

Engineering Works to Form New Eastern Inner Dock Quay
Volume 1: Environmental Impact Assessment



June 2024

CONTROL SHEET

Client: Global Energy Nigg Limited
 Project Title: Engineering Works to Form New Eastern Inner Dock Quay
 Report Title: Volume 1: Environmental Impact Assessment
 Document number: 13924
 Project number: 677964

Issue Record

Issue	Status	Author	Reviewer	Approver	Issue Date
1	Draft	Jeet Shah	E Cormack	E Cormack	15/02/2014
2	Final	Jeet Shah	I Buchan	E Cormack	18/06/2024
3	Revision	E Cormack	E Cormack	E Cormack	24/07/2024

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PREFACE

This Environmental Impact Assessment Report (EIAR) has been prepared under the Town & Country Planning (Environmental Impact Assessment) (Scotland) 2017 Regulations (“the EIA Regulations”) and the Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (“the Marine EIA Regulations”). The EIAR has been prepared to support an application for Planning Permission to The Highland Council (THC) as well as applications for a marine construction and to Marine Directorate Licensing Operations Team (MD-LOT)¹.

The proposal includes modifications to the existing rock revetment at the east side of the Inner Dock to a heavy-duty quayside faced with a vertical retaining wall. The site is located within the Port of Nigg and can be accessed via the B9715. Moray Firth Special Area of Conservation (SAC) is situated adjacent to the east of the site. Nearby settlements include the hamlets of Balnabruich and Balnapaling to the immediate north, with Castlecraig approximately 1.5km east, Nigg approximately 2km north and in the wider area, Arabella Ankerville, Ballintore and the A9 are further north. The village of Cromarty is located ~1.5km south across the Cromarty Firth from the port.

The main purpose of the proposed development is to primarily facilitate the export of High Voltage (HV) cable manufactured at the adjacent Sumitomo Electrics factory directly onto cable installation vessels. It will also serve as an additional facility to support the existing operations at the site comprising the import, assembly and export of components necessary for energy production in the marine environment, encompassing the Marine Renewables and North Sea Oil & Gas sectors.

This EIAR reports the findings of an Environmental Impact Assessment (EIA) which has been co-ordinated and written by EnviroCentre Ltd, with specialist input from technical co-consultants.

This EIAR comprises the following elements:

- Volume 1: Environmental Impact Assessment Report
 - Providing a detailed description of the proposed development and its potentially significant environmental effects, detailing alternative options where applicable, reporting the findings of the EIA, as well as any proposed mitigation measures and providing other relevant background information;
- Volume 2: Relevant figures and plans too large to be presented within Volume 1; and
- Volume 3: Technical Appendices.
 - Containing detailed technical reports and baseline studies which act as background reports to Volume 1.

The following documents have also been prepared to support the application. These form part of the overall consent application submissions, but they do not form part of the EIAR:

- Planning Application;
- Planning Support Statement;
- Marine Licence Pre-application Consultation Report;
- Marine Construction Licence Application – the application for construction in the marine environment is required to consent activities up to Mean High Water Springs (MHWS); and

A Non-Technical Summary (NTS) has also been prepared which is a condensed synopsis of the EIAR

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Electronic copies of the NTS are available for free from the following contact, whilst digital copies of the full EIAR on disc can be obtained for £10. Full hard copies of the EIAR can be supplied for £500 per copy.

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¹ Previously called Marine Scotland Licensing Operations Team (MS-LOT)

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1 INTRODUCTION

1.1 Terms of Reference

EnviroCentre Ltd has been appointed by Global Energy Nigg Ltd (GEN) to undertake an Environmental Impact Assessment (EIA) in relation to the proposal to upgrade the eastern side of the Inner Dock by providing a new berthing quay. The new quay will be used for:-

1. Shipping of high voltage cable to be manufactured at the Sumitomo Electrics cable factory to the east of the site; and
2. Support the import, assembly, and export of components necessary for energy production in the marine environment, encompassing the Marine Renewables and North Sea Oil & Gas sectors.

This Environmental Impact Assessment Report (EIAR) comprises the written findings of the EIA process undertaken under both the Town & Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 ('the EIA Regulations') and the Marine Works (Environmental Impact Assessment (Scotland) Regulations 2017 ('the Marine EIA Regulations').

1.2 Report Usage

The information and recommendations contained within this report have been prepared in the specific context stated above and should not be utilised in any other context without prior written permission from EnviroCentre Limited.

If this report is to be submitted for regulatory approval more than 12 months following the report date, it is recommended that it is referred to EnviroCentre Limited for review to ensure that any relevant changes in data, best practice, guidance or legislation in the intervening period are integrated into an updated version of the report.

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1.3 The Applicant and Background

Global Energy Group (GEN) part owns, and fully operates the Port of Nigg (PON), and is part of the Inverness headquartered energy sector service group Global Energy Group who operate worldwide. GEN acquired Nigg Yard in 2011 and invested a substantial amount to transform it to the current PON which includes access to a deep-water quayside. The primary function of PON is the provision of facilities and services to support the oil and gas and renewables sectors. The Applicant has since successfully diversified to satisfy current market needs in the north of Scotland. A typical day may include the repair of drilling rigs, fabricating subsea manifolds, berthing vessels or marshalling offshore wind components. PON is also one of the members of the Inverness and Cromarty Firth Green Freeport which are one of the two selected Green Freeports in Scotland.

Also contained within PON is the "not-for-profit" business - Nigg Skills Academy (NSA). The independent business was set up to support black trade skills (welding, fabrication and pipe fitting) for local employees in partnership with North Highland College and is now diversifying into running courses for other industries.

1.4 The Project Team

The EIA carried out in relation to the proposed development has been undertaken by specialist environmental and technical consultants as provided in Table 1-1.

Table 1-1: Project Team and Competent Expertise

Project Role	Organisation	Lead Author & Reviewer	No. of Years' Experience	Qualifications & Professional Memberships
Inputs to EIA Process				
Project Director	EnviroCentre	Duar Fleming	+28	Qualified by Experience
Project Manager	EnviroCentre	Emma Cormack	+21	BSc (Hons), MEnvSc
Project Co-ordinator	EnviroCentre	Jeet Shah	+7	B.Eng, M.Eng, MEnvSc
Volume 1: Environmental Impact Assessment Report				
Chapter 1, 2,3,8,9, and 10.	EnviroCentre	Emma Cormack	+21	BSc (Hons), MEnvSc
Planning	Mabbett & Associates Ltd	Alan Ogilvie	+40	BSc (Hons), MRTPI
Biodiversity	EnviroCentre	Gemma Nixon	+10	MSc CEcol MCIEEM
Ornithology	EnviroCentre	Matthew Sullivan	+17	MSc ACIEEM
Water	EnviroCentre	Martin Nichols	+12	BSc (Hons) MSc C.WEM MCIWEM
Airborne Noise	EnviroCentre	Andrew Hood	+9	MSc, MIOA
Traffic Assessment	ECS Transport	Steven Scott	+23	HNC MSc
Drainage and Flood Risk	Mabbett & Associates Ltd	Joshua Rigby	+15	BSc (Hons) MCIWEM

2 PROPOSED DEVELOPMENT

2.1 Introduction

Global Energy Nigg Ltd (GEN) are considering modifying the existing rock revetment forming the east side of the Inner Dock to form 290m of heavy-duty quayside 36m wide, faced with a vertical retaining wall to primarily facilitate the export of HV cable manufactured at the adjacent Sumitomo Electrics cable factory directly onto cable installation vessels. The total area of the works is 2.5 Hectares (Ha) or thereby with the application boundary shown in Drawing No 677964-GIS007, Volume 2 of this EIAR.

The proposed development transcends two separate regulatory regimes; namely,

- Development control in accordance with the provisions of the Town and Country Planning (Scotland) Act 1997, which applies to development in, on, over or under land (where the land extends seawards as far as mean low water on spring tides (MLWS)) and administered by The Highland Council (THC); and
- Marine licensing in accordance with the provisions of the Marine (Scotland) Act 2010, which applies to licensable marine activity either in the sea or on or under the seabed (where the sea within the Scottish marine area extends landwards as far as mean high water on spring tides (MHWS)) administered by the Marine Directorate Licensing Operations Team (MD-LOT).

The approximate area of each regulatory regime is THC ~1.86 Ha and MD-LOT ~2.5 Ha. The area of the permanent quay once constructed is ~1.6 Ha

The remainder of this chapter describes the need for the development, alternatives considered, how the design has been developed, and activities associated with the development.

2.2 The Applicant and Background

Global Energy Group Limited (GEG) acquired Nigg Yard in 2015 and invested a substantial amount to transform it to the current PON which includes access to a deep-water quayside. PON is one of Scotland's most important energy industry facilities, having played a pivotal role in supporting six major offshore wind projects. PON generated a revenue of ~ £13 million during the Financial Year of 2022-23.

Currently the revenue is derived from the following sources:

1. Building property rental
2. Storage land rental
3. Vessel charges
4. Quayside charges

A substantial portion of PON's revenue is derived from the renewables sector, however they continue to service the requirements of the oil and gas sector.

Global Energy Nigg Limited (GEN) currently employs 22 permanent staff and the proposed development will result in addition of 14 permanent staff for group company Global Port Services (Scotland) Limited (GPSS) who operate from the South Quay offices. There are ~300-400 people working on a daily basis on site.

2.3 The Site and Surrounding Area

2.3.1 The Site

The port site itself is part owned by GEN, and part leased from Dunskaith Property Company and the Wakelyn Trust. The area of land earmarked for the new quayside development is owned by the Wakelyn Trust but is under a long-term lease to GEN until 2071.

The site is part of the wider PON which comprises laydown and storage areas, fabrication and assembly shops, staff offices and a deep-water quays. Access to the Park can be gained via the B9715. A location map is provided in Drawing 677964-GIS007, Volume 2 of this EIAR. PON was established in 1972 as Nigg Fabrication Yard and consists of approximately 70 hectares (ha) of land reclaimed from the eastern edge of Nigg Bay.

The site comprises the eastern side of the Inner Dock at the PON (Ordnance Survey Grid Reference NH 7940 6921). The Inner Dock was originally constructed as a dry dock for the fabrication of steel oil production platforms for the North Sea. Currently however, the Inner Dock is flooded and the dock gate is moored offshore at the adjacent Oil Terminal jetty. This situation is envisaged to remain for the foreseeable future and the proposed construction works would take place within a flooded Inner Dock (Hereafter the dock will be referred to as the Inner Dock.).



Plate 2-1: View of the existing revetment on east side of the Inner Dock looking north

2.3.2 The Surrounding Area

PON is situated on the eastern edge of Nigg Bay, a RSPB reserve, and sits at the mouth of the Cromarty Firth, where it meets the Moray Firth (known as 'The Sutors'). The Nigg Oil Terminal is located to the immediate north of PON, with the B9175 and Fearn Peninsula to the east. The B9175 forms a part of The National Cycle Network.

Nearby settlements include the hamlets of Balnabruich and Balnapaling to the immediate north, with Castlecraig approximately 1.5 km east, Nigg approximately 2 km north and in the wider area, Arabella Ankerville, Ballintore and the A9 further north. The village of Cromarty is located ~1.5 km south across the Cromarty Firth from PON. The Cromarty Ferry crosses the entrance to the firth to the west of The Sutors in the summer season from May to September.

The land to the east is predominantly agricultural with areas of pasture as well as arable fields. There are some patches of gorse scrub and small areas of woodland. There is a sandstone quarry ~ 2 km to the east and scattered residential housing (refer to Drawing 677964-GIS007, Volume 2 of this EIAR).

A planning application (Planning Reference 23/04662/FUL) for the construction and operation of a High Voltage (HV) Sumitomo Electrics cable manufacturing factory and ancillary facilities was submitted to THC Planning in September 2023 with planning permission granted in February 2024. The site of the factory is to the east of the B9175 opposite PON. It is intended the upgraded east side of the Inner Dock at PON will be used to receive the HV cables from the Sumitomo Electrics cable factory, directly onto installation vessels, predominantly to service the off-shore wind market.

2.3.3 Ecologically Designated Sites

The surrounding area contains several ecological designations within a 5km radius (refer to Drawing 677964-GIS008, Volume 2 of this EIAR). These include the following:

- Cromarty Firth Site of Special Scientific Interest (SSSI), situated approximately 0.59km to the west of the site, designated for intertidal mudflats and sandflats;
- Cromarty Firth Special Protection Area (SPA), situated approximately 0.59km west of the site, designated for a range of non-breeding birds;
- Cromarty Firth Ramsar Site, situated approximately 0.59km west of the site, designated for intertidal mudflats and sandflats and waterfowl assemblage;
- Rosemarkle to Shandwick Coast SSSI, situated approximately 0.76km east of the site, designated for maritime cliffs, geological features and breeding birds;
- Moray Firth Special Area of Conservation (SAC), situated adjacent to the east of the site and designated for bottlenose dolphin; and
- Moray Firth SPA situated adjacent to the east of the site and designated for its breeding and non-breeding birds.

There are other designations at greater distance, for example the Dornoch Firth and Morroch More SAC, which are relevant to the marine ecology assessment but not in the immediate vicinity of the site.

2.3.4 Statutory Harbour Authority

The Port of the Cromarty Firth (PoCF) is the existing Statutory Harbour Authority for the Cromarty Firth under the Cromarty Firth Port Order of Confirmation 1973 Act as amended. As such PoCF are the responsible authority for overall control and management of navigation within the Firth and its approaches including those accessing PON and operates a Port of Cromarty Firth Marine Safety Management Plan.

The POCF has the authority to grant licences for marine works and dredging operations in the firth and manages the allocated dredge disposal site at the Sutors. The Applicant are consequently required to seek these licenses prior to the commencement of any marine works. Being a Trust Port, the POCF are designed to reflect local needs and markets.

2.3.5 Green Freeports

Inverness and Cromarty Firth are one of two Scottish ports selected by the Scottish and UK Governments to become a Green Freeport in January 2023. The designation is designed to attract investment into the area while delivering the objectives of the Green Freeports policy. PON is within the boundary of Inverness and Cromarty Green Freeport and is identified as a “Tax Site” and a “Customs Site”.

2.4 The Need for Development and Consideration of Alternatives

The proposals to upgrade the east side of the Inner Dock is to primarily facilitate the export of HV cable manufactured at the adjacent proposed Sumitomo Electrics cable factory (which is subject to its own separate planning permission) directly onto cable installation vessels, reducing the risk of cable damage during transportation. It will also serve as an additional facility to support the existing operations at the site comprising the import, assembly and export of components necessary for energy production in the marine environment, encompassing the Marine Renewables and North Sea Oil & Gas sectors. By creating a new berth on the east side of the Inner Dock, it greatly complements the new east quay, and provides both a load in and load out quay for offshore renewables projects conducted on the east side of the site. The 50m return along the north side of the dock, also allows for roll-on, roll-off operations to be conducted at the east side of the site, replicating the capability already available on the west side of the port.

The Nigg oil terminal site was initially proposed as a potential location for the new Sumitomo Electrics HV cable factory, but the client considered that this location was too far away from the existing quays. There is a risk of damaging the cables when transporting them long distances, and therefore the site to the east of the dock was considered optimal for the Sumitomo Electrics HV cable factory, providing a new quay could be constructed on the east side of the Inner Dock to permit direct loading. The close proximity of the proposed quay to the factory allows for the cables to be directly transferred from the factory, directly onto the cable carousels located on the deck of the cable installation vessels. Loading the cable via any other quay at Nigg would involve longer and more complicated transportation solutions and added risk of damaging the cable. For this reason, alternative locations were quickly discounted in favour of the proposed solution.

The existing revetment slope that forms the east side of the Inner Dock is not suitable for ship berthing and will be replaced by a vertical quay wall located at the toe of the revetment and tied back to anchor piles located within the crushed rock quay infill. An optioneering exercise was carried out on the design of the proposed quay. The exercise considered the advantages and disadvantages of 3 solutions namely:-

1. Steel Tubular Pile / Sheet Pile Combi Wall;
2. Open Berth Structure with a suspended deck; or
3. Contiguous piled wall using the proprietary RD® Piling system.

Several factors were considered including the need to support very heavy imposed loads, the need to retain the ability of the dock to be dewatered in the future, the speed of construction, the cost of the materials and the environmental impact of the construction method. Through this process it was determined that a contiguous piled wall using the proprietary RD® Piling system was preferred over the other two solutions primarily due to the speed of construction, the relatively quiet method of pile installation, the ability of a solid structure to sustain the heavy loading predicted and the reliability of the projected final cost of construction.

2.5 Construction Phase

2.5.1 General Overview

GEN decided that their preferred form of construction contract should be Design and Construct using the NEC4 Engineering and Construction contract Option A which was used very successfully in the past construction of both the South and East quays at Nigg. A Specimen design was prepared (Refer to Inner Dock East Quays: General Layout of Development, Drawing No IDEQ-SRI-100 and Proposed Layout Type 1 Tubular Wall Section A-A, Drawing No 5783006-RWC-TND-NIGGQ-C-DR-100200-P02, Volume 2 of this EAIR) and tender documents duly issued to four selected contractors. McLaughlin & Harvey has been identified as submitting the most attractive tender in association with their designers Robert Wise. Although no formal contract has yet been finalised, the Contractor has agreed to the use of their tender material to make clear the proposed construction sequence as described in the following sections (Refer to Outline Method Statement, Technical Appendix 2.1, Volume 3 of this EAIR).

Major work activities will include:

- Enabling works – Site surveys, site clearance, office relocation, installation of temporary office and welfare facilities, delineation of traffic and pedestrian routes, etc.
- Demolition – Removal of revetment material /structures forming the dock side slopes and quay furniture.
- Temporary structures – construction of temporary piling platform.
- Quay Wall Structure - front quay wall, rear anchor wall and tie rods.
- Earthworks – Placement of import fill material behind new quay wall.
- Reinforced Concrete Works – Cope beam.
- Drainage – Positive Surface Water Drainage System.
- Electrical Works – High Mast Lighting System.
- Concrete Slab – levelling and construction of concrete surface slab.

2.5.2 Construction Timescales

It is anticipated that construction will commence in October 2024 with completion by early summer 2026. The development is planned to be operational in June 2026. The construction will be carried out for 20 months. The current construction sequence proposed after enabling works is detailed in Table 2-1. The construction programme will be regularly updated throughout the period.

Table 2-1: Current Construction Programme

Month		Site Activity / Construction Phase
Start	End	
October 2024	January 2025	Preparatory Works including Design Acceptance, Site Investigation, Site Clearance, Enabling Earthworks, Formation of Temporary Working Platform
February 2025	February 2026	Pile installation
June 2025	December 2025	Tie rod installation
September 2025	November 2025	Concrete cope construction
September 2025	February 2026	Surface water drainage installation
September 2025	April 2026	Cathodic protection
January 2026	March 2026	Electrical installation and high mast lighting
February 2026	March 2026	Quay furniture (bollards, life buoys etc)

2.5.3 Rock Armour Removal and Clearance of Pile Line

The existing rock armour (~2,000m³) will be removed and transported to a crusher plant located on site where it will be processed and stored for future use.

