worked in close collaboration with the infrastructure design team to avoid or reduce environmental impacts through the proposed design. This is referred to as embedded mitigation (or design interventions). Embedded mitigation for the proposed development is reported in EIAR Chapter 3 (Project Description) where three items of fundamental highest level embedded mitigation are identified as:

- Adoption of the approach described in The Highland Council Guidance Note on the Construction Environmental Management Process for Large Scale Projects, August
- 10. To initiate this process, an Outline Construction Environmental Management Document (CEMD) has been prepared; and
- Designing a channel width and dredge pocket to avoid any encroachment into the intertidal area of the Whiteness Spit (described below).
- Compensatory planting of 120 acres of Scots Pine at an offsite location.

This chapter summarises the mitigation measures, which have been identified following the assessment of impact significance, which are considered necessary to further reduce or compensate for potential impacts. The stated mitigation measures have been identified through the Environmental Impact Assessment (EIA) process, and whilst some of these are also necessary to achieve separate legislative compliance (e.g. protected species licences), they are included as they still encompass mitigation commitments of this EIAR. All contractual and legally binding mitigation measures are highlighted within Table 15.2 and these will be included within the Outline Construction Environmental Management Document (OCEMD) (provided in EIAR Appendix 3.2) where they relate to the construction stage once the application process has concluded.

The outline CEMD includes all the construction related measures provided below and has been prepared and describes methods and techniques that will be employed to ensure compliance with legislation and good practice. Prior to construction the OCEMD will be fully finalised and submitted to THC for approval. The appointed Contractor will then take the CEMD and prepare a series of detailed CEMPs (Construction Environmental Management Plans) which build upon the requirements laid out in the Schedule of Mitigation.

With regards to the operation of the proposed development, there is a Port Operational Environmental Management Plan (POEMP) currently in place for the consented port. This plan will be reviewed and updated to include the proposed extension site area and operations and will be implemented to ensure that environmental effects associated with the operational phase are effectively managed, monitored, and mitigated. The POEMP sets out clear procedures, responsibilities, and performance indicators for ongoing environmental management. It will also establish monitoring and reporting mechanisms to ensure compliance with relevant legislation, environmental standards, and best practice guidance. Regular review and updating of the POEMP will ensure continual improvement in environmental performance throughout the entire port's operation including the extension area.

The Schedule of Mitigation table gives each of the measures a reference, and an approximate location as to where the measure should be applied i.e. whole project extents or specific location). The timing of mitigation could also vary, and the table sets out when it should be applied i.e. a detailed design requirement, or implemented prior to construction, or during construction or operation of the proposed development or a combination of all.

It should be noted that some of the measures provided in Table 15.2 were identified as embedded mitigations. Those measures have already been incorporated into the Indicative Design and are shown in green text below, whereas all measures in black font are for mitigation that should be considered and implemented by the Contractor and the Project Team during the future design and construction phase. There are also some measures recommended for the operational phases.

Please note that this Schedule of Mitigation and Enhancements should be read and applied in conjunction with the latest version of the following documents which the appointed Contractor will be responsible for producing, updating as required, and upholding:

- Construction Dust Management Plan
- Waste Management Plan

Drafts of these are provided in EIAR Chapter 5 (Supporting Information and Assessments) based upon the plans that were in place for the existing consented site.

## 15.2 OTHER CONSENTS REQUIRED

In consultation with The Highland Council, the Marine Directorate, and the Statutory Consultees, it is understood that the proposed development will also require the following consents.

**Table 15.1: Additional Consents**

| Consent | Why is it required | Further Details |
|---|---|---|
| European Protected Species (EPS) Licences | Protected species licences may be required from Scottish Natural Heritage (SNH) due to disturbance or destruction to a species and (or) its habitat, as a result of the proposed development. | EIAR Chapter 11 (Terrestrial Ecology) |
| Habitat Regulation Assessment (HRA) – Appropriate Assessment (AA) | An AA to consider impacts upon the Inner Moray Firth Special Protection Area (SPA) and the Moray Firth SPA, Special Area of Conservation (SAC). | The AA will be carried out by the Competent Authority but will draw from information provided as part of this EIAR including EIAR Appendix 13.9 and EIAR Appendix 11.6 |
| Controlled Activity Regulations (CAR) Licences | The following licences are required in accordance with the Water Environment (Controlled Activities) (Scotland) Regulations 2011:<br>Complex Licence – Engineering Licence including Construction Site Licence.<br>Simple Licences - Engineering Licences, Abstraction Licences and Drainage Licences.<br>All other activities are covered by General Binding Rules (GBR).<br><br>*NB - We are aware that there are potential changes coming in to this licensing regime but anticipate that the* | EIAR Chapter 9 (Hydrology and Hydrogeology) |

| Consent | Why is it required | Further Details |
|---|---|---|
| | *proposed development will require these or the relevant new equivalent.* | |