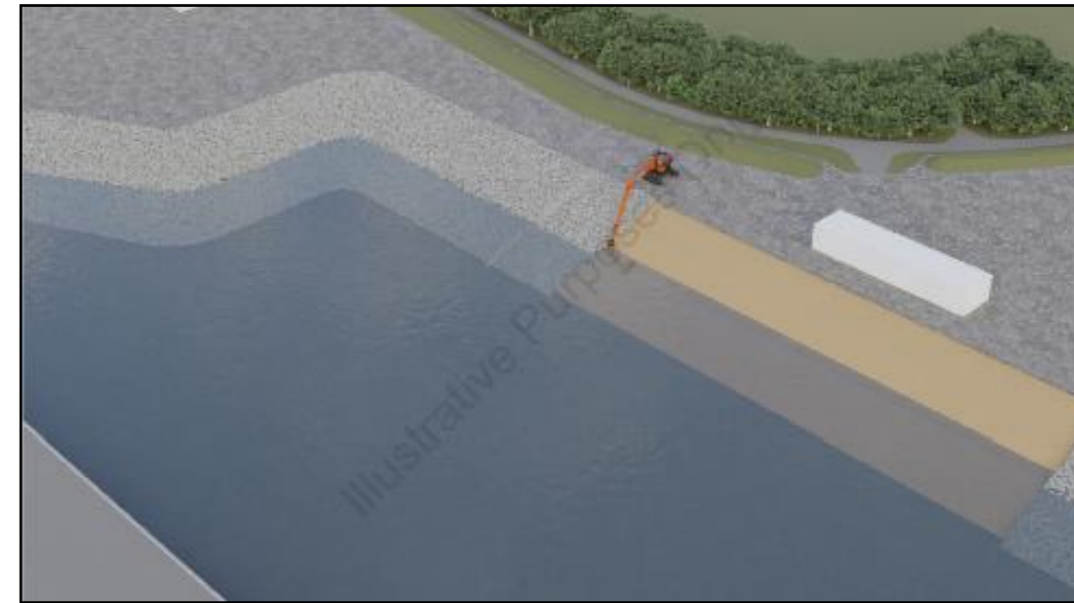


Plate 2-2: Rock Armour Removal

The toe of the existing revetment will be excavated to clear the pile line. This will generate ~23,100 m³ of material comprising ~6,038m³ of sand and 17,064m³ of crushed rock. ~2,530m³ of sand will be reused on site as pile plug infill material. The remaining quantity will be stockpiled on site for future re-use or disposed of to a suitable licensed facility.

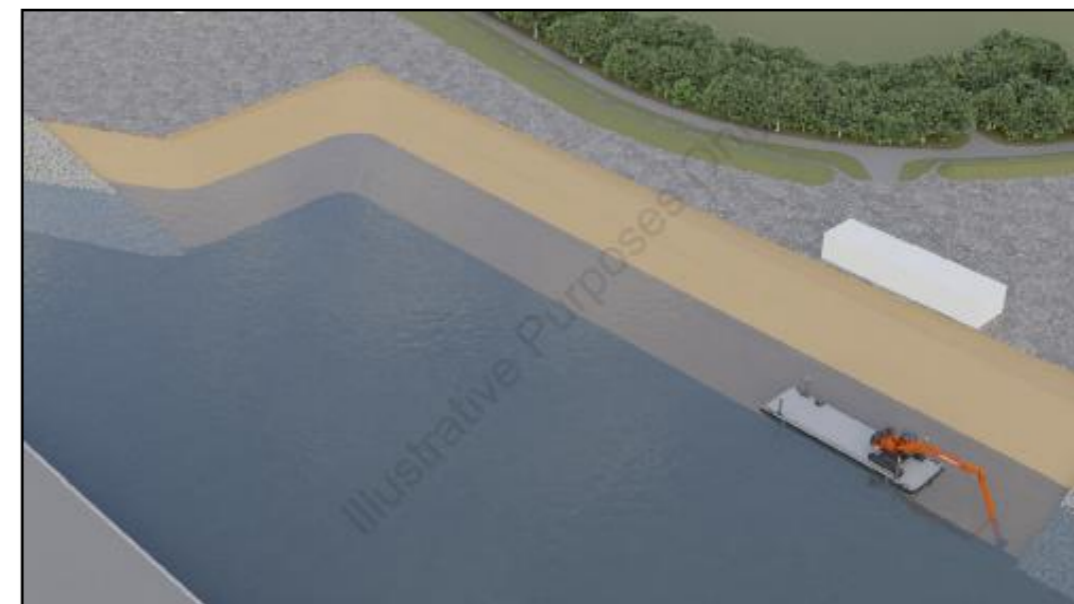


Plate 2-3: Clearance of Pile Line

2.5.4 Formation of Temporary Piling Platform

A temporary working platform will be constructed from clean crushed rock material sourced from Castlecraig Quarry. The material will be placed by long reach excavator from the existing land. The toe of the working platform will retain a navigational clearance of 100m from the west side of the Inner Dock.

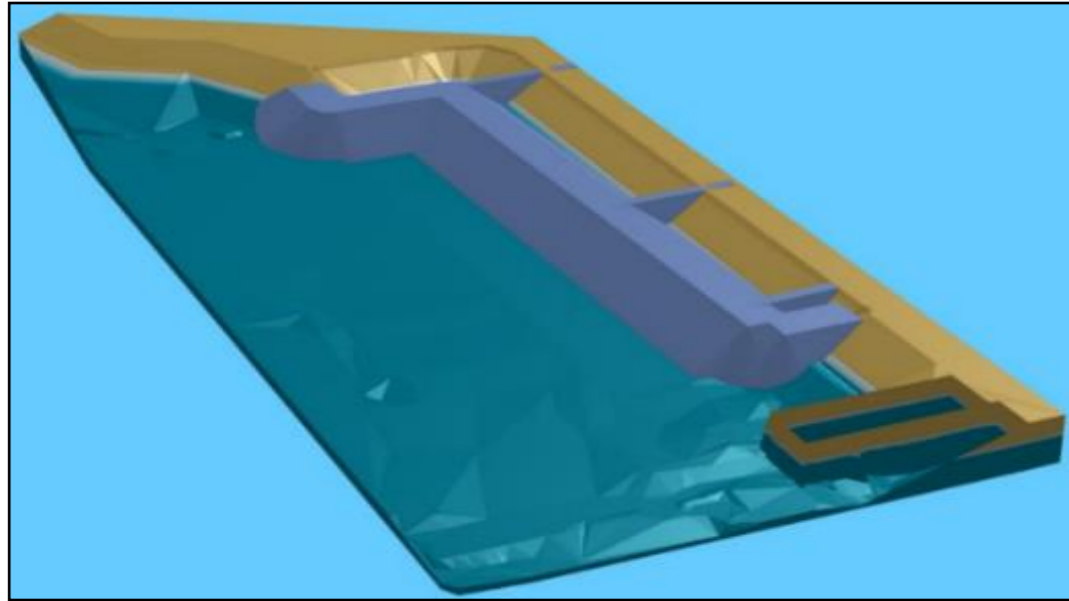


Plate 2-4: Schematic of the temporary working platform

The temporary stone bund will feature a crest working platform of approximately 15-metre width and a slope angle of 2V/3H. A total of 129,735 m³ of crushed rock will be imported from the local Castlecraig Quarry for this purpose.

2.5.5 Installation of Main Quay Wall and Anchor Wall

The main pile wall will be constructed using 610mm diameter RD[®] piles made of spirally welded steel and having interlocking clutches. Each pile is clutched together to form a contiguous front wall.

The RD[®] pile is positioned and a “Down-the-Hole” (DTH) hammer is inserted into the pile casing. The DTH cuts ahead of the steel casing drilling a hole slightly bigger than the diameter of the pile which follows after the hammer under the weight and natural vibration of the piling rig. High pressure air from the DTH pushes the drill arisings back up the pile to be discharged into a skip and set aside for future use as quay infill. Once the desired toe depth is achieved, the DTH is removed and the pile is partially filled with sand. The next pile is then positioned so it can interlock with the installed pile and the procedure repeated.

The tubular anchor piles will be installed simultaneously with the main wall piles using a rotary rig. The individual anchor piles will be located at around 3m centres along the top of the existing revetment some 35m back from the front wall.

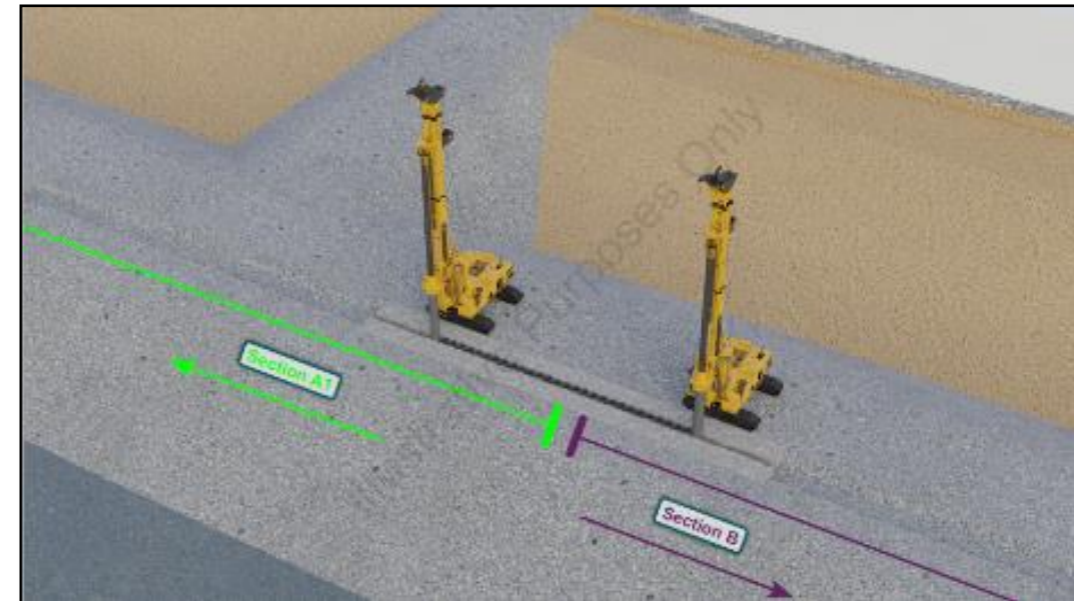


Plate 2-5: Schematic of RD[®] piles installation

2.5.6 Tie Rod Installation and Backfilling

After the first section of main and anchor wall piling has been completed, imported crushed rock will be used as backfill up to the underside of the tie rods which are located at a level of around 1.5m above Mean Low Water Springs (MLWS). Each tie rod will be connected to a horizontal wailing along the rear of the front wall piles and will be fixed at the inshore end with a nut and washer after passing through a hole cut in the anchor pile.

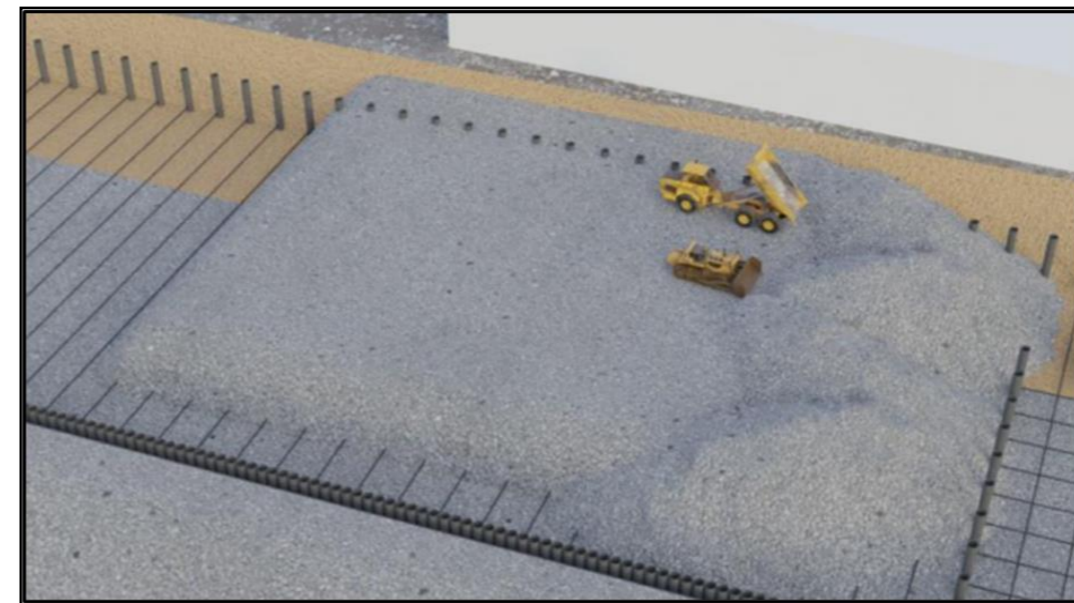


Plate 2-6: Tie rod installation and backfilling

Once a section of tie rods has been installed the ground will be brought up to the level of the underside of the concrete cope using material excavated from the temporary working platform in front of the section. This process will allow the front wall to move out slightly causing the tie rods to take up some tension which is essential prior to the construction of the in situ concrete cope.

The total volume of infill material required is $\sim 117,107\text{m}^3$ of crushed rock. To minimise double handling, $\sim 65,735\text{m}^3$ of the crushed rock temporary platform will remain insitu behind the pile wall (i.e. landside). The remaining material located on the marine side will be recovered by long reach excavator with $51,372\text{m}^3$ being used to complete the infill. The surplus crushed rock $\sim 12,628\text{m}^3$ will be stockpiled on site for future use.



Plate 2-7: Schematic depicting removal of temporary working platform and backfill of tie rods

2.5.7 Construction of Cope Beam

Once enough tie rods have been installed and effectively tensioned, construction of the cope beam can commence. It is envisaged that a proprietary system of falsework and formwork will be installed to create a safe and secure working environment over the section of cope to be concreted. Movement joints will be formed in the cope at intervals to be determined by the final design. Safety ladders and safety chains will be fitted to the cope at intervals in compliance with the Dock Regulations.

During the concrete pouring, appropriate mitigation measures will be implemented such as those defined in GPP 6: Working on construction and demolition sites. The total volume of concrete required for the cope beams is estimated to be $\sim 680\text{m}^3$.



Plate 2-8: Schematic showing coping beam installation

2.5.8 Drainage

The Contractor will develop a temporary Surface Water Management system to ensure surface water and drainage is managed effectively avoiding pollution incidents through uncontrolled sediment run-off and discharge into the dock area.

Construction of the concrete slab will be postponed until such time as sufficient settlement of the quay infill is proven to have taken place. In the meantime, the quay surface will be finished with a layer of graded crushed rock which will allow surface water to permeate into the granular body of the new quay. Piezometers will be provided in cased boreholes located behind the front walls and weepholes will be provided at a low level. This will allow the ground water level to be monitored and drawn down in a controlled manner during any future dock de-watering.

2.5.9 Concrete Slab

When provided, the concrete slab design will include a positive surface water drainage system consisting of a network of channel slot drains and carrier pipes cast into the slab. Catchpits will be installed in appropriate places and the pipework laid to a suitable fall. The drainage will be directed to interceptors before being discharged through the quay wall to the Inner Dock.

The final slab thickness will be determined by the Contractor's designers in due course but, for tender purposes, was estimated at 300 mm thick reinforced with steel fabric reinforcement and synthetic fibres. The volume of concrete required for this purpose is estimated to be $2,900\text{m}^3$.

2.5.10 Site Security

For major construction works, a temporary construction compound shall be established within PON with the whole of the site works area segregated from other port activities. Once established the contractor shall manage / control the area through the Construction (Design and Management Regulations 2015 (CDM Regs)).

The location of the temporary construction compound, the means of segregation and access routes are to be agreed with GEN and detailed within the project specific CEM Plan. Suitable signage to direct construction workers and deliveries shall be installed prior to commencement of site works.

2.5.11 Construction Traffic

It is envisaged that construction material will be delivered to site by both sea and road. The B9175 is part of the National Cycle Network as well as used by locals therefore a Construction Traffic Management Plan will be developed by the Contractor to ensure the safety of members of the public and site workers. The plan will be submitted to THC for approval and will be implemented throughout the agreed duration.

For deliveries by road, two access points are anticipated. Access point 1 will be via the main gate of PON which will be used for general deliveries. Access point 2 is located further south and is normally locked. However, to minimise impact on the B9175, the Contractor will be given restricted access for the sole purpose of importing material from Castlecraig quarry.

It is estimated that circa 129,692m³ of infill material will be brought to site from Castlecraig Quarry to form the temporary working platform prior to being used as permanent infill material. This equates to a maximum number of daily 2 way movements of 250 based on 8 m³ tipper lorries being used to transport the material from the quarry to the construction site.

In relation to concrete, this will also be transported to site via road with a total of 680 m³ being required for the coping beam formation and a further 2,900 m³ to form the final concrete slab. It is estimated that this will equate to about 10 ready mix concrete wagons accessing the construction site per day (i.e. 20 two-way trips) during the relevant concreting phases of the development.

Construction materials arriving by sea will primarily be tubular steel piles. The materials will be offloaded at one of the existing quays at Nigg. Once offloaded, the material will be transported to the designated work or storage area.

The number of domestic and work vehicles allowed within PON is restricted and the existing offsite car park will therefore be utilized by the majority of site operatives. A dedicated minibus shuttle service will provide transportation for the site operatives to the works area from the car park.

2.5.12 Construction Working Hours

With the exception of tidal working to install tie rods and cases of emergency, construction operations shall take place within the following hours;

- Monday to Friday: 08:00 – 19:00; and
- Saturday: 08:00 – 13:00.

There will be no working on Sundays or Scottish Bank Holidays.

2.5.13 Environmental Management During Construction

An overarching Construction Environmental Management (CEM) Document has been compiled and provided in Technical Appendix 2.2, Volume 3 of this EIAR. This document has been produced in accordance with The Highland Council Guidance Note on Construction Environmental Management Process for Large Scale Projects (August 2010). This Guidance Note sets out a robust Project Environmental Management Process (PEMP) for large scale projects. It describes the CEM Document as one of the key management tools for highlighting site sensitivities and defining appropriate mitigation measures identified during the EIAR process (as summarised in the Schedule of Mitigation). The CEM Document will be developed to incorporate any other requirements identified in

the conditions attached to the planning consent and marine license. It also provides a clear roadmap of the key roles and responsibilities of all those involved during construction works.

The information and procedures provided in this CEM Document shall be used by the principal contractor to develop a detailed Construction Environmental Management Plan (CEM Plan) which will provide focused mitigation and control measures in order to ensure the environment is protected during the construction works. The CEM Plan shall incorporate, but not be limited to, the identified mitigation measures detailed within the Schedule of Mitigation.

The CEM Plan will be submitted to the statutory authorities for approval prior to any Works commencing on site.

The CEM Plan is a working document which shall be regularly reviewed and updated throughout the lifetime of the construction works in accordance with the procedures detailed in the CEM Document and the relevant consents.

Implementation of the CEM Plan and other environmental control procedures will be checked by an independent Environmental Clerk of Works (ECoW), through site visits, inspections and audit of the Contractors records throughout the Works.

2.6 Operational Phase

2.6.1 Activities

Once constructed, the Eastern Inner Dock Quay will primarily be used to export HV cables from the Sumitomo Electrics cable factory directly onto cable installation vessels. The cable spooling operations are estimated to occur over 140 days per year consisting of 20 port calls at an average 7 day stay. The works will result in 14 new full time jobs for logistics / maintenance personnel to support marine activities. Staff will operate from the South Quay offices.

When not being used for this purpose, the quay will be incorporated into the existing operational activities that occur at PON. Technical services currently provided by GEN include:

- Large-scale and complex fabrication projects for subsea and offshore equipment;
- Shot blasting and painting of infrastructure;
- Survey and engineering;
- Architectural repair and refurbishment of offshore rigs;
- Specialist oil rig and floating production and storage offshore (FPSO) vessels, repair and inspection;
- Construction of offshore and subsea infrastructure; and
- Construction, assembly and marshalling of renewable energy projects.

For clarity, this secondary use is unlikely to be for floating turbine integration onto the floating foundation structure and testing at port-side due to the Inner Dock's restricted water depth being unsuitable for this purpose.

In addition, wet storage would be the consideration of specific future capital projects so that the overall effect of industries such as offshore floating wind etc which may use wet storage, turbine assembly and testing at quay-side, as part of their manufacturing process, accurately reflects the proposals i.e. type of structure, scale, volume, duration etc, in any impact assessment.

As such wet storage, turbine assembly and testing at quay-side are not considered further within this EIAR.

2.6.2 Drainage

Surface water runoff from the proposed development would be discharged to the Cromarty Firth, as per the existing situation. As the waterbody is tidal at this location, surface water would discharge unrestricted. Treatment

would be achieved through the use of Sustainable Drainage Systems (SuDS), such as surface mounted drainage channels which will include catch pits at changes in direction. The outflow flow will pass through oil separators with sampling chambers included. The permanent drainage network will be confirmed at the detailed design stage. A Drainage Impact Assessment has been prepared by Mabbett & Associate Ltd and provided as Technical Appendix 7.2, Volume 3 of this EIAR.

2.6.3 Operational Environmental Management

The operations at PON are controlled via the integrated management system or via the tenant's management systems when operating on a site-within-a-site basis. An Operational Environmental Management Document (OEMP)² ensures activities at Nigg are undertaken in accordance with good environmental practice.

The objectives of the OEMP are to:

- Identify all appropriate environmental safeguards and demonstrate how they will be implemented on-site;
- Manage site activities effectively;
- Enable adverse impacts on the environment to be minimised;
- Provide for the conservation of the site's environment;
- Identify suitable emergency preparedness and response procedures;
- Provide details of complaints management procedures;
- Meet all requirements of relevant legislation and assist with ensuring compliance of the Project Approval; and
- Monitor and manage environmental impacts.

2.7 Decommissioning Phase

For a development of this type, decommissioning is not envisaged. Should decommissioning ever be planned in the future, Statutory Regulators would be consulted, and applications made at that time under whatever future regulatory regime exists at that point in the future.

² The Port of Nigg, *Nigg Operational Environmental Management Document (Ref PON-02-IM-0022)*

3 EIA METHODOLOGY AND SCOPE

3.1 Introduction

The purpose of an EIA is to identify and evaluate the likely significant effects of a proposed development on the environment, both direct and indirect, and identify measures to mitigate or manage any significant adverse effects. The EIA process also provides an opportunity to 'design out' adverse effects wherever possible. Where adverse effects cannot be designed out, mitigation measures are proposed to avoid, compensate or reduce significant environmental effects to an acceptable level where possible. The findings of the EIA process must be documented in a clear and understandable manner within the EIAR. The EIAR is then submitted to assist the Regulators in determining any planning and / or marine licence applications.

The EIAR submission includes a Non-Technical Summary (NTS). This is a concise, stand-alone document which provides a project description, the baseline environmental conditions along with the findings of the EIAR in an accessible and easy-to-read format. The NTS does not use technical terms, detailed data or scientific discussion.

The EIA work is undertaken by specialist environmental and technical consultants on the basis of project information supplied by the Applicant, their Engineering advisors and their preferred D&C Contractor and following consultation with statutory consultees, other bodies and members of the public.

EIA is an iterative process which allows feedback from stakeholder consultation and the results from baseline studies to be fed into the design process of the proposed development.

3.2 EIA Objectives

The objectives of the EIA are:

- To establish a robust environmental baseline upon which to base environmental assessment, incorporating field surveys, desk study and consultation;
- To provide an assessment of the potential environmental impacts of the proposed development and to determine which of these, if any, are likely to result in a significant effect on the receiving environment; and
- Where significant effects are predicted, to determine mitigation measures to reduce the residual effects to acceptable levels where possible and document residual effects.

3.3 Key Terms

To ensure clarity and consistency through the EIAR, the following key terms have been used:

- 'the proposed development' refers to the construction of the proposed development as described in Chapter 2: Proposed Development;
- 'the site' is the land and sea bound by the red-line boundary in which the proposed development lies, and is illustrated within Drawing No 677964-GIS014, Volume 2 of this EIAR; and
- The 'Study area' is the area over which desk based or field assessments have been undertaken and are identified within each chapter. The core study area varies depending on the nature of the potential effects within each discipline, as informed by professional guidance and best practice regarding EIA. All of the core study areas cover the site and are described within the methodology section of the relevant chapters within this EIAR.

3.4 Pre-Application Consultation

The Council determined that although the Eastern Inner Dock Quay proposals fell under the description of a Paragraph 8 (2), Schedule 1 development of the EIA Regulations (Refer to Section 3.5 for further details), due to the scale of the site, the development did not meet the criteria necessary for a Major Planning Application.

Following receipt of a notice of intention to develop the quay, the Highland Council organised a pre-application meeting on 13th June 2023 to which they invited representations from relevant sections of the Council as well as external bodies including NatureScot, SEPA and the Marine Directorate. Although not regarded as a Major Development, the Council felt that they should follow the procedures set down for a Major development. This would ensure that all affected parties would have the opportunity to identify any specific issues of concern particularly given the sensitive environmental status of the Cromarty Firth. Such a pre-application meeting is intended primarily to identify concerns thus assisting the developer to address such concerns in designing the works and considering alternative construction methods.

In July 2023 the Council issued a "Response Pack" dated 11th July 2023 (Council Ref No 23/02299/PREMAJ) containing the formal responses received following the meeting (Refer to Technical Appendix 3.1, Volume 3 of this EIAR). The key issues identified are summarised below:

- Ensuring designated sites are satisfactorily protected;
- Compliance with National Planning Framework 4 (NPF4) including with respect to biodiversity;
- Addressing and mitigating amenity issues particularly noise during construction and operation;
- Consideration of the transport requirements generated, including construction traffic and by employees, in line with the sustainable travel and investment hierarchies; and
- Addressing the requirements of the National Marine Plan

3.5 Screening as Part of the EIA Process

In determining the requirement for an EIA, Schedule 1 of both EIA Regulations sets out the types of development for which EIA is a mandatory requirement, whilst Schedule 2 lists the projects where the need for EIA is judged on a case-by-case basis, depending on whether a proposal is likely to cause significant environmental effects or is located in a sensitive area as defined by the EIA Regulations.

As the proposed development contains elements which transcends the intertidal zone (i.e. the area between Mean High Water Springs (MHWS) and Mean Low Water Springs (MLWS), which constitutes the dividing line between terrestrial and marine planning, consents will be required from both THC and MD-LOT. It is identified that the project is a Schedule 1 development as it falls within the description of Paragraph 8 (2) of both the terrestrial and marine EIA regulations. The paragraph refers to:

"Trading ports, piers for loading and unloading connected to land and outside ports (excluding ferry piers) which can take vessels of over 1,350 tonnes".

Accordingly, an EIA is automatically required to support applications under both the Town and Country Planning (Scotland) Act and the Marine (Scotland) Act. A formal screening request for the project was submitted to THC and MD-LOT with a Screening Opinion, confirming it to be an EIA development, being returned on 19th December 2023 and 22nd November 2023 respectively.

3.6 Scoping as Part of the EIA Process

3.6.1 Introduction

The sections below set out the EIA Scoping process for this development and accordingly documents how the EIAR was shaped into what is currently included and offers rationale to why other topics have been excluded, based on the likelihood of likely potential significant effects.

3.6.2 Scoping Requests and Opinions

A request for a formal Scoping Opinion was submitted to THC and MD-LOT under Regulation 17(1) of the EIA Regulations and Regulation 14(1) of the Marine EIA Regulations. This was accompanied by an EIA Scoping Report (Refer to Technical Appendix 3.2, Volume 3 of this EIAR) provided to assist the THC, MD-LOT, statutory and non-statutory consultees to form an opinion upon the likelihood of potentially significant environmental effects and hence the topics to be assessed in the EIA (i.e. those topics where significant environmental effects could potentially result if unmitigated). The Scoping Report also provided an opportunity for consultees to comment upon suggested methodologies for technical assessment.

3.6.3 Scoping Opinion – Defined Scope

A Scoping Opinion was provided by THC dated 14/05/2024 (Refer to Technical Appendix 3.3, Volume 3 of this EIAR). This contained formal responses from internal Council departments, Historic Environment Scotland (HES), Marine Scotland, Scottish Environment Protection Agency (SEPA), NatureScot and Scottish Water.

A Scoping Opinion was provided by MD-LOT dated June 2024 (Refer to Technical Appendix 3.4, Volume 3 of this EIAR). This also contained formal responses from HES, Maritime & Coastguard Agency (MCA), NatureScot, Scottish Environment Protection Agency (SEPA) THC, Cromarty Firth Port Authority, Royal Society for the Protection of Birds (RSPB) Scotland, Scottish Water and National Air Traffic Services.

The Scoping Responses from both THC and MD-LOT are summarised in Table 3-1. This table provides a signpost of where these issues have been addressed, or where applicable, why they have been Scoped out of the EIA.

Table 3-1: Summary of Scoping Responses

Consultee	Topic	Point for Inclusion	EIA Report Chapter	Justification
The Highland Council	Land Use	The ES should recognise the existing land uses affected by the development having particular regard for The Highland Council's Development Plan and other supplementary planning policies. This is not instead of but in addition to the expectation of receiving a Planning Statement in support of the application itself which, in addition to exploring compliance with the Development Plan, should look at National Planning Framework 4 and Planning Advice Notes which identify the issues that should be taken into account when considering significant development. It is not considered necessary to cover the matter of energy policy within the ES or helpful to cover planning policy within each Chapter of the ES	Chapter 4	Provided as requested
	Socio-economic	The ES should estimate who may be affected by the development, in all or in part, which may require individual households to be identified, local communities or a wider socio economic groupings such as tourists & tourist related businesses, recreational groups, economically active, etc. 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.	Section 9.6	Socio-economic assessment with respect to the proposed development has been carried out and economic information has been detailed in the EIAR.
	Community Assets	The ES needs to recognise community assets that are currently in operation for example TV, radio, tele-communication links, radar, MOD safeguards, etc. In this regard the applicant, when submitting a future application, will need to demonstrate what interests they have identified and the outcomes of any consultations with relevant authorities.	N/A	Not considered relevant to the proposed development.
	Moray Firth SAC (bottlenose dolphin) Dornoch Firth & Morrich More SAC (harbour seal only)	It's not entirely clear, but it seems that both bottlenose dolphin and harbour seal are not being scoped in. For the avoidance of doubt, we recommend that both SAC species are scoped into the EIA Report for full assessment. Although the construction methods of the Inner Dock (yet to be confirmed) are likely to involve the formation of a temporary working platform (using clean crushed rock), it is likely that noise effects will still permeate through the water out into the Moray Firth SAC nearby. Pre-application advice provided previously highlighting possible mitigation measures for inclusion within a Marine Mammal Protection Plan (June 2023), where SAC harbour seals are also likely to benefit from similar mitigation. It will be important for any Marine Mammal Protocols to be fully presented within the EIA Report to inform the shadow Habitats Regulation Appraisal (HRA) process using SAC Conservation Objectives.	Chapter 6	Both species are considered. Underwater noise has been scoped out as it is considered that the use of the temporary piling platform in combination with the proposed piling methodology and the location within the inner dock will limit underwater noise impacts.
	Moray Firth SAC (bottlenose dolphin) Dornoch Firth & Morrich More SAC (harbour seal only)	We also recommend that changes in the movements, numbers and distribution of vessels associated with construction and operational aspects at Nigg should be scoped in for assessment. Previous studies on this issue could be a useful baseline. Therefore, based on all the information available to date, we advise there is potential for Likely Significant Effect for both SAC species. It is likely that an EPS licence may be required to progress this proposal, as disturbance effects to dolphins could still occur.	Section 6.6.1	The vessel movements associated with construction and operational aspects at Nigg has been considered.
	Moray Firth SAC (subtidal sandbanks)	Its not totally clear from the Scoping Report that there will be sediment disposal off the Sutors, as there is mention of retaining materials excavated from near the toe of the existing inner dock. However, there would appear to be minimal ecological connectivity to this marine habitat for other operations. However, we recommend its inclusion within the shadow HRA process for completeness.	N/A	No off-shore disposal at the Sutors is proposed.
	Habitats / Biodiversity	The ES should provide an account of the habitats present on the proposed development site. It should identify rare and threatened habitats, and those protected by European or UK legislation, or identified in national or local Biodiversity Action Plans. Habitat enhancement and mitigation measures should be detailed.	Chapter 6	A Preliminary Ecological Appraisal (PEA) of the site has been undertaken and informs the assessment.

	<p>We recognise opportunities to reduce the introduction of marine invasive non-native species (mINNS) to a minimum and proactively improve the practice of existing port activities. Introduction and spread are most relevant to vessel movements (e.g. due to hull fouling and/or from ballast water, etc.). Several mINNS are already present within the Cromarty Firth and activities during construction and operation could facilitate their spread. We recommend that site-based biosecurity plans are included within the EIA. This should aim to minimise the spread and introduction of mINNS at both construction and operational phases of the development. There are a wide range of potential biosecurity measures that could be employed. NatureScot would be happy to advise further on biodiversity plans if required.</p>		<p>A Biodiversity Assessment and Management Plan is considered in the assessment.</p> <p>The Principal Contractor shall prepare a biosecurity management plan to ensure plant and equipment do not bring INNS to site.</p> <p>Hull fouling is not allowed within the area controlled by PoCF.</p> <p>The management of ballast water is under the control of 3rd parties i.e. vessel owners/masters and regulated through The Merchant Shipping (control and management of ships' ballast water and sediments) Regulations 2022. The regulation guidance³ states that <i>"there is no obligation or responsibility placed on ports to monitor the compliance of vessels on an ongoing basis"</i> in relation to ballast water management.</p>
Animals	<p>The ES should provide a baseline survey of the animals (mammals, reptiles, amphibians, etc) interest on site. It needs to be categorically established which species are present on the site, and where, before a future application is submitted. The presence of protected species or European Protected Species must be included and considered as part of the planning application process, not as an issue which can be considered at a later stage. Any consent given without due consideration to these species may breach European Directives with the possibility of consequential delays or the project being halted by the EC. Please refer to the comments of SNH in this respect.</p>	Chapter 6	Provided as requested
Water Environment	<p>The ES needs to address the nature of the hydrology and hydrogeology of the site, and of the potential impacts. Measures to prevent erosion, sedimentation or discolouration will be required, along with monitoring proposals and contingency plans. Assessment will need to recognise periods of high rainfall which will impact on any calculations of run-off, high flow in watercourses and hydrogeological matters. You are strongly advised at an early stage to consult Scottish Environment Protection Agency (SEPA) as the regulatory body responsible for the implementation of the Controlled Activities (Scotland) Regulations 2005 (CAR), to identify if a CAR license is necessary and the extent of the information required by SEPA to assess any license application.</p>	Chapter 8	<p>The nature of the hydrology and hydrogeology of the site, and related potential impact and the mitigation measures are addressed in the EIAR. The assessment considers the periods of high rainfall affecting the calculations of run-off, high flow in watercourses and hydrogeological matters.</p>
Fish and other Aquatic Interests	<p>The ES needs to address the aquatic interests within local watercourses, including down stream interests that may be affected by the development, for example increases in silt and sediment loads resulting from construction works; pollution risk / incidents during construction; obstruction to upstream and downstream migration both during and after construction; disturbance of spawning beds / timing of works; and other drainage issues. The ES should evidence consultation input from the local fishery board(s) where relevant.</p>	N/A	No watercourses present on site.
Air Quality	<p>The ES needs to address existing air quality and the general qualities of the local environment including background noise, sunlight, prevailing wind. From this base data information on the expected impacts of any development can then be founded recognising likely impacts for each phases of development including construction, operation and decommissioning. Issues such as dust, air borne pollution and / or vapours, noise, light, shadow-flicker can then be highlighted.</p> <p>Given the separation distance to sensitive receptors, dust from construction work is unlikely to be a significant issue however, the applicant will be required to submit a scheme for the suppression of dust.</p>	Section 9.2	<p>Construction impacts on air quality is considered within the EIAR.</p> <p>Vapours, light and shadow-flicker are not considered relevant to the proposed development.</p>

³ <https://www.gov.uk/government/publications/mgn-675-mf-the-merchant-shipping-control-and-management-of-ships-ballast-water-and-sediments-regulations-2022>

	<p>The scoping report refers to a previous construction noise assessment and has suggested that further assessment be scoped out of the EIAR but states that a construction noise management plan (CNMP) will be submitted for the approval of the planning authority prior to commencement of the development.</p> <p>The CNMP should identify the measures to reduce the impact of noise from construction activities and from piling in particular. This activity can be extremely intrusive and is likely to be of particular concern to residents. Within the normal operating times, there may be a need to further restrict piling operations to avoid early morning or late afternoon periods.</p> <p>The scoping report has confirmed that an operational noise assessment will be undertaken. It also refers to previous assessments and monitoring surveys which have been carried out for other developments in this area. It is proposed that this data will be reviewed to determine its suitability for further use in assessment of operational impacts from the new quay. It is understood the applicant will liaise with Environmental Health on this and on the details of what additional noise monitoring is necessary.</p> <p>Section 4.5.2 outlines how the assessment will be carried out and the proposal is for it to be carried out in accordance with Pan1/2011 using principles from BS4142. Table 4.1, which is replicated from PAN 1/2011, shows a matrix for assessing the significance of effects when comparing the noise levels before the development to predicted levels after it becomes operational.</p> <p>Typically, new industrial development is usually assessed by comparing the specific noise source with the background however, in this case the background level at some receptors is already dominated by noise from existing activities. Therefore, simply comparing before and after will just lead to a self-perpetuating creeping background which would keep increasing with each new development.</p> <p>The applicant will be required to submit a noise impact assessment for the approval of the Planning Authority which includes but is not limited to the following:</p> <ul style="list-style-type: none"> • A description of the proposed development in terms of noise sources and the proposed locations and operating times of the same; • A description of any noise mitigation methods that will be employed. The effect of mitigation methods on the predicted levels should be reported where appropriate; • A detailed plan showing the location of noise sources, noise sensitive premises and survey measurement locations;* • A survey of current ambient (LAeq) and background (LA90) noise levels at appropriate locations neighbouring the proposed site. Where relevant, the use of previous monitoring results may be useful to inform the assessment but this should be agreed with Environmental Health; • A prediction of noise levels resultant at neighbouring noise sensitive premises, for the operational phase of the proposed development. This must include a prediction of cumulative impacts arising from the development and other sources within the port and from external sources. The raw data and equations used in the calculations should be available on request. <p>The applicant will be required to submit a noise management plan for the approval of the Planning Authority which encompasses the proposed development and existing port activities.</p>		<p>Noted</p> <p>Principal Contractor to develop a CNMP</p> <p>Chapter 5</p> <p>An Operational Noise Assessment has been undertaken.</p>
<p>Climatic Factors</p>	<p>The ES needs to address all relevant climatic factors which can greatly influence the impact range of many of the preceding factors on account of seasonal changes affecting, rainfall, sunlight, prevailing wind direction, etc.</p>	<p>Chapter 8</p>	<p>Rainfall, the only climatic factor that can affect the proposed development has been</p>

			considered in the assessment under water environment in the EIAR.
Cultural Heritage	Given the prior development on site, Historic Environment Scotland are content that the potential for impact on their marine interests is negligible and can therefore be scoped out.	Chapter 9.3	A Protocol for Archaeological Discoveries has been provided in the Construction Environmental Management Document
LVIA	<p>The Council expects the ES to consider the landscape and visual impact of the development. The Council makes a distinction between the two. While not mutually exclusive, these elements require separate assessment and therefore presentation of visual material in different ways.</p> <p>Whilst section 10.4 scopes out the need for a LVIA should there be turbines in place (for testing) more than 28 days in a calendar year then a LVIA should form part of the ES. All elements of a development are important to consider within any ES, including the visual impact of factors such as the testing of turbines and other infrastructure.</p>	Section 9.7	Construction and testing of turbines is not considered within this EIAR – refer to Section 2.6.1 for further details.
Roads Infrastructure	A Transport Assessment (TA), or section on traffic and transportation, within the Environmental Statement for the project will be required. The TA should identify all Council maintained roads likely to be affected by the various stages of the development and consider in detail the impact of development traffic, including abnormal load movements, on these roads. Where necessary, the TA should consider and propose measures necessary to mitigate the impact of the development on the road network. Prior to preparation of the TA the developer should first carry out a detailed scoping exercise in consultation with the Council, as local roads authority and, as required, Transport Scotland as trunk roads authority.	Chapter 7 and Technical Appendices 7.1 and 7.2, Volume 3 of the EIAR.	A separate chapter on Traffic Assessment is provided in the EIAR, supported by Transport Statement and CTMP as technical appendices.
Moray Firth SPA	<p>Although this proposal lies outwith these Protected Areas, some SPA species use waters relatively near to Nigg and within the wider Cromarty Firth. The Scoping Report lacks detail about new operational processes linked to the Inner Dock proposal, where this dock expansion is likely to play its part in floating turbine construction. Many bird species will not have experienced massive floating turbines before; therefore, we welcome a precautionary approach for Protected Areas. We note that section 7.6.3 of the Scoping Report refers to turbine testing and wet storage within the firth. We welcome the intention that the developer aims to complete a robust assessment of potential impacts to ornithology, involving both SPA's. However, there appears to be a mismatch with this proposal being earmarked for submission in 2024 yet waterfowl survey work is not proposed until 2024/2025. This issue could cause problems, resulting in project risk to timescales and delivery.</p> <p>There is a growing evidence base around displacement effects on a range of marine waterbirds associated with the presence of marine wind turbines. However, to date, turbine assembly has largely been at offshore wind farm sites. Therefore, this development raises novel issues, where large floating turbines are likely to be constructed, tested & towed in proximity to SPA species.</p> <p>We are aware that non-breeding eiders may be sensitive to tall turbine structures (even when non-functional), where displacement effects may occur to individuals using these areas. We note that the Scoping Report highlights other SPA sub-tidal species that use the Nigg coastal section, including goldeneye, red-breasted merganser, long-tailed duck, red-throated diver, common scoter and shag. In addition, Slavonian grebe and scaup should also be scoped-in for assessment. Many of these species have potential to be affected by the presence of large turbine structures, which may result in displacement (or disturbance) effects to SPA birds using subtidal waters. These effects could be generated at port-side, during turbine towing and if stored (even temporarily) within or adjacent to either SPAs. The potential for displacement and/or disturbance effects will depend on birds' responses to presence, movement and other operations linked to such massive</p>	Chapter 6	<p>The impacts on the Moray Firth SPA have been considered within the EIAR.</p> <p>Floating turbine construction is not considered within this EIAR – refer to Section 2.6.1 for further details.</p> <p>For clarity the reference to 2024 / 25 wintering bird survey proposals is in relation to collecting baseline information for future capital projects.</p>