**Table 15.2: Schedule of Mitigation.**

| Ref | Timing | Mitigation Required | Responsible person(s) |
|---|---|---|---|
| **Noise** | | | |
| NoiseV1 | Construction | Implementation of best practice methods of noise control, especially in the vicinity of property NSR-A (Starlight Wellness Center).<br>Appropriate conditions to minimise noise and vibration would be imposed on the Contractor as part of their contract requirements. Noise control measures incorporated into the CEMP include (but are not limited to) the following:<br>• Selecting inherently quiet plant;<br>• Using, where necessary and practicable, enclosures and screens around any noisy fixed plant;<br>• Limiting site work hours, where possible; and<br>• Adhering to relevant British Standards.<br>Mitigation for building services and fixed plant include the following measures, which are not exhaustive:<br>• Procurement of 'quiet' non-tonal plant.<br>• Locate plant and air vents away from NSRs.<br>• Acoustic enclosures.<br>• In-duct attenuators.<br>• Acoustic louvres.<br>• Using, where necessary and practicable, enclosures and screens around any noisy fixed plant;<br>• Plant to be located, as far as is reasonably practicable, away from adjacent occupied buildings or as close as possible to noise barriers/bunds or site hoardings where these are located between the plant and the buildings.<br>• Isolation of plant from building structure.<br>As minimal information is available at this stage on vehicle movements within the proposed development, some generic advice can be provided to ensure that noise levels do not adversely affect NSRs.<br>• Only vehicles conforming to relevant national or international standards, directives and recommendations on noise and vibration emissions will be used.<br>• Site hoarding and screens will provide acoustic screening where necessary where vehicle movements are in close proximity to NSRs.<br>• Personnel will be instructed on BPM to reduce noise and vibration as part of their induction including training as required prior to specific work activities.<br>• When transporter engines are not required to be running, i.e. other than unloading, engines should be turned off so they do not contribute unnecessarily to the prevailing noise climate.<br>• Where possible, vehicles should be fitted with broadband reversing alarms rather than tonal types. | Principal Contractor |
| NoiseV2 | Construction<br>Operation | Installation of noise barrier/bund on boundary between site and NSR-A. (Starlight Wellness Centre)<br>Installation of an appropriate length screen of 2m height between the site and receptor. | Principal Contractor |

| Ref | Timing | Mitigation Required | Responsible person(s) |
|---|---|---|---|
| NoiseV3 | Pre-construction<br>Construction<br>Operation | Reduction of fixed plant noise levels associated with operational use of the site. During detailed design (or other appropriate stage of development) consider the location, dimensions and noise level of proposed plant. Ensure the location does not create directivity and that the quietest appropriate plant is used. | Principal Contractor |
| NoiseV4 | Pre-construction<br>Construction | Site Noise Management Plan (can be part of an overall Site Management Plan). Review potential operations that could be noise generating and reduce the potential noise levels where possible (these could include, but are not limited to<br>• vehicle/forklift movement, or<br>• lifting/lowering of objects by crane) | Principal Contractor /Ardersier Port |
| **Landscape, Seaside and Visual** | | | |
| LSV1. | Construction | Retention of existing woodland supplemented by new planting (both underplanting and new woodland) to create a continuous 20m wide landscape buffer with limited visual permeability on the landward side of the site. Detailed design and implementation of a structural peripheral landscape scheme. | Principal Contractor/Ardersier Port |
| **Historic Environment** | | | |
| HistorE1 | Pre-construction<br>Construction | Preparation of a Project Design in consultation with The Highland Council's Historic Environment Team that would outline the approach to Historic building recording undertaken on the standing remains of ORCA 09. | Principal Contractor/Ardersier Port |
| HistorE2 | Pre-construction<br>Construction | Preparation of a Project Design in consultation with The Highland Council's Historic Environment Team that would outline the approach to the assessment of existing borehole logs and watching brief (if required) to THC HET and deposited with the Highland Historic Environment Record (HER). | Principal Contractor/Ardersier Port |
| HistorE3 | Pre-construction<br>Construction | Preparation of a Project Design in consultation with The Highland Council's Historic Environment Team that would outline the approach to an archaeological watching brief during ground clearance of extension lands. | Principal Contractor/Ardersier Port |
| **Hydrology and hydrogeology** | | | |
| Hydro1 | Pre-construction<br>Construction<br>Operation | Ensure mitigation measures outlined in the EIAR are followed during construction and operation. Production of a CEMD and POEMP, with a suitable qualified Environmental Clerk of Work (EnvCoW) to monitor works, production of a pollution incidence response plan and follow best practise and relevant guidance. | Ardersier Port |
| Hydro2 | Construction | Treat surface water runoff from the extension areas. Silt fencing and bunds around open ground and stockpiles, early-phase planting of slopes, employ temporary settlement measures, only undertake vegetation stripping where necessary. | Principal Contractor |
| Hydro3 | Construction | Situable site drainage – site compounds. Runoff treated though construction drainage features and foul drainage in a close system and disposed off-site | Principal Contractor |