	<p>floating turbine structures. Therefore, it would help if the applicant provided more information on this, including spatial extent of towing, destination point, how it will be done, frequency per season & time of day and/or tidal cycle, etc.</p> <p>We welcome that survey work is proposed to take place to assess potential impacts of port operational procedures. However, we offered assistance on the issue of survey work within our pre-application advice back in June 2023. This could have allowed for a survey programme to be agreed and implemented during the 2023/24 non-breeding season, which has nearly just gone. It will be necessary for SPA bird survey work to be provided with the application, otherwise an assessment of impacts cannot be undertaken.</p>		
Cromarty Firth SPA	<p>For the Cromarty Firth SPA, we note the distance between the proposal and high-tide waterfowl roosts. However, intertidal foraging habitats are likely to be closer to Port of Nigg, where these may be used by SPA species, including redshank, oystercatcher, bar-tailed godwit and curlew, etc. Operational effects of floating turbines, relates to all relevant ecological processes for SPA waders and wildfowl, such as: foraging, roosting, loafing, etc. Some studies suggest waders (albeit on breeding habitat) can be displaced from their favoured territories by the presence of turbine structures, therefore the potential effects of displacement to SPA waders and wildfowl should also be considered. This is relevant to non-breeding periods (e.g. most waterfowl) and breeding periods (common tern & osprey, see below). We know that ospreys use coastal firths during the breeding season. Individuals can also be seen foraging and resting, during spring and autumn, within the Cromarty Firth area. We also previously noted, potential nesting habitat close to the cable factory in our final response. Therefore, potential impacts to osprey foraging habitats should be assessed in context to floating turbines and any wet storage zones.</p> <p>We understand that common terns may use areas within Port of Nigg. This potentially takes them closer to works and turbine construction areas. Therefore, disturbance from piling and any dredging could occur, as well as managing laydown for construction materials, etc. It is also possible that displacement effects may occur from floating turbines, once constructed at port side. Therefore, these factors should be given due consideration in context to assessment of the SPA Conservation Objectives for both species.</p> <p>NatureScot would welcome further detail on floating turbine testing at port-side. If testing involves low rotor speeds and very short duration testing, then it is possible that collision risk will be negligible, so vantage point surveys to assess collision risk may not be required. However, until further information is provided on this, NatureScot are unable to advise further. NatureScot would welcome detail in due course to help advise further on potential survey work required.</p>	Chapter 6	<p>The impacts on the Cromarty Firth SPA have been considered within the EIAR.</p> <p>Floating turbine construction is not considered within this EIAR – refer to Section 2.6.1 for further details.</p> <p>For clarity the reference to 2024 / 25 wintering bird survey proposals is in relation to collecting baseline information for future capital projects.</p>
Cromarty Firth SSSI	<p>Red-breasted merganser, redshank, bar-tailed godwit, whooper swan & wigeon are all covered by the above advice. Should other SSSI interests, such as mudflats and sandflats, etc., have the potential to be affected by construction or operational aspects (even cumulative issues), then this should be scoped in. Longevity of any adverse impacts is important, and whether effects are likely to be permanent or temporary. Thus, impacts of scale, levels of significance and reversibility for assessment against SSSI features should be captured within the EIA Report (if relevant).</p>	Chapter 6	<p>The impacts on the Cromarty Firth SSSI have been considered within the EIAR.</p>
Wider countryside birds	<p>We are aware that eiders may be particularly sensitive to tall turbine structures. However, there are likely to be 'unknowns' in context to any effects that may occur from huge turbines (under construction & during testing) to an active breeding eider colony nearby. However, we are aware that the breeding eider colony previously at Nigg shifted some years ago, therefore we are unsure if any birds still</p>	Chapter 6	<p>Eiders are considered within the Biodiversity Chapter.</p> <p>A/A Floating turbine construction is not considered within this EIAR – refer to Section 2.6.1 for further details.</p>

	breed there. Some level of assessment should be provided within the EIA Report if a small colony still exists.			
Marine Directorate	<p>The Applicant considers risk of major accidents and/or disasters in section 3 of the Scoping Report. The Scottish Ministers acknowledge the Applicant's commitment to include consideration of risks introduced and the implementation of a Construction Environmental Management Document.</p> <p>However, the Scottish Ministers do not consider that the Applicant has provided sufficient information to justify scoping out the risk of major accidents and/or disasters. Consequently, it must be scoped in for further assessment in the EIA Report in respect of both the construction and operational phases of the project.</p> <p>The Scottish Ministers consider that the EIA Report must include a description and assessment of the likely significant effects deriving from the vulnerability of the Proposed Works to major accidents and disasters. The Applicant should make use of appropriate guidance, including the recent Institute of Environmental Management and Assessment ("IEMA") 'Major Accidents and Disasters in EIA: A Primer', to better understand the likelihood of an occurrence and the Proposed Works susceptibility to potential major accidents and hazards. The description and assessment should consider the vulnerability of the Proposed Works to a potential accident or disaster and also the Proposed Works potential to cause an accident or disaster.</p> <p>The Scottish Ministers advise that existing sources of risk assessment or other relevant studies should be used to establish the baseline rather than collecting survey data and note the IEMA Primer provides further advice on this. This should include the review of the identified hazards from your baseline assessment, the level of risk attributed to the identified hazards and the relevant receptors to be considered.</p>	Section 9.1	<p>Accidents and Natural Disasters has been considered within the EIAR.</p> <p>A/A Floating turbine construction is not considered within this EIAR – refer to Section 2.6.1 for further details.</p>	
		The assessment must detail how significance has been defined and detail the inclusions and exclusions within the assessment. Any mitigation measures that will be employed to prevent, reduce or control significant effects should be included in the EIA Report. The Scottish Ministers advise that the fuller intended use of the site requires to be considered in the assessment in relation to the construction, towing, testing, maintenance and storage of turbines.		
	Airborne Noise	To the extent that the effects relate to the marine licensable activities of the Proposed Works, the Scottish Ministers agree with the Applicant that, noise and vibration can be scoped out of the EIA Report. However, for the avoidance of doubt, the Scottish Ministers advise that the NatureScot representation in relation to noise impacts on marine mammals must be implemented in full in the relevant receptor chapter of the EIA Report. The Applicant is referred to section 5.6.11 of this Scoping Opinion for further clarity.	Noted	Underwater noise has been scoped out as it is considered that the use of the temporary piling platform in combination with the proposed piling methodology and the location within the inner dock will limit underwater noise impacts.
	Air Quality	To the extent that the effects relate to the marine licensable activities of the Proposed Works, the Scottish Ministers note the intention for the submission of a Construction Dust Management Plan by the approved contractor and are content that air quality can be scoped out of the EIA Report.	Noted	None
Archaeology and Cultural Heritage	<p>The Applicant considers the potential impacts of the Proposed Works on archaeology and cultural heritage in section 6 of the Scoping Report and proposes to scope this out from further assessment in the EIA Report. The Scottish Ministers acknowledges the Applicant's intention to submit a Protocol for Archaeological Discoveries to be agreed prior to work commencing.</p> <p>In line with the HES representation, the Scottish Ministers are content that archaeology and cultural heritage can be scoped out of the EIA Report.</p>	Chapter 9.3	A Protocol for Archaeological Discoveries has been provided in the Construction Environmental Management Document	

<p>Biodiversity - Birds</p>	<p>The Scottish Ministers agree with the impacts proposed to be scoped in as detailed in sections 7.4 and 7.5 of the Scoping Report. However, draw the Applicant's attention to the NatureScot representation in Appendix I in relation to the requirement to fully identify all new operational processes linked to the Proposed Works, in particular, floating turbine construction, testing, storage and towing. The Scottish Ministers advise that displacement and disturbance as a result of turbines relative to both non-breeding and breeding periods is scoped into the EIA Report.</p> <p>The Applicant is directed to the NatureScot representation in this regard and advised to fully address this in the EIA Report.</p> <p>In section 7.6.3 of the Scoping Report, the Applicant states that the qualifying interests of the Moray Firth and Cromarty Firth SPAs are scoped in for assessment. For the avoidance of doubt, the following birds should be scoped into the EIA report, but not be limited to non-breeding eiders, goldeneye, red-breasted merganser, long-tailed duck, red-throated diver, common scoter, shag, Slavonian grebe and scaup.</p> <p>The Scottish Ministers acknowledge the Applicant's intention to undertake further wintering bird surveys to ensure a robust assessment. The Scottish Ministers would also like to draw the Applicant's attention to the RSPB representation in Appendix I and advise that breeding Common Tern must be scoped in and included in the wintering bird surveys to ensure appropriate mitigation is in place avoiding impact on the Cromarty Firth SPA during construction of the Proposed Works.</p> <p>The Applicant is directed to the NatureScot representation and highlight its advice in relation to the requirement for further bird survey work to inform the assessment of the operational impacts of the Proposed Works. The Scottish Ministers advise that this should be fully addressed and surveys should be carried out in line with the NatureScot representation. The Applicant is advised to engage with NatureScot in this regard. For the avoidance of doubt, operational impacts cannot be considered without at least one nonbreeding season of vantage point surveys, this is in line with the NatureScot representation.</p> <p>The Scottish Ministers note the intention to submit a Biodiversity Enhancement Plan with the EIA Report. In this regard, the Scottish Ministers draw the Applicant's attention to the RSPB representation in Appendix I regarding the submission of a Tern Management Plan and advise that this is considered when developing the Biodiversity Enhancement Plan for submission with the EIA Report.</p>	<p>Chapter 6 and Technical Appendix 6.3, Volume 3 of the EIAR.</p>	<p>Floating turbine construction is not considered within this EIAR – refer to Section 2.6.1 for further details.</p> <p>For clarity the reference to 2024 / 25 wintering bird survey proposals is in relation to collecting baseline information for future capital projects.</p> <p>A Biodiversity Enhancement Plan is provided as Technical Appendix 6.3, Volume 3 of the EIAR.</p>
<p>Biodiversity -Marine Habitats and Fish</p>	<p>The Scottish Ministers are broadly content with the scoping out of marine habitats and fish with the exception of marine mammals. The Scottish Ministers advise that bottlenose dolphin and harbour seal are scoped into the EIA Report for further assessment for both construction and operational phases in relation to potential impacts due to noise and changes in vessel activity. The Scottish Ministers direct the Applicant to the NatureScot representation in this regard and advise that it is fully addressed in the EIA Report.</p> <p>In line with the NatureScot representation, the Scottish Ministers advise that a Marine Mammal Protection Plan, detailing in full any mitigation measures, must be submitted alongside the EIA Report. Furthermore, the Scottish Ministers draw the Applicants attention to the NatureScot representation, specifically in relation to the production of an appropriate biosecurity plan addressing the introduction of MNNS during the construction and operational phases and advise that this is considered in producing the EIA Report.</p>	<p>Chapter 6</p>	<p>Underwater noise has been scoped out as it is considered that the use of the temporary piling platform in combination with the proposed piling methodology and the location within the inner dock will limit underwater noise impacts. As such a Marine Mammal Protection Plan has not been prepared.</p> <p>Any vessels accessing PON will be under the jurisdiction of PoCF. The management of ballast water is under the control of 3rd parties i.e. vessel owners/masters and regulated through The Merchant Shipping (control and management of ships' ballast water and sediments) Regulations 2022. The regulation guidance⁴ states that "<i>there is no obligation or responsibility placed on ports to</i></p>

⁴ <https://www.gov.uk/government/publications/mgn-675-mf-the-merchant-shipping-control-and-management-of-ships-ballast-water-and-sediments-regulations-2022>

				<i>monitor the compliance of vessels on an ongoing basis” in relation to ballast water management.</i>
Climate and Greenhouse Gases	<p>The Scottish Ministers are content with the elements proposed by the Applicant to be scoped in for and out from further assessment in the EIA Report as detailed within section 8 of the Scoping Report. Noting the Applicants intention to assess the operational phase, the Scottish Ministers advise that the fuller intended use of the Proposed Works is included in this assessment. The Scottish Ministers broadly agree with the Applicant’s proposed assessment methodology however 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 Greenhouse Gas (“GHG”) Assessment which should be based on a Life Cycle Assessment 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 Applicant should note that at present there is no consultee for GHG emissions and adherence to the guidance is essential to ensure an appropriate assessment has been undertaken.</p>	Chapter 9.4	Provided as requested	
Land Quality	<p>The Scottish Ministers are content with the elements proposed by the Applicant to be scoped out from further assessment in the EIA Report, as detailed within section 9 of the Scoping Report.</p>	Noted	None	
Seascape, Landscape and Visual	<p>In section 10 of the Scoping Report, consideration is given to landscape and visual effects on the surrounding area, outlining that there will be temporary impacts due to construction activities. The Applicant has assessed that the impacts surrounding the operation of the Proposed Works are not significant given the existing industrial use and therefore scoped out.</p> <p>In chapter 13 of the Scoping Report, the Applicant concludes that seascape, landscape and visual impacts will be scoped out for full assessment in the EIA Report. The Highland Council, in its representation, considered this to be consistent with pre-application advice it provided to the Applicant. In line with The Highland Council representation, the Scottish Ministers agree that seascape, landscape and visual impacts are scoped out for further assessment in the EIA Report.</p>	Noted	None	
Traffic and Transport	<p>The Applicant considers traffic and transport in section 8.6 of the Scoping Report. The potential environmental effects are discussed from section 11.3 and inclusion of relevant receptors covering predominantly terrestrial activities including air pollution, severance, driver delay, pedestrian delay and amenity, accidents and safety dust and dirt as well as hazardous loads.</p> <p>The Scottish Ministers are content that traffic and transport is to be scoped into the EIA to the extent that the effects relate to the marine licensable activities of the Proposed Works.</p>	Chapter 7	Road traffic is considered in the assessment. Marine traffic are under the jurisdiction of PoCF and have not been considered.	
Water Environment	<p>The Applicant considers the water environment in section 12 of the Scoping Report considering hydrology, hydrogeology and water quality and coastal processes including tides, waves and sediment along with flood risk. The Applicant acknowledges the importance of the aims of the Water Framework Directive and the potentially significant effects that construction of the Proposed Works will have.</p> <p>The Scottish Ministers agree with the areas scoped in and out as detailed within the water environment section of the Scoping Report. The Scottish Ministers are content with the Applicant’s intention to include a full assessment on impacts on water quality, including an assessment on particulate and chemical contamination of the water environment within the EIA Report utilising EIA standard procedures and further advise that during the assessment the Applicant must give proper</p>	Chapter 8	Provided as requested	

	<p>consideration to all elements likely to interact with the water environment which pose a risk to degradation of water quality.</p>		
Socio-economics	<p>In section 1.6 of the Scoping Report the Applicant provides a note advising socio-economics have been considered within the planning permission for the HV cable manufacturing factory and is not further considered within the Scoping Report.</p> <p>In line with the MAU advice, the Scottish Ministers do not agree with the proposal to scope out socio-economic impacts, nor the scoping out of human health from the EIA. The Scottish Ministers advise the Proposed Works requires consideration independent of the cable manufacturing facility. The Scottish Ministers direct the Applicant to the MAU advice and recommend that its guidance is considered in the production of a Socio-Economic Impact Assessment ("SEIA"). In particular, the Scottish Ministers advise the SEIA should include a detailed description of the methodology used, with specific details about the methodological approach taken and any key assumptions that underpin the findings.</p> <p>The Scottish Ministers advice that socio-economic impacts are scoped in, including human health and an SEIA should be undertaken for the construction and operational phases of the Proposed Works.</p>	Section 9.6	Socio-economics has been considered.

3.6.4 Further Consultation

For each individual technical assessment further consultation was undertaken as required and is detailed within the corresponding chapter.

3.7 EIAR Content

Schedule 4 of both EIA Regulations requires that the following information is provided:

- A description of the location of development, its physical characteristics and land-use requirements during construction and operation;
- A description of the main characteristics of the operational phase of the development;
- An estimate of residues and emissions produced during the construction and operation phases;
- A description of reasonable alternatives, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects;
- A description of the relevant aspects of the current state of the environment and an outline of the likely evolution thereof without implementation of the development as far as reasonable;
- A description of environmental receptors likely to be significantly affected by the development;
- A description of the likely significant effects of the development on the environment;
- A description of the forecasting methods or evidence used to identify and assess the significant effects;
- A description of the measures envisaged to mitigate significant effects;
- A description of expected significant adverse effects deriving from the vulnerability of the development to risks of major accidents and/or disaster; and
- A non-technical summary of the aforementioned information.

3.8 EIA Key Stages

Whilst each environmental topic discussed within the EIAR establishes its own methodology based upon good practice and relevant industry guidance, there is a basic methodological framework which is applied to all EIA technical chapters.

The EIA process involves the following key stages:

- Baseline Studies – identification of existing environmental conditions through review of existing information, monitoring and field studies as required, to provide a baseline against which to assess the likely impacts of the proposed development;
- Potential Significant Impacts – identification of potential impacts and their resulting effects during the construction phases, in relation to the design mitigation already implemented and where applicable, taking alternatives into account;
- Impact Assessment – evaluation of the effects, resulting from the identified potential impacts, to determine their significance, both positively and negatively, and incorporating cumulative effects;
- Mitigation and Monitoring – the identification of measures to avoid, reduce or compensate likely significant effects and any steps required to monitor these potential environmental effects; and
- Residual Effects – identification of residual effects assuming successful implementation of mitigation.

For consistency where possible, the above headings have been used within the technical chapters of this EIAR.

3.9 Risk Assessment Approach

3.9.1 Introduction

The risk assessment approach uses the source – pathway – receptor linkages to assess the significance of the impact(s). The significance of an impact is defined by the probability of the impact occurring and its likely consequences (i.e. the Magnitude of Impact / Change). When a significant impact is identified then appropriate mitigation measures are identified to avoid or reduce that impact if possible and the residual risk following implementation of the mitigation measures is then considered. The risk assessment approach includes consideration of cumulative impacts with other developments.