| Ref | Timing | Mitigation Required | Responsible person(s) |
|---|---|---|---|
| | | | |
| Hydro4 | Construction | Minimise concrete runoff and impact on the water environment. Undertake concrete batching, handling and placement in line with GPP6 and in line with CEMP | Principal Contractor |
| Hydro5 | Pre-construction<br>Construction<br>Operation | Minimise the risk of oil, fuel or vehicle spillage contamination. Storage of fuels and oils in line with GPP2 and GPP8 and vehicles and vessels to carry spill kits | Principal Contractor |
| Hydro6 | Pre-construction<br>Construction<br>Operation | Minimise the risk of sediment discharges into the water environment from dredge activities or construction of marine infrastructure. Undertake in accordance with conditions of marine licence and BPEO. | Principal Contractor |
| Hydro7 | Operation | Control surface water runoff and erosion. SuDS drainage measures, creation of diversion cut-off ditches, inlet screening on road culverts. | Principal Contractor |
| **Coastal Processes and Geomorphology** | | | |
| CPG1 | Construction | Identify the measures and procedures shall be in place during construction, including on chemical usage, waste management, dredging and any port related environmental policies. | Principal Contractor |
| CPG2 | Operation | Identify the measures and procedures shall be in place during operation, including on chemical usage, waste management, dredging and any port related environmental policies.<br>This plan is already implemented by Ardersier Port. | Principal Contractor<br><br>Ardersier Port. |
| CPG3 | Pre-construction<br>Construction<br>Operation | Setting measurable environmental objectives and targets supported by a management programme that measures and monitors performance. Involve and consult interested parties on environmental issues where appropriate. Systematically identify and assess environmental risks associated with port related activities. Strive to achieve continual improvement in environmental management systems and performance.<br>This plan is already implemented by Ardersier Port. | Principal Contractor<br><br>Ardersier Port. |
| **Marine Mammals** | | | |
| MarineM1 | Construction<br>Operation | Bunkering Procedures, and Port Oil Spill Contingency Plans - Identification of potential pollution sources and how the Ardersier Port will respond to these spill events.<br><br>This plan is already implemented by Ardersier Port. | Principal Contractor<br><br>Ardersier Port |
| MarineM2 | Construction | Marine Mammal Mitigation Plan (MMMP) - For piling activities, a 500 m mitigation zone (MZ) shall be employed to ensure that instantaneous PTS can be effectively mitigated.<br><br>For dredging activities, there shall be no distance-specific MZ around the dredge vessel. Instead, it is proposed that prior to dredging operations commencing, the MMO will be required to conduct a pre-dredging search of the entire Phase 2 dredging area. This ensures that the inner harbour area is monitored for the presence of seals (the species most likely to be present within the inner harbour area) and other marine mammals. | Principal Contractor/Ardersier Port |