Further information on the risk assessment approach is provided in the sections below.

3.9.2 Sensitivity/Importance of Receptors

The sensitivity of the baseline conditions/receptors is defined according to the relative importance of existing environmental features on or in the vicinity of the site, or by the sensitivity of receptors which would potentially be affected by the proposed development.

Criteria for the determination of sensitivity (e.g. high, medium or low) or of importance (e.g. international, national, regional or authority area) were established for each topic assessment based on prescribed guidance, legislation, statutory designation and/or professional judgement relevant to that topic.

3.9.3 Magnitude of Impact/Change

The methods for predicting the nature and magnitude of potential impacts vary according to the subject area. Quantitative methods of assessment can predict values that can be compared against published thresholds and indicative criteria in Government guidance and standards. However, it is not always possible to ascribe values to environmental assessments and therefore qualitative assessments are sometimes used. Such assessments rely on previous experience and professional judgement. The methodologies used for assessing each topic area are described within the specialist chapters of this EIAR and supporting assessments.

In general terms, the magnitude of impact on environmental baseline conditions is identified through detailed consideration of the proposed development, taking due cognisance of any legislative or policy standards or guidelines, and/or the following factors:

- The degree to which the environment is affected, e.g. whether the quality is enhanced or impaired;
- The scale or degree of change from the existing situation;
- Whether the impact is temporary or permanent, indirect or direct, short-term, medium-term or long-term; and
- Any in-combination effects and potential cumulative effects.

In some cases, the likelihood of impact occurrence may also be relevant and, where this is a determining feature of the assessment, this is clearly stated.

3.9.4 Significance of Effect

Significant effects are predicted where important resources, or numerous sensitive receptors, could be subject to impacts of considerable magnitude. Effects are unlikely to be significant where low value or non-sensitive resources are subject to minor effects.

The criteria for determining the significance of an effect have been developed giving due regard to the following, where applicable;

- Sensitivity, importance or value of the resource or receptor;
- Extent and magnitude and duration of the impact; and
- Performance against environmental quality standards.

The criteria and assessment methodology used for each topic considered within this EIAR are set out within the 'Methodology' section of the respective EIAR technical chapter.

Unless otherwise stated, reported effects are considered to be adverse. It is however possible that some effects may be positive and these are stated and explained where appropriate.

The EIAR reports on the significance of the environmental effects as per the EIA Regulations. Although a significant effect does not always have to equate to an unacceptable effect, in order to ensure impartiality, the EIAR does not comment on acceptability.

3.9.5 Design Mitigation and Residual Effects

Design mitigation is integral to providing an environmentally robust development whereby suggestions for mitigation are incorporated into the project prior to 'design freeze'. This in-built mitigation represents, where applicable, environmental good practice and places a responsibility upon the Applicant to provide environmentally sustainable design solutions.

Design rationale is further discussed within the Design and Access Statement which accompanies the wider applications, along with a section within each EIAR chapter that comments on design mitigation that has been incorporated into the development before the assessment is carried out. Therefore, where design mitigation has been employed, the impact assessment is carried out with this design mitigation in place as it forms a constituent part of the proposed development. Residual effects are generally then the effects that follow the assessment of proposed development with design incorporated.

Residual effects of the proposed development are those that remain, assuming successful implementation of the identified mitigation measures. All remaining effects of the proposed development, following the application of mitigation measures, are summarised clearly and their significance stated, within the 'Residual Effects' section of each specialist chapter.

Where applicable, the EIAR also reports on opportunities for enhancement which could be incorporated into planning permission or marine licence conditions.

3.9.6 Cumulative Impact Assessment

Consideration of cumulative effects is a requirement of the EIA Regulations. By definition, these are effects that result from incremental changes caused by past, present and reasonably foreseeable actions together with the proposed development. There are different types of cumulative effects (such as in-combination and sequential effects) and typically cumulative impact assessment is assessed within each technical chapter,

3.10 Final Content and Structure of the EIAR

3.10.1 Introduction

Based on the consultation responses and initial baseline collection, it was possible to complete the EIAR with a clear focus on the main topics requiring full and detailed impact assessment. These topics are listed in Table 3-3 and this Volume contains a chapter for each. The EIAR is presented within three volumes, which are also set out within Table 3-2.

Table 3-2: Structure of the EIAR

Item	Description	Author
Volume 1: Environmental Impact Assessment Report		
Chapter 1: Introduction	This chapter sets the context for the EIA and introduces the development in a broad context.	EnviroCentre
Chapter 2: Proposed Development	This chapter sets out the development description upon which the environmental assessment is based, as well as examining the design, alternatives considered and biodiversity enhancement considerations.	EnviroCentre (with input from McLaughlin & Harvey)
Chapter 3: EIA Methodology and Scoping	This chapter introduces the EIA methodology by which the proposed development was designed, along with an outline of how the EIAR has responded to comments throughout the process.	EnviroCentre
Chapter 4: Planning	This chapter assesses the development against THC's Development Plan, other supplementary planning policies and National Planning Framework 4 (NPF4)	Mabbett & Associates Ltd
Chapter 5: Airborne Noise	A Noise Risk Assessment will be undertaken to assess the potential impacts associated with operational noise.	EnviroCentre
Chapter 6: Biodiversity	This chapter assess the impact of the proposed development upon the terrestrial and marine environment. It considers designated sites, terrestrial habitats and mammals, benthic habitats and fauna, marine mammals and fish.	EnviroCentre
Chapter 7: Traffic Assessment	While some construction materials will be transported to site by sea, other construction materials may be transported to site by road which may increase traffic on the local road network. Assessment of the potential impact related to construction traffic will be undertaken and included as a Chapter in the EIAR.	ECS Transport
Chapter 8: Water Environment and Coastal Processes	This chapter assesses the impact of the proposed development upon the water environment,- including water quality, hydrodynamic modelling, pollution and flood risk.	EnviroCentre and; Mabbett & Associates Ltd (Flood Risk and Drainage Impact Assessment)
Chapter 9: Supporting Assessments	This chapter covers areas of the environment which are important to note but have not been identified as having potentially significant effects throughout the EIA process (as detailed within Chapter 3: EIA Methodology and Scoping). These include: <ul style="list-style-type: none"> • Accident and Natural Disaster; • Air Quality; • Archaeology and Cultural Heritage; • Socio-economics; • Carbon Assessment; and • Material Assets and Waste 	EnviroCentre and MKA Economics Ltd (Socioeconomic)

Item	Description	Author
Chapter 10: Schedule of Mitigation	This chapter sets out a summary of all mitigation measures proposed within the EIAR within a schedule which can then be used to inform an overarching Construction Environmental Management Document (CEMD) and individual Construction Environmental Management Plans (CEMP's).	EnviroCentre
Chapter 11: Summary of Effects	This chapter summarises the key findings of the EIAR, discusses CEMD principles, and provides a Statement of Significance in relation to the proposed development.	EnviroCentre
Volume 2:	This volume provides the figures relevant to each chapter within Volume 1 which are too large to present within the EIAR itself and is provided as a standalone volume to aid comparative assessment.	All
Volume 3: Technical Appendices	This volume provides the relevant technical background papers and studies which have informed each chapter.	All

Table 3-3: Cumulative Schemes for Consideration in the EIAR

Planning Ref	Address	Description of Development	Status
23/04662/FUL	Land 500M North Of Nigg Welding School Nigg Tain	Erect High Voltage Cable Manufacturing Plant	Permission granted

3.10.2 Supporting Documents

The following documents have also been prepared to accompany the planning and marine license applications, which do not form part of the EIAR but are nevertheless associated with it.

- **Planning Statement** – this document assesses the level of compliance of the landward elements of the proposed development, drawing upon the evidence contained within the EIAR, in relation to the Development Plan and other material considerations;
- **Transport Statement** – this examines the key transportation issues and access opportunities associated with all modes of travel for development on the site, and documents the walking, cycling and public transport connections in the area. The document has been prepared to support the planning application; and
- **Pre-Application Consultation (PAC) Report** – this provides information on the community engagement which has been undertaken prior to this submission with regards to the proposed development, and details public engagement initiatives and attitudes towards the proposed development. It covers the marine based PAC requirements.

A Non-Technical Summary (NTS) has also been prepared.

3.10.3 Projects for Cumulative Assessment

A review of THC's public register was undertaken in February 2024 to identify the other existing and/or approved development that could have cumulative effects with the proposed development. The projects identified which could have cumulative impacts with this development are identified in Table 3-3. These projects will be considered within each individual Chapter where relevant.

4 PLANNING CONTEXT

4.1 Introduction

The Proposed Development has been considered in relation to National policies, legislation, guidance, the Local Development Plan policies and Supplementary Planning Guidance. Those relevant to the Proposed Development are described below.

There is no record of planning applications on the Application Site in the past 30 years.

4.2 Development Plan Policy

Section 25 of the Town and Country Planning (Scotland) Act 1997 requires planning applications to be determined in accordance with the development plan unless material considerations indicate otherwise. In this instance, the development plan relevant to the application site comprises the adopted Highland wide Local Development Plan (HwLDP) (2012) and the Inner Moray Firth Local Development Plan (IMFLDP — 2015), superseded for the most part by the National Planning Framework 4 (NPF4) as of February 2023. Reference and consideration are also given to the March 2024 Intention to Adopt version of the Inner Moray Firth Local Development Plan 2 (IMFLDP2), which represents the settled view of the Highland Council. Until replaced by a new style Local Development Plan from 2025 onwards, the IMFLDP2 is a material consideration in the assessment of planning applications and therefore will have some weight in the decision-making process. Also addressed are the requirements of the National Marine Plan.

4.3 National Planning Framework 4

National planning policy is now set out in NPF4 since its adoption on 13 February 2023 and has become part of the statutory Development Plan. The Planning (Scotland) Act 2019 required that both National Planning Framework 3 (NPF3) and Scottish Planning Policy (SPP) be replaced. SPP has been amalgamated into the new NPF. NPF4 is to be read and applied as a whole, therefore all policy and spatial principles stemming from it will be considered alongside the HwLDP, IMFLDP and IMFLDP2. However, it is understood that if policy conflict arises between NPF4 and HwLDP or IMFLDP2, NPF4 will prevail.

NPF4 now provides the spatial priorities and national policies for Local Development Plans to bring forward, these would move to a 10-year cyclic period. The adopted IMFLDP policies will continue to be in force until a new LDP is adopted under the requirements of the NPF4 and will continue to be a main determinant in decision-making. NPF4 gives significant weight to the climate emergency and the need to reduce greenhouse gas emissions.

NPF4 sets out a National Spatial Strategy that states ‘*Meeting our climate ambition will require a rapid transformation across all sectors of our economy and society. This means ensuring the right development happens in the right place. Every decision on our future development must contribute to making Scotland a more sustainable place. It goes on to say ‘Our strategy and policies support development that helps to meet greenhouse gas emissions targets. The global climate emergency and the nature crisis have formed the foundations for the spatial strategy as a whole.’*

NPF4 highlights planning as a “powerful tool for delivering change on the ground in a way which brings together competing interests so that decisions reflect the long-term public interest. Past, present and future challenges mean that we will need to make the right choices about where development should be located. We also need to be clear about the types of infrastructure we will need to build, and the assets that should be protected to ensure they continue to benefit future generations.”

Part 1 of NPF4 contains the National Spatial Strategy underpinned by a series of spatial principles and supports a shared vision where each part of Scotland can be planned and developed to create Sustainable, Liveable, Productive and Distinctive places. Part 2 – National Planning Policy incorporates Scottish Planning Policy which contains detailed national policy on a number of planning topics set out under the four themes indicated in Part 1: Sustainable, Liveable, Productive and Distinctive places.

The Regional Strategy for the **North** identifies the area as having a role to play in continuing “*to make a strong contribution towards meeting our ambition for a net zero and nature positive country by demonstrating how natural assets can be managed and used to secure a more sustainable future.*” The “*strategy aims to:*

- *Protect environmental assets and stimulate investment in natural and engineered solutions to climate change and nature restoration, whilst decarbonising transport and building resilient connections.*
- *Maintain and help to grow the population*
- *Support local economic development by making sustainable use of the areas’ world-class environmental assets to innovate and lead greener growth.”*

One of the identified priorities for the adjacent North East area, which includes the Moray Firth, is to “*plan infrastructure and investment to support the transition from oil and gas to net zero whilst protecting and enhancing blue and green infrastructure and decarbonising connectivity.*”

The national development – “*3. Strategic Renewable Electricity Generation and Transmission Infrastructure supports renewable electricity generation, repowering, and expansion of the electricity grid.*” This continues: “*A large and rapid increase in electricity generation from renewable sources will be essential for Scotland to meet its net zero emissions targets. Certain types of renewable electricity generation will also be required, which will include energy storage technology and capacity, to provide the vital services, including flexible response, that a zero carbon network will require. Generation is for domestic consumption as well as for export to the UK and beyond, with new capacity helping to decarbonise heat, transport and industrial energy demand. This has the potential to support jobs and business investment, with wider economic benefits.*”

Linked to this “*the electricity transmission grid will need substantial reinforcement including the addition of new infrastructure to connect and transmit the output from new on and offshore capacity to consumers in Scotland, the rest of the UK and beyond. Delivery of this national development will be informed by market, policy and regulatory developments and decisions.*”

Part 2 of NPF4 sets out National Planning Policy. The NPF4 policies relevant to the proposed development are listed below. The EIA Report addresses most of these matters in detail.

Policy 1 Tackling the Climate and Nature Crises “*This policy prioritises the climate and nature crises in all decisions. It should be applied together with the other policies in NPF4. It will be for the decision maker to determine whether the significant weight to be applied tips the balance in favour for, or against a proposal on the basis of its positive or negative contribution to the climate and nature crises.*”

The proposed new quay is a vital piece of infrastructure that will enable the transportation of manufactured high voltage cables from the adjacent Sumitomo Electrics factory to connect and transmit electricity generated from new on and offshore wind turbines. Offshore wind is recognised as one of the most important renewable energy generation technologies for the future and one that wholly works to address the global climate emergency. This proposal indirectly works to achieve this overarching goal.

Policy 2 Climate Mitigation and Adaption requires proposals ‘*To encourage, promote and facilitate development that minimises emissions and adapts to the current and future impacts of climate change.*’

The siting of the Proposed Development has been strategically chosen to balance access to offshore and onshore facilities at PON. By virtue of its manufacturing purpose, the proposed plant encourages and supports

a crucial step away from fossil fuel use into renewable energy generation which in turn reduces harmful greenhouse gas emissions.

Policy 3: Biodiversity requires “development proposals to contribute to the enhancement of biodiversity, including where relevant, restoring degraded habitats and building and strengthening nature networks.”

An Ecological Impact Assessment (EclA) of the proposed development was undertaken to identify and describe any likely significant effects arising from it. Chapter 6 of the EIAR details the specialist ecological studies undertaken and the results of the assessment supplemented by the drawings contained within Volume 2: Drawings and the baseline survey reports and assessments contained within Volume 3: Technical Appendices of the EIAR. These include the following: -

- Preliminary Ecological Appraisal (PEA) – Technical Appendix 6.1.
- Shadow Habitat Regulations Appraisal – Technical Appendix 6.2.
- Biodiversity Net Gain Assessment and Biodiversity Enhancement and Management Plan – Technical Appendix 6.3.

The assessments have concluded that the Proposed Development will not result in any overall loss of habitats of value to biodiversity. Mitigation measures are proposed for the construction period to minimise the risk of impacts upon protected species.

Policy 4: Natural Places intends to protect, restore and enhance natural assets, making best use of nature-based solutions.

Several environmental designations lie beyond the site, the closest being the Moray Firth Special Area of Conservation (SAC) 250m to the south. Pollution prevention measures shall ensure that there are no run-off impacts from construction or operation phases.

Policy 6: Forestry, woodland and trees intends to protect and expand forests, woodland and trees.

This is particularly relevant to the protected Ancient Woodland (also a TPO area) to the east of the site across the B9175 road. Given the presence of the public road and all construction works will take place well away from the root protection areas, there would no impacts on this woodland.

Policy 9: Brownfield, vacant and derelict land and empty buildings intends to encourage, promote and facilitate the reuse of brownfield, vacant and derelict land and empty buildings, and help to reduce the need for greenfield development.

The east side of the site is an underused area of quayside with a range of underused or vacant temporary structures and external storage. The Proposed Development would make better use of this land as well as the east side of the Inner Dock.

Policy 10: Coastal development intends to protect coastal communities and assets and support resilience to the impacts of climate change. Part (a) explains that proposals in developed coastal areas will only be supported where they don't increase the risk to people of coastal flooding or erosion and that they take into account long term projected climate change.

The Proposed Development would not result in increased risk by flooding or erosion impacts being located within an area of land removed from the coastline.

Policy 11: Energy intends to “encourage, promote, and facilitate all forms of renewable energy development onshore and offshore. This includes energy generation, storage, new and replacement transmission and

distribution infrastructure and emerging low-carbon and zero emissions technologies including hydrogen and carbon capture utilisation and storage (CCUS).”

This policy gives express support for ‘proposals associated with carbon negative technologies and other renewable energy developments subject to maximising their net economic benefit and addressing their other effects through project design and mitigation.’ Significant weight is to be given to their contribution to meeting targets on renewable energy generation. The proposed new quay would benefit renewable energy development by facilitating the supply of HV cables to the on and offshore wind farm industry and support other renewable related projects using the PoN.

Policy 12: Zero waste seeks to encourage, promote and facilitate development that is consistent with the waste hierarchy.

A Waste Management Plan for construction and operational phase wastes would be put in place as part of any mitigation strategy and could be conditioned as required.

Policy 13: Sustainable transport intends to encourage, promote and facilitate developments that prioritise walking, wheeling, cycling and public transport for everyday travel and reduces the need to travel unsustainably.

The Transport Assessment also considers these matters in more detail. It confirms that only the construction related traffic will have a temporary, minor adverse significant impact on the national and local road network. The operation of the new quay will not generate significant additional car trips to warrant mitigation through improved sustainable transport provision.

Policy 18: Infrastructure first encourages, promotes and facilitates an infrastructure first approach to land use planning, which puts infrastructure considerations at the heart of placemaking.

The site is located within the existing and established Port with its current infrastructure. The Proposed Development is intended to enhance the range of facilities through the provision of additional berthing space, which will in turn help generate more economic activity in the area.

Policy 20: Blue and green infrastructure intends to protect and enhance blue and green infrastructure and their networks.

The site is already part of the PON which is not accessible to the public for recreational purposes. As such, there will be no impact upon existing blue and green infrastructure networks.

Policy 22: Flood risk and water management seeks to strengthen resilience to flood risk by promoting avoidance as a first principle and reducing the vulnerability of existing and future development to flooding.

A preliminary flood study confirms that the site lies within an area that may be susceptible to coastal flooding through rising sea levels in future. There will also be a negligible impact on coastal flood levels as the new quay wall will be within the footprint of the existing revetment and given the small scale of proposed works in relation to the large volume of coastal water exchanged within the Cromarty Firth. Further consideration to flood risk and drainage is presented in Technical Appendix 8.1, Volume 3 of this EIAR.

Policy 23: Health and safety seeks to protect people and places from environmental harm, mitigate risks arising from safety hazards and encourage, promote and facilitate development that improves health and wellbeing.

The Noise Impact Assessment carried out as part of the EIA confirmed that there are no significant additional noise and other amenity concerns arising from the Proposed Development. There is, however, an undertaking

by the port operator (GEN) to investigate the feasibility of shore power for ships moored whilst loading and unloading.

Policy 26: Business and industry seeks to encourage, promote and facilitate business and industry uses.