| Ref | Timing | Mitigation Required | Responsible person(s) |
|---|---|---|---|
| | | The MZ that should be monitored during spoil disposal operations on the approach to, and at the spoil disposal site, is a 200 m MZ established around the spoil disposal vessel. | |
| MarineM3 | Construction | Construction Environmental Management Plan (CEMP) - Identifies the measures and procedures shall be in place on chemical usage, waste management, and any port related environmental policies. | Principal Contractor |
| MarineM4 | Construction<br>Operation | Navigational Safety Risk Assessment (NRA) - The NRA shall employ mandatory pilotage which ensures vessels are guided safely through the harbour, reducing the risk of collision and accidents. An inhouse traffic management system, as well as coordination with nearby ports and maritime authorities shall manage vessel traffic and prevent congestion. As part of the NRA, implementation of vessel movement plans and marine management strategies shall be required to protect local wildlife.<br><br>This plan is already implemented by Ardersier Port. | Ardersier Port |
| MarineM5 | Construction<br>Operation | Marine Environmental Policy - Setting measurable environmental objectives and targets supported by a management programme that measures and monitors performance. Involve and consult interested parties on environmental issues where appropriate. Systematically identify and assess environmental risks associated with port related activities. Strive to achieve continual improvement in environmental management systems and performance.<br><br>This plan is already implemented by Ardersier Port. | Principal Contractor<br><br>Ardersier Port |
| MarineM6 | Construction<br>Operation | Port Waste Management Plan (PWMP) - Reduce environmental impact, promote resource efficiency, and maintain compliance with the Waste Framework Directive and national waste regulations.<br><br>This plan is already implemented by Ardersier Port. | Principal Contractor<br><br>Ardersier Port |
| **Terrestrial Ecology** | | | |
| TerresE1 | Pre-construction<br>Construction | Project governance (CEMD → CEMP, HMP)<br><br>Implement the Outline CEMD, develop the CEMP and Habitat Management Plan (HMP) covering all measures, constraints plans, buffers, toolbox talks, stop-work procedures, and incident response across all work areas.<br><br>Approve CEMP/HMP before mobilisation; brief all site staff; maintain daily compliance logs; Environmental Clerk of Works (EnvCoW) to audit and advise on sensitive tasks and maintain a live constraints register. | Principal Contractor<br>Ardersier Port principally |
| TerresE2 | Pre-construction<br>Construction<br>Operation | Designated sites (e.g., Inner Moray Firth Ramsar adjacent)<br><br>Maintain existing 3 m bund (consented area) as visual/noise screen; maintain ≥10 m buffers to wetland features; install silt fencing/bunding on water directed slopes; avoid light spill toward designated habitats. | Principal Contractor |

| Ref | Timing | Mitigation Required | Responsible person(s) |
|---|---|---|---|
| | | Demarcate no-go zones on drawings and on the ground; install sediment controls before earthworks; embed pollution prevention (bunded fuels, designated refuelling, spill kits); implement directional, shielded lighting per plan. | |
| TerresE3 | Construction<br>Operation | Pollution prevention / soils & water<br><br>Install sediment controls prior to ground disturbance; contain/spoil manage within site; no untreated discharge to waterbodies; secure/bund fuels and chemicals; spill kits at points of use; staff trained in spill response.<br><br>Pollution Prevention Plan within CEMP; daily plant/fuel checks; inspections after heavy rain; immediate containment/recovery of spills; export non-reusable arisings to licensed facility. | Principal Contractor |
| TerresE4 | Pre-construction<br>Construction<br>Operation | Lighting (all phases)<br><br>Use directional, downward-facing, shielded luminaires; maintain dark corridors along woodland edges and commuting routes; do not illuminate watercourses/retained habitats.<br><br>Implement Lighting Strategy within CEMP; pre-commission lux checks at habitat edges; timers/curfews; introduce temporary screens if spill identified by monitoring. | Principal Contractor |
| TerresE5 | Construction | Noise & vibration (construction)<br><br>Comply with project noise/vibration limits; prioritise daytime for high noise tasks; apply species specific standoffs (e.g., near setts, dens, roosts); use soft start for heavy plant adjacent to sensitive features.<br><br>Construction Noise & Vibration Plan; ECoW to advise and adjust stand-offs/sequence if triggers exceeded or sensitive fauna noted. | Principal Contractor |
| TerresE6 | Construction<br>Operation | Traffic & access<br><br>Use designated routes only; enforce site speed limits<br><br>Traffic Management Plan; driver induction and toolbox talks; periodic compliance checks. | Principal Contractor |
| TerresE7 | Pre-construction<br>Construction | Habitats – general<br><br>Retain habitat boundaries/margins wherever practicable to maintain connectivity; phase vegetation clearance; protect downslope edges with sediment controls. | Ardersier Port |

| Ref | Timing | Mitigation Required | Responsible person(s) |
|---|---|---|---|
| | | Vegetation Clearance Method Statement; or Site Environment Team present during sensitive works; stop work if protected species encountered. | |
| TerresE8 | Pre-construction<br>Construction<br>Operation | Habitats – woodland (Scots pine plantation; upland birchwood)<br><br>Retain boundary woodland blocks and connectivity; edge enhancement (selective thinning to increase light; create standing deadwood/brash piles; reuse suitable forest soils) to increase structure; deliver offsite compensatory planting with ~10% native broadleaf and habitat features.<br><br>Tree works under ecological method statement; implement compensation with NatureScot/Scottish Forestry agreement; aftercare and monitoring (establishment, survival, structure) per HMP. | Ardersier Port |
| TerresE9 | Pre-construction<br>Construction | Habitats – heath (dry lowland h1a5; wet heath with cross-leaved heath h1a7)<br><br>Retain margins; protect hydrology; recreate heath mosaics within 2 ha on-site donor area (location/design at detailed stage).<br><br>Detailed habitat design at planning/CEMP stage; soil handling to conserve seedbank; establish heather/heath species; manage grazing/encroachment through HMP. | Ardersier Port |
| TerresE10 | Pre-construction<br>Construction | Habitats – grasslands (lowland dry acid g1a; other lowland acid g1d; other neutral g3c)<br><br>Retain margins where possible; salvage and reuse suitable soils/turves; reinstate with appropriate seed mixes to replicate structure; manage to deliver varied sward and avoid nutrient enrichment.<br><br>Soil/vegetation method statement; seed/hay specifications in HMP; post establishment cuts; invasive control; ECoW checks. | Ardersier Port |
| TerresE11 | Pre-construction<br>Construction | Habitats – ponds (acid peat-stained lakes & ponds r1c7)<br><br>Protect retained features with buffers and pollution controls; recreate acid peat stained ponds within 2 ha onsite wetland area (location/design at detailed stage).<br><br>Detailed design at planning/CEMP; earthworks and profiles per ecologist's spec; no nutrient inputs; monitor hydrology and vegetation colonisation; adaptive management. | Ardersier Port |
| TerresE12 | Pre-construction<br>Construction | Bats – general (trees & activity areas) | Principal Contractor |

| Ref | Timing | Mitigation Required | Responsible person(s) |
|---|---|---|---|
| | | Avoid works near roosts in core occupancy where practicable (summer May–Sept; hibernation Nov–Mar); retain ≥10 m tree belts for connectivity; maintain dark corridors; pre-felling PRF checks by licensed bat worker (≤3 months pre-felling).<br><br>Bat SPP; derogation licence where required; toolbox talks; emergency stop-work if bats found; schedule noisy works in daylight; avoid plant movement at dusk/dawn near roosts/commuting routes. | |
| TerresE13 | Pre-construction<br>Construction | Bats – Juniper Cottage Buildings 2 & 3 (confirmed roosts)<br><br>Secure EPS derogation licences; carry out licensed exclusion and supervised demolition; install compensatory roosts in advance (Schwegler box suite incl. hibernacula types e.g., 1FW/1WQ as appropriate) and a purpose built bat roost ("bat barn") to support maternity capability; keep adjacent corridors dark.<br><br>Licence method statements (timing outside occupancy where possible); exclusion by licence holder; install/commission bat barn and boxes before demolition; post-installation monitoring and maintenance. | Principal Contractor |
| TerresE14 | Pre-construction<br>Construction | Badger<br><br>Maintain ≥30 m buffers to active setts (≥100 m for high noise/vibration); retain commuting corridors; direct lighting away from setts; if unavoidable, implement artificial sett creation and licensed exclusion/closure only 1 July–30 Nov with pre-feeding to alternative sett; apply speed controls and signage on access tracks.<br><br>Badger SPP; repeat pre-construction survey ≤3 months pre-start; NatureScot licence for works within buffers or closures; ECoW supervision; post-works monitoring of sett activity and foraging behaviour. | Principal Contractor |
| TerresE15 | Pre-construction<br>Construction | Red squirrel<br><br>Programme felling outside Feb–Sept where practicable; buffers: 50 m to breeding dreys; 20 m to standard dreys; retain ≥10 m perimeter tree belt for connectivity; stagger felling/soft-start; install artificial drey boxes in retained and compensation woodlands; consider licensed translocation if necessary, under the Scottish Code.<br><br>Red Squirrel SPP; NatureScot licence if dreys affected; repeat preworks checks ≤3 months prestart and during breeding season; driver speed controls and signage. | Principal Contractor |
| TerresE16 | Pre-construction<br>Construction | Pine marten | Principal Contractor |