This policy states LDP's should allocate sufficient land for business and industry to support economic growth. We would stress that the Proposed Development is in an area that has established industrial, and employment uses at PON designated as NG01 in the modified IMFLDP2. The nature and scale of the Proposed Development is wholly appropriate for the area, noting its location within the existing Inner Dock area of the PON. The proposal benefits from support of this policy.

Policy 29: Rural Development encourages rural economic activity, innovation and diversification whilst ensuring that the distinctive character of the rural area and the service function of small towns, natural assets and cultural heritage are safeguarded and enhanced.

The Proposed Development will directly and indirectly encourage rural economic development and diversify existing activities at the PON, while complimenting the existing core business and help further strengthen its renewable energy role. It is considered that the proposed new quay meets the requirements of this policy, indirectly helping to deliver vibrant and sustainable rural communities by sustaining or creating additional jobs.

Part 3 of NPF4 contains a number of Annexes, including Annex C 'Spatial Planning Priorities.' In relation to the North, Annex C identifies the coastline as a hub for economic activity, particularly around the offshore renewable energy sector, highlighting key ports such as the Cromarty Firth (including Nigg). Opportunity Cromarty Firth, which successfully secured the Green Freeport status, highlighted opportunities to unlock potential for projects, new facilities and infrastructure, that will aid ports in the transition from fossil fuels through oil and gas decommissioning, renewable energy and low carbon hydrogen production and storage. The expansion of the infrastructure, supply chain and services will benefit local communities through the provision of employment and income for local businesses.

4.4 National Marine Plan

Scotland's first National Marine Plan was published by marine Scotland in 2015 (NMP2015). This "provides a comprehensive overarching framework for all marine activity in our waters" to "enable sustainable development and use of our marine area in a way which will protect and enhance the marine environment whilst promoting both existing and emerging industries." It covers both Scottish inshore waters (out to 12 nautical miles) and offshore waters (12 to 200 nautical miles). It also applies to the exercise of both reserved and devolved functions.

Principles of sustainable development are embedded within the NMP2015; where the use of the marine environment for sustainable economic growth is recognised and promoted (Gen 1), specifically in remote areas susceptible to rural depopulation and stagnant economies (Gen 2). This is particularly relevant to the growth sectors which Scotland specialises in (i.e. oil and gas and renewable energy initiatives). In this case, the use of the marine environment will stimulate economic activity for local communities, which is likely to have many indirect social benefits in the form of local investment in services; local training and skills development; employment generation; opportunities for investment and trade; and overall maintenance of/potential increase in local populations (Gen 3/ Refer to Chapter 8.6: Socio-economics of Volume 1 of the Nigg Eastern Inner Dock Quay EIA).

Gen 4 (co-existence) focusses on the management of compatible and synergistic developments within one location through the co-existence of suitable developments/sectors. The proposals to upgrade the east side of the Inner Dock is to primarily facilitate the export of HV cable manufactured at the adjacent proposed Sumitomo Electric cable factory directly onto cable installation vessels, reducing the risk of cable damage during transportation. It will also serve as an additional facility to support the existing operations at the site comprising the import, assembly and export of components necessary for energy production in the marine environment,

encompassing the Marine Renewables and North Sea Oil and Gas sectors. By creating a new berth on the east side of the Inner Dock, it greatly complements the new East Quay, and provides both a load in and load out quay for offshore renewables projects conducted on the East side of the site. The 50m return along the north side of the dock, also allows for roll-on, roll-off operations to be conducted at the east side of the site, replicating the capability already available on the west side of the port. In addition to this, Nigg Skills Academy operates from within Nigg Energy Park where relevant infrastructure and practical work experience is available onsite. Promotion and integration of the services provided at Nigg (i.e. Renewables, bulk handling, fabrication and offshore maintenance) ensures the site's continued 'multi-user' functionality and the associated benefits of co-existence.

Gen 5 Climate change requires developers to address climate change through mitigation and adaptation. The Port of Nigg (PON) is within the boundary of Inverness and Cromarty Firth Green Freeport. The green freeports are required to contribute to four key policy objectives in which promotion of decarbonisation and a just transition to a net zero economy is one of them. Specifically, Chapter 9.4: Carbon Assessment, Volume 1 of the EIA considers climate and greenhouse gases based on a Life Cycle Assessment approach. Through the assessment, appropriate carbon reduction strategies are identified that could be incorporated into the proposed development. The use of the new quay is considered to be water compatible, appropriately sited and designed for local conditions both now and in the long term. The existing risk management and contingency plans for the wider port area will be extended to cover the new quay (Gen 5 and Gen 8 Coastal process and flooding).

In relation to Seascape, landscape and visual impacts (Gen 7) it is noted that the quay is unlikely to be used for wind turbine integration and testing due to its restricted water depth being unsuitable for these activities. In addition, wet storage has also been discounted from the Seascape, landscape and visual impacts assessment as there are currently no manufacturing proposals which link wet storage and the use of the quay. This would be considered should any future capital projects require wet storage. The primary function of the quay is to export HV cable from the Sumitomo Electric cable factory. The existing industrial land uses and activity taking place in and around the inner dock quay would significantly limit the magnitude of all landscape and visual effects (Refer to Chapter 9.7: Seascape, Landscape and Visual, Volume 1 Written Statement of the Nigg Eastern Inner Dock Quay EIA). It was concluded that the proposed development will still allow for appreciation of the landscape character and cultural heritage of the study area and associated heritage assets.

A shadow Habitats Regulation Assessment (HRA) of the potential for the qualifying features of the Dornoch Firth and Morrich More Special Areas of Conservation (SAC), the Cromarty Firth Special Protection Areas (SPA) and Moray Firth SPA (Gen 9 Natural Heritage) has been completed and informs Chapter 6: Biodiversity, Volume 1 of the EIA. This chapter also considers potential impacts on the Cromarty Firth Site of Special Scientific Interest (SSSI) designation. The Chapter concluded that adverse effects to the favourable conservation status of any of the qualifying features identified as being potentially impacted by the works could be avoided through implementation of mitigation measures.

A Preliminary Ecological Assessment (PEA) survey was conducted to identify the baseline environmental conditions at the site and surrounding area and thereby provide baseline information for the biodiversity assessment. Subsequently, a site-specific Biodiversity Enhancement and Management Plan (BEMP) was developed to ensure the development would increase connectivity to habitats in the wider PON land ownership area proportionate to the scale of the development (Gen 9 Natural Heritage).

Vessel traffic accessing PON are under the control of Port of Cromarty Firth who are the Statutory Harbour Authority for the Cromarty Firth and approaches. As such measures to limit the introduction of marine Invasive Non-Native Species (INNS) (Gen 10) sits with 3rd parties and out with the control of PON. The principal contractor will identify measures to ensure that plant and equipment used during the construction phase do not introduce INNS to the marine environment. They will also consider measures to ensure litter does not enter the marine environment as a result of the construction works (Gen 11 Marine Litter).

Chapter 8: Water Environment and Coastal Processes, Volume 1 of the EIA considers the potential for the construction and operation of the quay to cause a deterioration in the Water Framework Directive (WFD) status of the Cromarty Firth (Gen 12 Water quality and resource).

At the design phase of the development an optioneering exercise was undertaken exploring the benefits and disadvantages of quay wall construction options. Through this exercise it was determined that a contiguous vertical quay wall installed using a proprietary RD® piling system (i.e. down-the-hole) through a temporary working platform was preferred as amongst other advantages this technique would result in a significant reduction in noise / vibration to the surrounding environment (i.e. marine and terrestrial) on comparison with other piling techniques. The Principal Contractor will develop a site-specific Construction Noise Management Plan to ensure the surrounding environment is protected during this phase of the development.

An Operational Noise Impact Assessment was undertaken for the proposed development as part of the EIAR (Gen 13), which concluded that the change in noise levels as a result of the quay being used was predicted to be so small it would barely be noticed. It is recommended however that existing site-wide noise mitigation measures and best practices are followed throughout PON to minimise baseline noise level creep is minimised along with consideration of utilising electric powered mobile and fixed plant on site. In addition, the existing Operational Noise Management Plan is to be reviewed and updated taking into account any recommendations identified from a shore to ship power feasibility study which the Applicant has committed to undertake to support the Sumitomo Electrics HV Cable factory planning application.

As the site of the new quay is within an area of reclaimed land which has been subject to levelling and reworking the potential for impacts on the historic environment are not considered relevant (Gen 6 Historic Environment). Also, as there is minimal human or ecological sensitive receptors in close proximity to the construction area it is considered that construction dust can be dealt with through applying industry standard mitigation measures (Gen 14 Air Quality).

The EIA and supporting EIAR was undertaken with embedded fundamental values (as per Gen 17-19) to ensure a fair, transparent process; with opportunities for public and stakeholder engagement; and sound science at its core. Cumulative impacts on the ecosystems of the marine plan area have also been assessed accordingly (Gen 21). Detailed cumulative assessment of ongoing/proposed development projects in proximity of the Nigg project include the construction of the Sumitomo Electrics High Voltage Cable Factory have been outlined in the introductory Chapters of the EIAR and again within each specialist chapter were relevant.

4.5 Planning Advice Notes

The Scottish Government Planning Advice Notes (PANs) providing advice on good practice and other relevant information which have been considered in assessing to the proposed development are as follows: -

PAN 33: Development of Contaminated Land requires the development of land which has previously been used for certain types of use to be the subject of at least a preliminary assessment (Phase 1) to ascertain the potential for contamination. The quayside area adjacent to this side of the Inner Dock is underused at present. It has been the subject of monitoring in the past following a pollution incident in the 1990's when a large quantity of diesel had seeped from corroded underground fuel lines within the southern and eastern sections of the site. The resulting remediation programme in 2014 and 2015 and a series of routine monitoring events have been conducted to assess the impacts of the groundwater pollution since 2006.

Further monitoring was undertaken in December 2023 which confirmed there are no hydrocarbon pollutants recorded above the laboratory limit of detection in any of the samples analysed. This indicates that the remediation measures implemented in 2014 and 2015 have had a positive effect on groundwater quality.

PAN 51: Planning, Environmental Protection and Regulation (Revised 2006) supports the existing policy on the role of the planning system in relation to a range of specific environmental protection regimes designed to safeguard the natural and built environment. These operate alongside the land use planning system which aims to ensure that development takes place in suitable locations and is sustainable, while also providing protection from inappropriate development. The regimes include:

- Pollution Prevention and Control;

- Protection of the Water Environment;
- Drinking Water Quality – public and private water supplies;
- Contaminated Land;
- Radioactive Substances;
- Statutory Nuisance including Noise;
- Litter;
- Light;
- Local Air Quality Management; and
- Environmental Noise.

PAN 60: Planning for Natural Heritage provides advice on how development and the planning system can contribute to the conservation, enhancement, enjoyment and understanding of Scotland's natural environment and encourages developers and planning authorities to be positive and creative in addressing natural heritage issues. This explains that "the planning system has a vital role to play in safeguarding the natural heritage and building environmental capital. It can help to create high quality sustainable environments which offer social and economic opportunities and weave the experience of nature into the fabric of everyday life. Within this context:

- maintaining and enhancing landscape character;
- providing for a diversity of wildlife habitats;
- making provision for a wide range of out-door recreational activities; and
- fostering opportunities for learning about the environment;

are all important planning objectives." It also provides case study examples of good practice and outlines the Environmental Impact Assessment (EIA) "process which identifies the environmental effects of development proposals and seeks to prevent, reduce and offset any adverse effects."

The EIA carried out for both the Planning and Marine Licensing applications has concluded that there are no significant impacts anticipated in terms of airborne noise, ecology and biodiversity, traffic, the water environment and coastal processes or arising from the additional supporting assessments. Where potential impacts have been identified, a range of mitigation measures have been derived.

PAN 61: Sustainable urban drainage systems gives good practice advice for planners and the development industry complementing the Sustainable Urban Drainage Systems Design Manual for Scotland and Northern Ireland, which was published by CIRIA in March 2000 for the Sustainable Urban Drainage Scottish Working Party. It describes how the planning system has a central co-ordinating role in getting SUDS accepted as a normal part of the development process and guiding developers and regulators to solutions which can make a significant contribution to sustainable development.

Onsite SUDs are integral to the proposals, the main feature being a series of surface water drainage channels on the proposed finished deck with a series of retention separators and outfall pipes with pre-fitted flap valves.

PAN 75: Planning for Transport refers to the requirement for a transport assessment to be produced for significant travel generating developments providing information which covers the transport implications of the development. A Traffic Assessment has been carried out in conjunction with the EIAR and a Transport Statement is submitted in support of the planning application.

PAN 1/2011: Planning and Noise provides advice on the role of the planning system in helping to prevent and limit the adverse effects of noise. Information and advice on noise impact assessment (NIA) methods is provided in the associated Technical Advice Note. It promotes:

- the principles of good acoustic design;
- a sensitive approach to the location of new development;
- the appropriate location of new potentially noisy development; and

- a pragmatic approach to the location of new development within the vicinity of existing noise generating uses.

A Noise Assessment forms part of this submission and is discussed in more detail in the accompanying chapter of the EIAR.

PAN 1/2013: Environmental Impact Assessment, amended in May 2017 to reflect new terminology within the 2017 EIA Regulations, provides guidance on the integration of Environmental Impact Assessment (EIA) procedures into the overall development management process. An EIA aims to ensure that the likely environmental effects of a development proposal are properly understood before any development consent is granted. EIA therefore provides a means of assessing the likely significant environmental effects of a proposal, and the potential for avoiding, reducing or offsetting any adverse impacts, in a manner which is both systematic and transparent. This PAN also describes the Screening and Scoping processes and the expectations of planning authorities, their consultees and developers. The application is accompanied by a comprehensive EIAR.

Planning Advice on Flood Risk provides advice and guidance on the circumstances where a Flood Risk Assessment is required and the procedure for determining this. It also indicates the expectations of planning authorities, SEPA and developers in preparing and responding to Flood Risk Assessments.

As expected from its location, the site lies within an area that may be susceptible to coastal flooding through rising sea levels in future. There will also be a negligible impact on coastal flood levels as the new quay wall will be within the footprint of the existing revetment and the small scale of proposed works the Cromarty Firth. Further consideration to flood risk and drainage is presented in Technical Appendix 8.2, Volume 3 of this EIAR.

4.6 Highland-wide Local Development Plan

The Highland-wide Local Development Plan (HwLDP), adopted in April 2012, sets out a range of planning policies applicable for the whole Highland Council area. The HwLDP will continue to be used alongside NPF4, until it is replaced by a new style LDP. The Council advised in its pre-application response that planning legislation indicates that if there is incompatibility between the LDP and the NPF, whichever is the more recent shall prevail. That requirement does not take away from the fact that the HwLDP must, whilst still part of the adopted Development Plan, be part of the consideration of the proposed development.

This Plan's Vision and Strategy for the Inner Moray Firth supports the growth of jobs and population within the Easter Ross area with specific policy advice directly related to the development of the Nigg site contained in Policy 23 Nigg and in the Nigg Development Masterplan. The following general policies are most relevant and important to the assessment of the application: -

Policy 23: Nigg supports the development of the Nigg Yard (Energy Park) and proximal lands – the Oil Terminal and three areas to the east of the B9175 – allocated for business and industry uses in line with the approved Nigg Development Masterplan (Refer to Figure 4-1.)



Figure 4-1: HwLDP Map 13 – Nigg Development Masterplan Area

The Proposed Development is located within the established industrial, and employment uses at PON. The nature and scale of the proposed quay is wholly in keeping with port uses and therefore appropriate for the area.

Policy 28: Sustainable Design assesses proposals on the extent to which they are compatible with a range of factors, including impacts on individual and community residential amenity and demonstrating high quality siting and design.

The Proposed Development is designed to ensure it is responsive and sensitive to its location and context whilst bearing in mind its ultimate form and function also have to respond to the principal purpose as a working quay within the Port of Nigg.

Policy 30: Physical Constraints refers to Supplementary Guidance prepared by the Council on physical constraints whereby developers must consider whether their proposals would be located within such areas to avoid adversely affecting human health and safety or pose risk to safeguarded sites. In such areas developers must demonstrate compatibility with the constraint or outline appropriate mitigation measures to be provided.

The proposed site has been selected to avoid significant physical constraints, proximity to residential areas and other sensitive receptors and safeguarded sites. There are no defence installations, railways, or quarries nearby.

Policy 31: Developer Contributions seeks developer contributions when a development would result in a deficiency in public services.

The relevant application of this may be towards improvements to or speed mitigation measures on the B9175 road. Appropriate contributions may be sought – these would be considered during the processing of the planning application stage.

Policy 36: Wider Countryside assesses proposals out with settlement development areas for the extent to which they are acceptable with a number of factors, including being sympathetic to existing patterns of development in the area and compatibility with landscape character and capacity.

It is considered that the proposed quay would be in keeping with the pattern of industrial development at the PON and would be adjacent to existing and proposed employment uses. It requires to be in an area close to the Port and its facilities to reduce travelling distances between the manufacturing of HV cables and offshore loading stages. The proposed quay is away from sensitive receptors such as residential dwellings and villages which this location also offers. The development is also low profile in nature and therefore suitable within its landscape setting.

Policy 41: Business and Industrial Land directs proposals for new business to strategic and industrial sites/locations allocated for this use, which includes Nigg, and safeguards such sites from other competing uses.

The Proposed Development is within the context of the established industrial, and employment uses at PON. The proposal benefits from the support of this policy.

Policy 42: Previously Used Land supports development proposals that bring previously used land back into beneficial use provided site investigations and risk assessments demonstrate the site condition as suitable for the proposed development.

The site is in a brownfield or underused area of the Inner Dock and compliments the use of the Port, other land uses at PON and the proposed HV cable manufacturing plant to the east of the B9175 road.

Policy 49 Coastal Development requires that development proposals for the coast or for installations in nearshore waters should, in both their location and their design, show consideration to the range of existing interests.

The low profile nature of the proposed quay when viewed from the surrounding area is unlikely to have any significant landscape and visual effects. The Proposed Development is also complimentary to adjacent uses.

Policy 51: Trees and Development supports development which promotes significant protection to existing hedges, trees and woodlands on and around development sites.

The existing woodland to the east and north-east of the site is on the other side of the B9175 road. As such, there will be no impacts upon the tree roots from the Proposed Development.

Policy 56: Travel requires development proposals that involve travel generation to include sufficient information with the application to enable to Council to consider any likely on- and off- site transport implications of the development and should inter alia be accessible by sustainable modes of transport.

A Transport Assessment has been carried out and is submitted in support of the proposed development. This advises that a negligible affect is likely on the road network.

Policy 57: Natural, Built and Cultural Heritage requires all development proposals to be assessed taking into account the level and importance of these features, the form and scale of the development and any impact on the feature and its setting.

The Proposed Development is sufficiently far enough away from cultural heritage assets to have no impact thereon.

Policy 58: Protected Species requires that where there is good reason to believe that a protected species maybe affected by a development, a survey should be carried out to establish any such presence. If necessary, a mitigation plan should accompany any planning application. Developments that are likely to have an adverse effect on protected species that cannot be mitigation are unlikely to be permitted. Related to this are *Policy 59 – Other Important Species* and *Policy 60 – Other Important Habitats*.

As part of the EIA process the following have been provided: -

- Preliminary Ecological Appraisal (PEA) the subject of Technical Appendix 6.1;
- Shadow Habitat Regulations Appraisal (Technical Appendix 6.2); and
- Biodiversity Net Gain Assessment and Biodiversity Enhancement and Management Plan (Technical Appendix 6.3).

Policy 61: Landscape requires new development to reflect the landscape characteristics and special qualities identified in the relevant Landscape Character Assessments, and that cumulative effects should be taken into account.

Given the low profile of the proposed development in the local and wider landscape, a Landscape and Visual Impact Assessment was not required as part of the EIAR.

Policy 64: Flood Risk requires a flood risk assessment for sites identified to be at risk of flooding.

The Proposed Development site lies within an area that has potential to be affected by coastal flooding as it is situated within the 1 in 200 year coastal flood extent as shown by the SEPA flood map. It is, however, a water compatible use, and requires to be located within this flood zone for operational reasons.

The development will also have negligible impact on coastal flood levels as the new quay wall will be within the footprint of the existing revetment and given the small scale of proposed works in relation to the large volume of coastal water exchanged within the Cromarty Firth. Further consideration to flood risk and drainage is presented in Technical Appendix 8.1, Volume 3 of this EIAR. Nevertheless, it is scoped out of further assessment of flood risk within chapter 8.

Policy 66: Surface Water Drainage requires development to be drained by Sustainable Urban Drainage Systems (SUDS).

It is proposed that drainage of surface water will adopt SUDS principles and be by means of surface mounted drainage channels on the deck of the proposed quay which will include catch pits at changes in direction and the outflow will pass through suitable oil separators with sampling chambers included and outfall pipes with pre-fitted flap valves before discharging into the Inner Dock.

Policy 72: Pollution requires that proposals that may result in significant pollution such as noise, air, water and light will only be approved where a detailed assessment report on the levels, character and transmission and receiving environment of the potential pollution is provided by the applicant to show how the pollution can be appropriately avoided and if necessary mitigated. Major Developments and developments that are subject of Environmental Impact Assessment are expected to follow a robust project environmental management process, following the approach set out in the Council's Guidance Note "Construction Environmental Management Process for Large Scale Projects" or a similar approach.

A Construction Environmental Management Document is provided as Technical Appendix 2.2, Volume 3 of this EIAR. Pollution is considered in the relevant chapters of the submitted EIAR. Overall, the effects of the proposed development on the water environment, soils and coastal processes are not considered to be significant.

Policy 73: Air Quality states that development proposals which, individually or cumulatively, may adversely affect the air quality in an area to a level which could cause harm to human health and wellbeing, or the natural environment must be accompanied by appropriate provisions.

The potential for impacts on local air quality was considered at the Scoping Stage of the EIAR. During the review, baseline air quality and the construction phase emissions were considered. The scoping assessment concluded that as the development was not located within an area known to have poor air quality in combination with controlling construction dust emissions through the development of a Construction Dust Management Plan (CDMP), the consideration of Air Quality was therefore scoped out of forming a full Chapter of the EIAR.

4.7 Inner Moray Firth Local Development Plan

In this Plan, adopted in 2015, the site is located within the Ross-shire Growth Area, a key part of the spatial or land use Strategy. Although about to be superseded by the new IMFLDP2, the 2015 Plan is a material consideration in the determination of planning applications.

The Nigg Energy Park and the PON, the oil terminal to the north and proximal lands to the east (labelled NG1), covering 211 hectares, is the largest area allocated for industrial development in the Ross-shire Growth Corridor (Refer to Figure 4-2).



Figure 4-2: Inset Map for Nigg from Adopted IMFLDP

It states that development should be in accordance with the adopted Nigg Masterplan including its Habitats Regulations Appraisal; consideration of the natural, built and cultural heritage of the wider area; Contamination Assessment; Flood Risk Assessment; Coastline Management Plan; Landscape and Visual Impact Assessment. The Plan also defines boundaries of the Special Landscape Areas (SLAs) across the plan area, which in this instance Sutors of Cromarty, Rosemarkie and Fort George Special Landscape Area sits approximately 1.5km east and south of the site.

Policy 2 Delivering Development may also be relevant to the determination of any future applications application. This supports the delivery of allocated development sites subject to the provision of necessary infrastructure, services and facilities.

Also about to be superseded is the Supplementary Guidance, The Nigg Development Masterplan. This outlines a vision and feasible options for the development of Nigg with the aim of maximising the strategic development potential and employment opportunities. While the Council does not intend to carry this document forward as supplementary guidance, it continues to provide useful background information.

4.8 Inner Moray Firth Local Development Plan 2 – Intention to Adopt (March 2024)

This Local Development Plan has been under Review since 2019 and was the subject of a lengthy Examination in 2023 following objections to the Proposed Plan in mid-2022. The Modified or Intention to Adopt version published on 28 March 2024 is a material consideration in the assessment of the Proposed Development as it represents the settled view of the Council.

Section 1 – Vision and outcomes

Paragraph 1 states: *“This Local Development Plan aims to deliver defined, positive outcomes for the environment, employment, communities and connectivity. To achieve this the plan must target and coordinate where and how growth occurs. The Plan’s Vision is expressed through four proposed, inter-related headline outcomes listed in Table 1 ‘Topics and Outcomes’. The two overarching aims of the Plan are to tackle the climate and ecological emergency and enable post pandemic economic recovery. These aims are threaded through the Plan and embedded within each of its Outcomes, Spatial Strategy, General Policies, Placemaking Priorities and development site choices.”*

Then at Paragraph 2: *“The four Outcomes provide an ambitious and appropriate framework for the future which take account of national and Highland outcomes, priorities and investment and tailor them for the Inner Moray Firth area. They also reflect the Council’s vision and strategy for Highland submitted for inclusion in the Scottish Government’s new National Planning Framework 4, ……….”*

Regarding the Vision for the Environment in Table 1, Topics and Outcomes: *“the Inner Moray Firth’s built, cultural and natural assets will be safeguarded and appropriately managed. Water, waste, heat, land and buildings will be used, re-used, located and designed in a carbon clever way. The environmental quality of all places will be safeguarded and where possible enhanced.”* Then for Employment, *“the Inner Moray Firth economy will be growing, greener, circular and diverse. Local enterprises will be national leaders in the life sciences, sustainable tourism and renewable energy sectors. More traditional sectors such as construction, food and drink and smaller scale general industry will have continued to thrive and provide jobs close to where people live reducing the need to travel.”*

In paragraph 4, the ‘Spatial strategy’ indicates the following: - *“Existing settlements and town centres will also be the prime locations for employment, alongside a number of Economic Development Areas and strategic renewable energy zones (including Nigg) where major new employment is expected to enable the transition to net zero.”*

The pre-application response advised that the focus of the IMFpLDP2 is again on identifying specific site allocations but includes a number of overarching general policies which will apply to all developments. More specifically, the following may also be relevant to the determination of an application: -

Policy 2: Nature Protection, Preservation and Enhancement requires development to assess, conserve and provide biodiversity enhancements within and adjacent to the site. As such, consideration should be given to the most appropriate method to secure biodiversity enhancement.

A Biodiversity Net Gain Assessment and Biodiversity Enhancement and Management Plan are provided as Technical Appendix 6.3 to this EIAR.

Policy 7: Industrial Land states that all sites allocated for industry are safeguarded for Classes 4, 5 and 6 uses only.

The site is within the Nigg Energy Park employment uses designation NG01.

Policy 9: Delivering Development and Infrastructure explains that the Council will assess each development proposal in terms of its impact on each relevant infrastructure network and community facility capacity.

While any reasonable contributions sought would be discussed during the consideration of the application, it is considered that the Proposed Development will have a negligible impact on the existing public road network.

The specific allocation for development at Nigg is covered in paragraphs 249 to 254 and under NG01. In more detail, the following statements are most relevant to the Proposed Development: -

- 249 Nigg is one of the UK's most important energy industry facilities, providing multi sector capability which combines some of the largest dry dock and construction and assembly workshops in Europe with over 900 metres of deepwater quayside. A major upgrade and extension to the South Quay was completed in 2015 and construction started in 2021 on a new East Quay, both of which enhance Nigg's ability to attract and compete for energy related activities.
- 250 As indicated in 'Employment | Ag obair', recent reports have shown that the Cromarty Firth is ideally placed to be at the centre of the global green energy transition. In recognition of this, Inverness and Cromarty Firth Green Freeport (ICFGF), a cross-sector partnership including Global Energy Group (GEG) who own and operate Port of Nigg, is looking to take advantage of this position to create lasting employment and regeneration opportunities for the area.
- 254 There is potential for NG01 to have an adverse effect, alone and in combination with a number of development sites (including many of the Plan's Economic Development Areas), on the integrity of the Dornoch Firth and Morrich More SAC, Cromarty Firth SPA/Ramsar, Moray Firth SAC and Moray Firth SPA due to the creation of additional noise, disturbance and physical damage and potential for pollution from possible development. Specifically, HD01 and WH01 for Dornoch Firth and Morrich More SAC; WH01, INW14, INC06 and IG05 (dolphins) for Moray Firth SAC; IG05 for Cromarty Firth SPA and WH01, INW14, INC06, FG01, CS01 and HD01 for Moray Firth SPA. Any development proposals at NG01 must demonstrate that there would be no adverse effect on the integrity of the Dornoch Firth and Morrich More SAC, Cromarty Firth SPA/Ramsar, Moray Firth SAC and Moray Firth SPA alone or in combination with other sites by demonstrating mitigation measures described in developer requirements for NG01.

The Application Site forms part of the specific land allocation referenced NG01: NIGG YARD, Area: 242.2 hectares (Refer to Figure 4-3). This also lists the Developer Requirements with an overall need for a "Developer masterplan which should address:

- Need to ensure no adverse impact on the water quality of the Outer Cromarty Firth;
- Flood Risk Assessment (no development in areas shown to be at risk of flooding);
- Drainage Impact Assessment;
- Protected species survey;
- Protect and enhance existing woodland and individual trees, create new woodland where opportunities exist and integrate within the green/blue network;
- Landscape and Visual Impact Assessment;
- Archaeological walkover survey in first instance with possible programme of archaeological works/mitigation;
- Safeguard fabric, historic character and setting of the Scheduled Monuments (Dunskeath Castle SM3319 and batteries and camps SM13750) and Listed Buildings at Pitcalzean House;

- Transport Assessment including details of potential impact and alterations to B9175, measures which promote the transport hierarchy and consider the need for support and enhancement to the Nigg-Cromarty ferry service;
- Protect and enhance wherever possible the National Cycle Network and Castle Craig Core Path;
- Noise assessment and inclusion of necessary mitigation;
- Demonstration of no adverse effect on the integrity of the Dornoch Firth and Morrich More SAC, Cromarty Firth SPA/Ramsar, Moray Firth SAC and Moray Firth SPA by public sewer connection and comprehensive sustainable urban drainage system to deal with surface water run-off to avoid sedimentation and pollution reaching the Firth, Construction Environmental Management Plan and Operational Environmental Management Plan both including prevention of sedimentation, pollution, noise, disturbance and avoiding spread of invasive non-native species (Common Cord Grass *Spartina Anglica*);
- Recreational Access Management Plan including consideration of water based activities, must ensure disturbance to the Moray Firth SAC bottlenose dolphin and the bird interests of the Moray Firth SPA are avoided, plan must include satisfactory provision and/or contribution towards open space, path and green network requirements, including mitigation associated with the Inverness to Nairn Coastal Trail, adherence to the Scottish Marine Wildlife Code and the WiSE scheme to help avoid, for example, rafts of birds on the water surface;
- Potential impact on harbour seals should be addressed, assessment to consider impact and any required mitigation for harbour seals that use nearby haul out sites;
- Noise impact assessment (considering both construction and operation) and any other related impact assessments such as that relating to air quality, light, odour and vibration;
- Appropriate setbacks, landscaping and other mitigation to safeguard amenity and privacy of neighbouring residential properties;
- Oil Spill Contingency Plan;
- Boat traffic Management Plan;
- Hydro-Dynamic study to assess the impact of altered flows on sediment movement in the firth in relation to subtidal sandbanks (only suitable development should be taken forward in light of the Dynamic Coast 2 and coastal flooding predictions);
- Full compliance with appropriate regulatory frameworks for ballast water discharge, dredging and disposal and ship-to-ship transfers including Marine Scotland dredging and disposal guidance (both for capital and maintenance spoil) and JNCC piling guidance;
- Exact developable areas to be determined through the master planning process with further input from and early engagement with key agencies and other stakeholders; and
- Programme of decommissioning/restoration in event of post operation/redundancy.

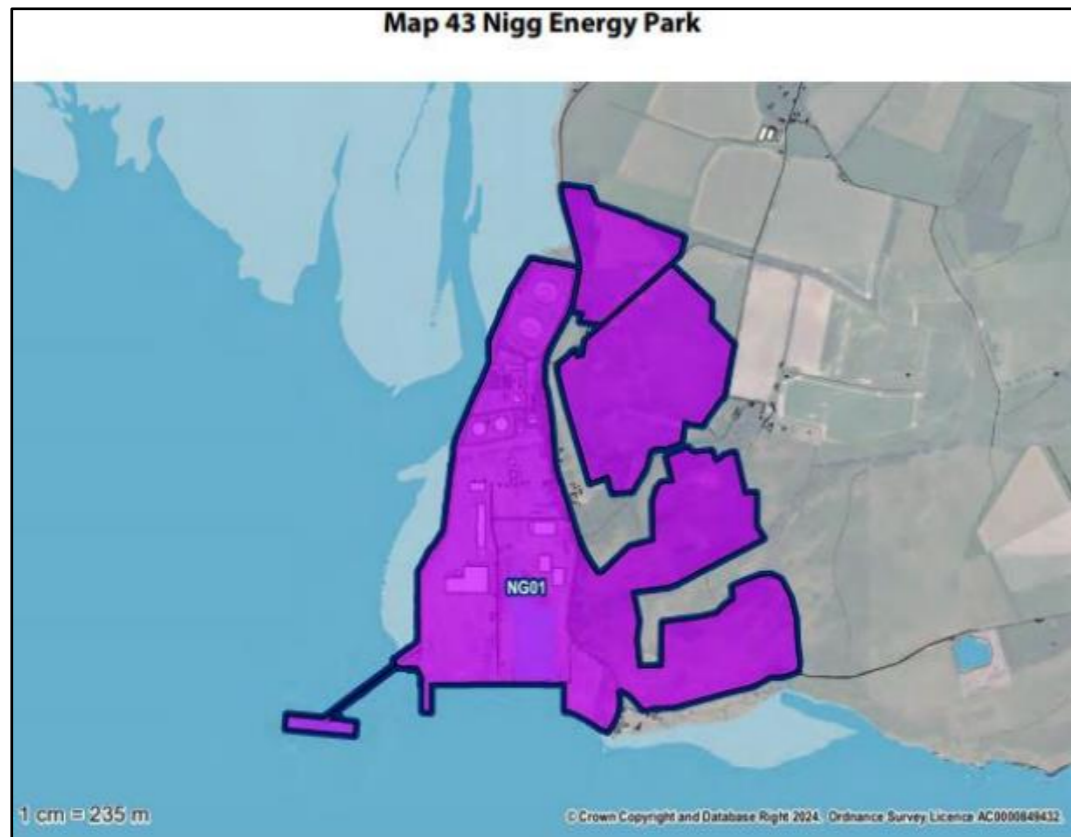


Figure 4-3: Inset Map for Nigg from Modified IMFLDP2

Any green freeport proposals which would extend beyond the NG01 site boundary shown on Map 43 Nigg Energy Park (Refer to Figure 4-3) should provide a masterplan (with input from and early engagement with key agencies and other stakeholders) and address the relevant developer requirements set out above.”

5 AIRBORNE NOISE

5.1 Introduction

This chapter summarises the findings of the Noise Impact Assessment (NIA) which was carried out for the proposed development. The noise assessment considers the airborne noise impacts at existing sensitive receptors surrounding the site as a result of the development proposals.

Details of the site and the proposed development are provided in Chapter 2: Proposed Development.

The full NIA is presented in Technical Appendix 5.1, Volume 3 of this EIAR.

5.2 Scoping and Consultation

5.2.1 Scoping Opinion

The Chapter below is a summary of the Noise Impact Assessment Report provided as Technical Appendix 5.1, Volume 3 of this EIAR in response to the scoping responses (as described in Table 3.1, Chapter 3):

In addition, a telephone consultation was undertaken between THC Environmental Health and EnviroCentre in March 2024 to discuss the assessment. It was agreed the noise assessment should be conducted in line with the consultation response of the Pre-Application Advice for Major Developments Document (Refer to Technical Appendix 3.1, Volume 3 of this EIAR).

5.2.2 Potential Impacts

Due to the proximity of the site to existing residential properties in Balnabruaich to the north, Balnapaling to the east, and Cromarty to the south, there is the potential for noise from activities during the construction and operational phases of the Eastern Inner Dock Quay Development to impact on existing sensitive receptors. The inclusion or not of these phases in the noise assessment are discussed in the sections below.

Construction Noise - The main impacts during the construction phase is the potential for construction activities, specifically from piling, reverse alarms and plant activities to impact local residents and marine mammals.

The advice provided in the Pre-application and Advice for Major Developments note (Refer to Technical Appendix 3.1, Volume 3 of this EIAR) in relation to construction noise is summarised below:

- The council have controls on construction noise under the Control of Pollution Act 1974 (COPA),
- It is expected that best practicable measures will be employed at all times to reduce the impact of noise;
- Particular consideration should be given to reducing noise from piling and reversing alarms;
- The applicant to ensure good communication with neighbouring residents; and
- If a COPA investigation into construction noise complaints are found to be reasonable then working hours or practices may have to change.

The principal contractor will develop a construction noise management plan specific to the proposed activities. The plan will form part of the CEM Plan which will be submitted to the council for approval prior to work commencing.

The effects of underwater noise on marine life are considered in the Biodiversity Chapter of the EIAR.

Taking the above into account, construction noise has been scoped out of the Airbourne Noise Assessment.

Operational Noise - In relation to operational noise the main impacts identified are from HV cable loading events and general site activities.

The operational noise associated with the export of HV cable from the adjacent Sumitomo Electrics cable factory was considered in a report by Mabbett & Associates Ltd in November 2023.

The report found that trans-spooling of HV cable within the PON is already conducted and that the operation of the new Sumitomo Electrics HV cable factory will therefore not introduce a new activity to the port. It highlighted the use of electrically powered coiling units rather than diesel-powered SPMTs. Electrically powered fixed plant being generally significantly quieter than diesel-powered plant, it was found that the introduction of the additional spooling operations is unlikely to increase the noise impact upon the closest noise-sensitive receptors and that the sound characteristics of the work should remain the same. A further detailed assessment is planned once the design of the proposed HV/DC factory has been finalised. In addition, PON have made a commitment to investigate the introduction of shore to ship power at PON with the aim of reducing the cumulative noise, reduce emissions, improve air quality and contribute to the overall sustainability of port operations⁵ as part of the Sumitomo Electrics cable factory planning application.

When not being used for the HV cable export activities, general site activities will utilise the Eastern Inner Dock Quay. As such no new noise-generating activities are anticipated with the potential to increase the day and night-time existing baseline noise levels at surrounding noise-sensitive receptors. Following granting of planning permission for construction of the eastern deep water quay, a Noise Management Plan⁶ was developed and approved by THC to prevent and minimise noise and emissions from operational activities within PON.

However, the proposed Eastern Inner Dock Quay development will bring noise-generating sources into closer proximity to residential receptors in Balnapaling than current operations, therefore there is the potential for an adverse effect at this location. A potential increase in noise levels at receptors in Balnabruaich and Cromarty is also possible.

Operational road traffic generation from the new eastern inner dock quay is expected to be minimal and infrequent. The change in noise due to change in road traffic is therefore also predicted to be negligible.

THC carried out assessments of both low-frequency noise and vibration from the port between October 2023 and December 2023, in response to concerns from residents of Cromarty. The surveys were requested as a result of concern from residents about the potential vibration generated by port activities, specifically from a particular vessel offloading wind turbine components at PON. This activity was measured during the monitoring period.

As part of the vibration assessment, monitoring of vibration dose value (VDV) and peak particle velocity (refer to Section 5.3.2 for definitions) was undertaken at two residential properties within the town of Cromarty, continuously over a period in the region of nine days. The recorded levels of vibration dose value for the daytime and night-time periods were below the ranges provided in BS 6472-1⁷ which are considered as a low probability of

⁵ The Port of Nigg (2024), Environmental Improvement Plan - Shore Power Supply [PON-02-IM-0027]

⁶ EnviroCentre (2022), Global Energy Nigg LTD: Nigg Energy Park Noise Management Plan.