| Ref | Timing | Mitigation Required | Responsible person(s) |
|---|---|---|---|
| | | Survey likely denning features; buffers: 30 m (non-breeding dens), 100 m (breeding dens); avoid Mar–Aug where practicable; phase/stagger felling to encourage dispersal; do not illuminate woodland; install artificial den boxes in quiet, connected woodland; apply speed controls.<br><br>Pine Marten SPP; NatureScot licence if dens affected; den checks in breeding season; consider licensed conservation translocation if appropriate; monitor den box uptake. | |
| TerresE17 | Pre-construction<br>Construction | Otter<br><br>Repeat pre-construction survey ≤3 months pre-start to 200 m of works; maintain dark riparian corridors; avoid bank obstruction; implement Otter SPP and speed controls near water crossings.<br><br>Licence if holt/resting place affected; toolbox talks; ECoW to monitor for fresh signs and advise stand-offs/timing; stop-work and consult if discovered. | Principal Contractor |
| TerresE18 | Pre-construction<br>Construction | Reptiles (common lizard) & common amphibians<br><br>Before clearance, lay reptile refugia (mats) across suitable habitat and allow settling; systematic check and translocate to preidentified receptor habitat; hand dismantle refugia (stone/brash/log piles) under ecological supervision; schedule works Apr–Sept (avoid hibernation); create refugia from felled timber and enhance south facing banks/varied swards.<br><br>Reptile SPP; ECoW supervision and capture logs; receptor prepared/approved pre-start; post-works habitat enhancements in HMP. (GCN eDNA negative—no GCN licence required.) | Principal Contractor |
| TerresE19 | Pre-construction<br>Construction | INNS / Biosecurity (precautionary)<br><br>None recorded; maintain biosecurity to prevent import/spread (clean-down plant and materials); monitor retained/created habitats and rapid-response if any INNS detected.<br><br>Biosecurity Method Statement in CEMP; inspection schedule; quarantine and treat/dispose per best practice if discovered; keep auditable records. | Principal Contractor |
| TerresE20 | Pre-construction<br>Construction<br>Operation | Off-site compensation (woodland creation)<br><br>Deliver compensatory planting to replicate Scots pine dominated plantation with ~10% native broadleaf, early birch for structure, and habitat features (refugia/shelter); acknowledge ~30year maturity horizon for structure equivalence.<br><br>Implement under NatureScot/Scottish Forestry approvals; establishment plan (stock, protection, weeding, beating-up, deer control); annual performance reporting. | Ardersier Port |

| Ref | Timing | Mitigation Required | Responsible person(s) |
|---|---|---|---|
| | | | |
| **Ornithology** | | | |
| Ornitho1 | Pre-construction<br>Construction<br>Operation | Site-wide – Pollution prevention & sediment control<br><br>Implement PPG/GPP-compliant pollution prevention and sediment control across all working areas, with a focus on interfaces to intertidal/shoreline habitats, drainage outfalls, laydown/fuelling areas. Measures include: silt fencing/settlement, bunding/cofferdams at water interfaces, secondary containment, designated refuelling/maintenance zones away from water, spill kits/response drills, drainage isolation/booms as needed, weather-triggered stop-works, and turbidity/visual monitoring where an ornithological pathway to intertidal habitats exists.<br><br>Through the CEMD Pollution Prevention Plan (incorporating SEPA GPPs), method statements and RAMS; emergency spill response plan; toolbox talks; verification and record-keeping in the mitigation log. Where applicable, align with Marine Licence conditions for works at the water interface. | Principal Contractor |
| Ornitho2 | Pre-construction<br>Construction | Waders (Inner Moray Firth SPA/Ramsar; Whiteness Head SSSI)<br><br>Establish -verified setback buffers to mapped high-tide roosts and intertidal frontage adjacent to Ardersier Port; confirm when works occur near shorelines.<br><br>Outline CEMD → CEMP (Bird Protection Plan); vantage watches and buffer plan appended to Method Statement; site briefings | Principal Contractor |
| Ornitho3 | Pre-construction<br>Construction | Waders (Inner Moray Firth SPA/Ramsar; Whiteness Head SSSI)<br><br>Temporal management of noisiest tasks (e.g., piling, concentrated HGV runs) outside peak high-tide windows and severe cold snaps to minimise disturbance.<br><br>Construction programme controls in CEMP; tide/meteorology check; Port sign-off. | Principal Contractor |
| Ornitho4 | Pre-construction<br>Construction<br>Operation | Waders (Inner Moray Firth SPA/Ramsar; Whiteness Head SSSI)<br><br>Directional lighting for quay/yard/tall items: downward facing, shielded, reduced spill toward intertidal; dimming/curfew where practicable.<br><br>Lighting Plan approved by ECoW; night commissioning checks; records in Mitigation Log | Principal Contractor |
| Ornitho5 | Pre-construction<br>Construction<br>Operation | Waders (Inner Moray Firth SPA/Ramsar; Whiteness Head SSSI) | Principal Contractor |

| Ref | Timing | Mitigation Required | Responsible person(s) |
|---|---|---|---|
| | | Traffic discipline along shore-adjacent corridors: fixed access routes, speed limits, consolidated runs; no ad-hoc access at beach edge.<br><br>Traffic Management Plan within CEMP; toolbox briefings; weekly ECoW inspections. | |
| Ornitho6 | Construction | Waders (Inner Moray Firth SPA/Ramsar; Whiteness Head SSSI)<br><br>Contingency quiet roost (e.g., supratidal scrape/berm) if monitoring evidence sustained displacement pressure.<br><br>Triggered by monitoring; implemented via HMP addendum and Method Statement; Ardersier Port approval. | Principal Contractor |
| Ornitho7 | Construction<br>Operations | Inner Moray Firth SPA/Ramsar and Moray Firth SPA (nonbreeding divers, grebes, sea ducks, shag)<br><br>Maintain roost buffers; temporal management at peak high tide windows/cold snaps; bund screening; directional/curfewed lighting; disciplined access; and vessel protocol for assembly/towout (slow, predictable transits on agreed routes; avoid peak periods where practicable; limit RIB speed/turns; on water observation and adaptive response if notable displacement observed).<br><br>All towout activities must adhere to the vessel management protocol, maintaining a speed of no more than 3–4 knots throughout the harbour area until clear of the site.<br><br>EIAR Appendix 13.9 measures transposed to CEMD → CEMP / HMP; Method Statements; Ardersier Port signoff; Marine Licence / planning conditions as applicable; briefings and compliance checks | Principal Contractor<br>Ardersier Port |
| Ornitho8 | Pre-construction<br>Construction<br>Operation | Intertidal/shoreline birds (SPA/SSSI assemblage)<br><br>Maintain existing ~3 m consented bund along consented boundary; install an additional ~2 m eastern bund (location to be confirmed) to reduce line-of-sight disturbance to roosts.<br><br>Shown on design drawings; earthworks Method Statement within CEMP; verification and maintenance checks. | Ardersier Port |
| Ornitho9 | Pre-construction<br>Construction | Breeding birds (onsite habitats)<br><br>Pre-works nesting bird checks within 48 hours of clearance March–August; apply species-appropriate 10–50 m buffers; pause works until fledging if active nests found. | Ardersier Port |

| Ref | Timing | Mitigation Required | Responsible person(s) |
|---|---|---|---|
| | | Ecologist survey Method Statement; buffer plan annexed to CEMP; maintain survey records and Mitigation Log. | |
| Ornitho10 | Pre-construction<br>Construction | Raptors incl. Schedule 1 (e.g., peregrine)<br><br>Survey & map active nests; set species-specific exclusion buffers; no felling/disturbance within buffer during breeding; licence only if unavoidable.<br><br>NatureScot Schedule 1 licence if required; Raptor Protection Plan in CEMP; specialist ornithologist supervision and reporting. | Ardersier Port |
| Ornitho11 | Pre-construction<br>Construction | Pinewood specialists (crested tit [Schedule 1], common crossbill [Schedule 1], woodcock, others)<br>Habitat management in the Scots pine plantation: retain selected mature conifers, create standing deadwood, maintain buffer belts on edges adjoining sensitive areas; phase works to avoid peak breeding activity.<br><br>Commitments in Habitat Management Plan (HMP); mark-ups on site plans; method statements and audits. | Ardersier Port |
| Ornitho12 | Pre-construction<br>Construction | Scots pine plantation & retained buffers<br><br>Retain and protect buffer belts (e.g., along plantation edges that interface with intertidal receptors and key movement corridors); avoid unnecessary break-throughs; maintain canopy connectivity. (Specific locations to mirror the 'retained habitats' figure once issued.)<br><br>Shown on HMP / Project Description figures; fencing/marking; CEMP protection measures; verification; align with forthcoming retained-habitats figure. | Ardersier Port |
| Ornitho13 | Pre-construction<br>Construction | Designated-site bird features (SPA/SSSI/Ramsar)<br><br>Sediment & pollution control focused at intertidal interfaces: silt fencing, bunding, cofferdams, spill plans to protect intertidal feeding grounds.<br><br>CEMP Pollution Prevention Plan; trained spill responders; ECoW spot-checks and incident reporting. | Ardersier Port |
| Ornitho14 | Pre-construction<br>Construction | All ornithology receptors<br><br>Outline CEMD → CEMP adoption (Bird Protection Plan, Lighting Plan, Traffic Management Plan, Raptor Plan) and personnel to oversee implementation and adaptive management.<br><br>Formal plan approvals; RAMS aligned; ECoW appointment and duties per internal streamlining guidance. | Ardersier Port |
| Ornitho15 | Construction | All ornithology receptors | Ardersier Port |

| Ref | Timing | Mitigation Required | Responsible person(s) |
|---|---|---|---|
| | | Toolbox talks/inductions covering legal protections, buffers, lighting controls, traffic discipline, stop-work triggers and reporting lines.<br><br>Training records; daily briefings; permit-to-work conditions; spot-checks. | |
| Ornitho16 | Construction | All ornithology receptors<br><br>Monitoring & reporting: mitigation log and weekly dashboard to PMT; adaptive updates to methods; stop-work if trigger breached.<br><br>field forms; weekly PMT notes; corrective action tracker filed with CEMP. | Ardersier Port |
| Ornitho17 | Operation | Tall structures/assembly lifts (barrier/collision)<br><br>Operational protocol for tall lifts: avoid prolonged static positions intersecting common flight bands during peak movement or poor visibility; apply weather/tide-aware lift scheduling.<br><br>Operational Method Statements; Arddersier Port Team advice; control room checklist before lifts; record exceptions. | Ardersier Port |

## 15.3 ENHANCEMENTS

In addition to the mitigation described above the Haventus project team have been exploring enhancements that could be implemented in and around the proposed development. These are summarised below.

**Planting for pollinators**
Approximately 2km of verge side vegetation along the port access road will be enhanced to benefit pollinators by seeding, planting of native trees and shrubs, and vegetation management.

**Invertebrates and brownfield plants**
Where opportunities exist the creation of 'butterfly and bee banks' to support invertebrates and plants that would have naturally colonized the sandy open undeveloped areas of the site. As this enhancement will, at least in part, opportunistically use long-term features on the site it will not be possible to provide a location or final designs for this enhancement until the site plans are finalised.

**Island extension (Bird Roosting and Nesting Area)**
An island created in 2023 from dredging activity is actively used by breeding terns and roosting waders. A portion of the island was lost during the 2025 dredge campaign. The island could be expanded by approximately 10,000m$^2$ to increase the nesting and roosting space for seabirds, waders and seaducks as described in EIAR Chapter 3 (Project Description). The potential impacts upon coastal processes associated with this potential change has also been assessed and is provided in EIAR Chapter 10 (Coastal Processes and Geomorphology).

**Wader and Wetland Biodiversity.**
The 'lagoon' is artificially created although it is part of the Whiteness Head SSSI and Inner Moray Firth SPA. This area will be enhanced by removing a portion of the bund to reconnect the lagoon with Whiteness Sands. Further enhancements will aim to encourage SPA species to make better use of the lagoon area by creating islands and a network of pools at the lanward end of the lagoon.

**Whiteness Head SSSI Vegetation Management**
A NatureScot condition assessment of the sand dune features of Whiteness Head SSSI list invasive gorse and rosebay willowherb as negative pressures contributing to the decline of some features of the SSSI. Approximately 90% of the gorse will be removed and rosebay willowherb will be reduced on the section of the SSSI within Ardersier Port control.

**Wetland Creation**
2ha of the development site has been set aside to create a wetland area. The final design of the wetland area is still to be determined but it is envisioned that the design will include a permanent waterbody and a network of ephemeral pools. As the 2ha has been set aside for biodiversity purposes part of it may, if required, be used for mitigation purposes such as transplanting plant communities. This area will also in part be used to translocate/establish habitats as described in EIAR Chapter 12 (Terrestrial Ecology) mitigation section, so whilst the majority of the wetland creation is an enhancement the area as a whole will also include mitigation elements.

**Woodland Enhancement**
A strip of existing plantation, 20m deep, will be retained as a screen buffer for the road and neighbouring properties. This strip primarily consists of commercial Scots pine plantation with gorse scrub and heath in open areas and a small roadside pond. This strip while in part, being used for mitigation purposes can be further enhanced for biodiversity benefits. The monoculture plantation strip will be enhanced for biodiversity by introducing native broadleaf species, deadwood creation and selective felling to increase light permeability to encourage natural regeneration from the existing seed bank.

Further detailed consideration of each of the above initiatives is provided in EIAR Appendix 15.1. Detailed design and implementation would be carried out in consultation with The Highland Council ecology team and NatureScot should the concepts be approved and permission for the extension obtained.