⁷ British Standards Institution (2014), BS 6472-1:2008 Guide to evaluation of human exposure to vibration in buildings. Vibration sources other than blasting.

adverse comment. The peak particle velocity levels recorded were also significantly below relevant damage criteria, avoiding all possibilities of damage.

Low-frequency noise monitoring was conducted at two separate properties within Cromarty between 24th October and 5th December 2023. The noise assessment took into account monitoring results, the environmental health officer's subjective assessments, a comparison of monitored levels against recognised standards and the 8 key considerations for a statutory nuisance assessment.

In both cases, levels were found not to meet the related criteria to be determined as an impact or nuisance. Assessment of vibration from the plant at the port is not considered further as part of the operational assessment, though penalties for low-frequency and tonal noise have been applied (Refer to Section 5.6.3 for further details).

Taking into account the above information, the scope of the Operational Noise Assessment focuses on general port activities only.

5.3 Policy, Legislation and Guidance

5.3.1 Policy, Legislation and Guidance

Policy, legislation and guidance relevant to the assessment of noise impact from the proposed development is listed below and presented in full in Section 2 of the NIA report, Technical Appendix 4.1, Volume 3 of this EIAR.

- National Planning Framework 4⁸
- Planning Advice Note (PAN) 1/2011 – Planning and Noise⁹
- Technical Advice Note (TAN) – Assessment of Noise¹⁰
- World Health Organisation Guidelines for Community Noise¹¹
- BS5228-1:2009+A1:2014; Code of Practice for Noise and Vibration on Construction and Open Sites¹²
- BS 4142:2014+A1:2019, Methods for rating and assessing industrial and commercial sound; and
- ISO 9613-2:1996 – Acoustics – Attenuation of Sound during Outdoor Propagation – Part 2: General Method of Calculation¹³

5.3.2 Technical Definitions

The following definitions relating to noise are used in this report:-

Ambient Sound Level: As defined in BS 4142:2014; equivalent continuous A-weighted sound pressure level of the totally encompassing sound in a given situation at a given time, at the assessment location. The ambient sound level includes the contribution from the residual sound level and the specific sound level. Measured with $L_{Aeq,T}$.

Background Sound Level: The background sound level represents baseline conditions, filtering out intermittent noises, and can be thought of as a baseline over which a continuous noise would be heard. Defined in BS 4142:2014; as the A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of any given time interval, T, $L_{A90,T}$.

$L_{Aeq,T}$: Equivalent continuous A-weighted sound pressure level. This is the single number that represents the average sound energy over a given time period, T. It is the sound level of a notionally steady sound that has the same energy as a sound that fluctuates over the specified measurement period.

$L_{A90,T}$: The noise level exceeded for 90% of the measurement period.

Octave: A range of frequencies whose upper frequency limit is twice that of its lower frequency limit.

Octave Band: Sound pressure level is often measured in octave bands, the centre frequencies of the bands are defined by ISO – 31.5Hz, 63Hz, 125Hz, 250Hz, 500Hz, 1kHz, 2kHz, 4kHz, 8kHz, 16kHz to divide the audio spectrum into 10 equal parts. The sound pressure level of sound that has been passed through an octave band pass filter is termed the octave band sound pressure level. Additionally, sound is often represented by one-third octave bands, which divides each octave band into three.

Peak Particle Velocity (PPV): A measurement of the maximum component of vibration, typically used in the measurement of ground borne vibration.

Residual Sound Level: The continuous A-weighted sound pressure level at a given location in the absence of the specific sound level. This, unlike the background sound level, includes the contribution from fluctuating sounds.

Specific Sound Level: The continuous A-weighted sound pressure level at a given location of the isolated industrial noise source.

Tonal Penalty: A penalty applied to a specific sound source to account for inherent tonality of a source as perceived at the position of the noise sensitive receptor. Tonal penalty can be derived subjectively (2 dB for a tone which is just perceptible at the receptor, 4 dB where it is clearly perceptible, and 6 dB where it is highly perceptible). The tonal penalty can be derived objectively through two procedures. The first is to assess the one-third octave band spectrum, where if certain criteria are met a 6 dB penalty is applicable. If a tone is not identified using the one-third octave band spectrum the penalty should be derived using the reference method, a more in depth narrow-band method based on a psychoacoustic model for tonal audibility.

Vibration Dose Value (VDV): As defined in defined in BS 5228; a measure of total vibration experienced over a specified period of time.

Weighting: Human hearing is most sensitive to frequencies between about 500Hz and 6kHz and less sensitive to frequencies above and below these. In order to measure noise levels representative of human hearing a filter is applied termed a Frequency Weighting which is a prescribed frequency filter provided in a sound level meter. An A-weighted sound pressure level in decibels (denoted as dB(A)) is designed to reflect the sharpness of the human ear, which does not respond equally to all frequencies.

5.4 Methodology

5.4.1 Noise Assessment Methodology

The noise assessment was undertaken to establish the impact of operational activities on noise-sensitive receptors surrounding the Site. The assessment involved the following stages:

⁸ The Scottish Government (February 2023), *National Planning Framework 4*.

⁹ The Scottish Government (2011), *PAN 1/2011 Planning and Noise*.

¹⁰ The Scottish Government (2011), *TAN 1/2011 Technical Advice Note*.

¹¹ World Health Organization (1999), *Guidelines for Community Noise*.

¹² 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*.

¹³ International Organization for Standardization (1996), *ISO 9613-2:1996 – Acoustics – Attenuation of Sound during Outdoor Propagation – Part 2: General Method of Calculation*.

- Measurement of existing baseline noise environment at a sample of 5 areas representative of the most exposed noise-sensitive receptors surrounding the proposed Eastern Inner Dock Quay;
- Review of available information i.e. previous noise assessments;
- Review of existing and proposed operational activities, locations, and noise data;
- Prediction of operational noise using CadnaA software at the location of the most exposed sensitive receptors;
- PAN 1/2011 assessment of operational noise, using principles defined in BS 4142:2014;
- Provision of operational noise mitigation advice to the Eastern Inner Dock Quay design team to inform proposed site design; and
- Provision of recommended noise mitigation and management measures for site-wide existing and proposed Eastern Inner Dock Quay operations at PON.

5.4.2 Operational Noise Assessment Target Criteria

Proposed activities from the operations within the Eastern Inner Dock Quay are assessed following guidance provided in PAN 1/2011 (and the associated document TAN 1/2011 'Technical Assessment of Noise'), using principles defined in BS4142:2014.

The noise criteria to be applied to operational industrial noise is summarised in Table 5.1.

Table 5-1: Significance of Effects; Operational Industrial Noise

Magnitude of Impact (After – Before) L _{AeqT} dB	Sensitivity of Receptor based on likelihood of complaint X = (Rating (L _{Ar,T}) – Background (L _{A90,T})) dB		
	Low (x < 5)	Medium (5 ≤ x < 10)	High (x ≥ 10)
Major (≥ 5)	Slight / Moderate	Moderate / Large	Large / Very Large
Moderate (3 to 4.9)	Slight	Moderate	Moderate / Large
Minor (1 to 2.9)	Neutral / Slight	Slight	Slight / Moderate
Negligible (0.1 to 0.9)	Neutral / Slight	Neutral / Slight	Slight
No Change (0)	Neutral	Neutral	Neutral

The above table is used as follows:

- Calculate the difference between the rated operational noise level (L_{Ar,T}) and the background noise (L_{A90,T}) at each noise-sensitive receptor, following principles defined in BS4142:2014. This difference in levels is used to define the Sensitivity of Receptor;
- Calculate the total noise at each noise-sensitive receptor, including operational activity (L_{Aeq,T}). The difference between the total noise including operational activity, and that before development at each sensitive receptor is used to define the Magnitude of Impact; and
- The Significance of Impact is then defined.

5.5 Baseline

Noise surveys were carried out in the area surrounding PON, comprising of the adjacent hamlets of Balnabruaich & Balnapaling, and in the town of Cromarty to the south. The surveys were completed during the day and night-time periods on Monday 18th and Tuesday 19th March 2024. The purpose of the surveys was to establish day and

night-time background noise levels at areas representative of the most exposed properties in Balnabruaich, Balnapaling and Cromarty. Full details of the noise monitoring survey are provided in Section 3 of the NIA, Technical Appendix 5.1, Volume 3 of this EIAR.

As discussed in Section 2.6, the proposed operations on the Eastern Inner Dock Quay are an extension of existing operations within NEP, therefore no new noise-generating sources or operations are proposed as part of the development. No further monitoring of the operational activities was thus required, with operational modelling information available from data sheets and the monitoring campaign carried out to inform the 2019 assessment of the East Quay Development being used in this assessment.

5.5.1 Noise Monitoring Locations

The Noise Monitoring Locations (NMLs) are described in Table 5-2, and shown in Drawing Nos. 677964-GIS005A & 677964-GIS006A, Volume 2 of this EIAR.

Table 5-2: Noise Monitoring Locations

NML ID	Grid Reference	Location
1A	279472 869705	Balnabruaich; on verge next to B9175, roughly 50 metres south of the entrance to PON. The position was selected to be representative during the daytime monitoring. Noise from an idling vehicle prevented measurement closer to the residence. Noise from the substation was not audible at this time.
1B	279410 869877	Balnabruaich; roughly 100 metres north of the entrance to PON, 12.5 metres west of B9175 to reduce the influence of traffic noise to/from PON. Position used during night-time monitoring as vehicle idling longer audible. Chosen at a similar distance back from the road as noise-sensitive receptors.
2	279645 868817	Balnapaling; at southern extent of B9175, roughly 1.5 metres from east boundary fence.
3	278710 867724	Cromarty; on grass next to George Street.
4	278918 867603	Cromarty; between two properties on corner of Forsyth Place and Shore Street. Cromarty. Selected on west side of properties to give better line of site to PON and reduce influence of traffic noise from Shore Street and bus stop on Forsyth Place.
5	279169 867340	Cromarty; on grass at south eastern corner of Shore Street.

5.5.2 Measured Noise Levels

A summary of the day and night-time results are provided in Table 5.3.

Table 5-3: Baseline Noise Monitoring Data

NML ID	Who Assessment Period	Start time / Duration (hrs:mins)	L _{Aeq} (dB _A)	L _{A90} (dB _A)
1A	Daytime	19:34 / 01:00	48.2	38.6
2	Daytime	18:22 / 01:00	49.8	42.9
3	Daytime	09:45 / 01:00	46.7	42.3
4	Daytime	10:53 / 01:00	48.4	41.2
5	Daytime	17:22 / 01:00	47.7	38.8
1B	Night-time	23:58 / 00:15	43.5	35
2	Night-time	00:26 / 00:15	45.7	41.9
3	Night-time	00:11 / 00:15	43.8	38.1

4	Night-time	23:37 / 00:15	46.5	36.1
5	Night-time	23:16 / 00:15	41.2	39.1

5.5.3 Comparison of Baseline Levels with Previous Noise Surveys

EnviroCentre – Nigg East Quay Technical Appendix 6.1, Noise Assessment (June 2019) - As part of the EIAR for the East Quay completed in June 2019, baseline surveys were undertaken at the same locations considered within this current assessment over two consecutive days and nights between 26th and 28th February 2019. Levels during these surveys were noted to have a greater amount of low frequency energy, with the primary source being attributed to generators on the oil rig located approximately 750 metres north west of Cromarty and 1km south west of NEP in the Firth of Cromarty.

The levels measured in 2024 are generally lower or consistent in range with those measured in 2019. LA90 levels were generally consistent with the levels of the previous survey with some variation, as would be expected. The port was generally quieter during the daytime periods than during the previous survey as demonstrated by the consistently lower LAeq values.

The survey from 2024 is therefore considered to represent worst-case background noise levels for the area, given that noise against a quieter background level will be more apparent to the listener.

The measurements made during the 2019 baseline survey are presented in full in Appendix C of the NIA, Technical Appendix 5.1, Volume 3 of this EIAR.

Highland Council – Environmental Health Noise Complaint Investigation – Assessment Report Complaints Re: Noise Arising from Cromarty Firth (October – December 2023) - As part of a complaint investigation, THC carried out measurements at two properties between the 28th of November and the 4th of December 2023. The external measurements were unattended and made at one of the locations over longer measurement periods (8 and 16-hour night and day periods respectively).

The external measurements made during this survey campaign were made at the same location as NSR 4 and are thus comparable with measurements made during the baseline noise survey of this assessment (Refer to Table 5-4).

Table 5-4: NSR 4 Measurements and Comparison with THC Campaign Noise Data

NML ID	WHO Assessment Period	Start time / Duration (hrs:mins)	THC Report LAeq Range for Period (dB _A)	LAeq (dB _A)	THC Report LA90 Range for Period (dB _A)	LA90 (dB _A)
4	Night	23:37 / 00:15	44 to 51	47	38 to 46	36
4	Night	23:52 / 00:15	44 to 51	47	38 to 46	37
4	Day	10:53 / 01:00	44 to 52	48	40 to 47	41

The levels measured during the survey fall within the ranges measured during the THC survey, with the exception of the night-time LA90 values which were 1-2 dB quieter. Given the shorter BS 4142:2014 measurement campaign used during this current assessment, it seems likely that a quieter period was measured during the survey and is representative of worst-case levels.

5.6 Impact Assessment

5.6.1 Introduction

3D computer noise modelling of operational activity at the proposed development has been carried out using CadnaA software.

Calculations were carried out using plant manufacturer's noise data provided by the Client, and published data in BS5228:2009+A1:2014, to derive predicted noise levels at noise-sensitive receptors. Full details of the items of modelled operational plant, noise data (including data source), operating times, durations and source heights for the modelled Eastern Inner Dock Quay operations are detailed in the NIA, Technical Appendix 5.1, Volume 3 of this EIAR. The following sections summarise this information.

5.6.2 Noise Sensitive Receptors

A sample of five noise-sensitive receptors have been chosen as being representative of those most exposed to noise from operational activities at the proposed Eastern Inner Dock Quay. These noise-sensitive receptors are in close proximity to the noise monitoring locations detailed in Table 5.3 and are shown in Drawing Nos. 677964-GIS005A & 677964-GIS006A, Volume 2 of this EIAR.

5.6.3 BS4142:2014 Acoustic Feature Correction

CadnaA software has been used to model the specific sound level from operational activities at the location of the most exposed sensitive receptors. To calculate the rated sound level, the assessment considers the character of the sound being assessed at the receptor location. If present, corrections for impulsivity, intermittency and/or tonality are added to the specific sound level to calculate the rated sound level.

A sound source may exhibit acoustic characteristics at source; however, the prominence of these features may be masked at the location of the noise-sensitive receptors by the residual (background) sound at these locations. The amount by which the residual sound masks these features varies as the residual sound changes in level and possible character. Similarly, the source's acoustic character may also vary with time.

The total applied character penalty for operational noise levels is 5 dB. Separate penalties have been applied for impulsivity and tonality.

Impulsivity - In the case of ships loading/unloading, the movement of cargo and wind turbine components has the potential to create sound which is impulsive in nature. The modelled specific sound from these activities is predicted to be below, or close to the measured background noise at the most exposed sensitive receptors, which is an indication that the sound is predicted to be mostly inaudible. Despite this, due to the high transient peak levels that the movement of cargo and wind turbine components may create it is considered likely that some sound from these activities may be just perceptible at the most exposed sensitive receptors. For this reason, a correction of 3 dB, for impulsivity that is just perceptible, has been applied to the specific noise levels at all receptor locations.

Tonality - The proposed Eastern Inner Dock Quay extension will employ the same, or similar noise-generating plant to that currently being employed for existing operations at PON.

During the 2019 visit to the site, measurements of activities in and around PON were carried out to determine the characteristics of the operational noise from the site. These measurements typically contained multiple active sources and therefore manufacturer/source data was considered most appropriate for modelling purposes.

However, the data was used to evaluate tonal characteristics of cumulative activities with PON in accordance with BS4142:2014 Annex C: Objective method for assessing the audibility of tones in sound: One-third octave method.

The results showed that there were no tonal components identifiable in the one-third octave band spectra that would indicate a 6 dB tonal penalty at noise-sensitive receptors within Balnabruich, Balnapaling and Cromarty.

Despite the analysis that there are no prominent tones present, it was observed subjectively during the baseline surveys of the area in 2019 and 2024 that noise from ship and oil rig generators created low-frequency noise which was audible at surrounding noise-sensitive receptors which was most noticeable during the night-time. The recent survey undertaken in March 2024 noted a reduction in low frequency noise in comparison to the 2019 survey, however some low frequency noise was faintly audible.

Although not considered prominently tonal when assessed with one-third octave bands, a slight degree of low-frequency generator tonality is subjectively considered to be present at existing receptors surrounding NEP.

With regards to proposed Eastern Inner Dock Quay operational activities, the sound generated is anticipated to be predominantly broadband in nature. Noise modelling has predicted that individual items of noise-generating plant will have lower modelled partial specific noise levels than the measured background sound at all receptor locations and, therefore are predicted to be largely inaudible. Despite this, it is considered likely that a slight degree of subjective tonality from the vehicle reverse alarms and ship generators may be just audible at receptor locations during the day and night-time periods. For this reason a conservative 2 dB tonal penalty has been applied to the specific noise levels from the proposed Eastern Inner Dock Quay at all receptor locations.

Noise Model Assumptions - A number of assumptions have been established during the CadnaA modelling exercise, as detailed below:

- The noise model assumes locations of plant based on descriptions of activities provided by the Applicant;
- Worst-case scenario combinations of operational activities likely to occur during any one day during the considered assessment periods have been assumed;
- The ground model uses Lidar 1 m resolution terrain height data for existing parts of PON and the surrounding area.
- The heights of buildings have been estimated from site visits and photographs;
- Ground absorption has been set to 0.5 for mixed soft/hard ground, areas of hard standing or water have been set to 1 for reflective surface;
- Receptors at ground floor level have been taken to be at 1.5 m height. Those at second-floor level have been assumed to be at 4 m height (i.e. 1st floor bedrooms);
- At one storey noise sensitive receptors, day and night-time noise levels have been calculated at 1.5 m height. At two storeys or above, day and night-time noise levels have been calculated at 4 m height.
- Items of moving plant have been modelled as line sources within CadnaA. All remaining operational plant have been modelled as point sources.

5.6.4 Operational Noise Results

The noise model results and TAN 2011 assessments for the day and night-time periods for operational activities are shown in Table 5-5 and Table 5-6.

Table 5-5: Noise Model Results and TAN 1/2011 Assessment; Daytime

Noise-sensitive Receptor ID	1	2	3	4	5
Modelled Specific Level L _S , (1 hour) dB	39.8	44.5	38.6	37.5	33.0

Noise-sensitive Receptor ID	1	2	3	4	5
Acoustic Feature Correction dB(A)	5	5	5	5	5
Rated Noise L _{Ar} , (1 hour) dB	44.8	49.5	43.6	42.5	38.0
Background Noise L _{A90} , (1 hour) dB	38.6	42.9	42.3	41.2	38.8
Rated - Background Noise dB(A)	6.2	6.6	1.3	1.3	-0.8
Sensitivity of Receptor	Medium	Medium	Low	Low	Low
Existing Level L _{Aeq} , (1 hour) dB	48.2	49.8	46.7	48.4	47.7
Specific Level + Existing Level L _{Aeq} , (1 hour) dB	48.8	50.9	47.3	48.7	47.8
Change in level	0.6	1.1	0.6	0.3	0.1
Magnitude of Impact (After – Before)	Negligible	Minor	Negligible	Negligible	Negligible
Significance of Effects	Neutral / Slight	Slight	Neutral / Slight	Neutral / Slight	Neutral / Slight

The results show that the daytime noise from proposed operations at the Eastern Inner Dock Quay is predicted to result in an increase in noise levels at sensitive receptors of between 0.1 – 0.6 dB(A) at NSR 5 (Shore Street, Cromarty), NSR 4 (Forsyth Place, Cromarty), NSR 1 (Balnabruich) and NSR 3 (George Street, Cromarty). The level increases by 1.1 dB(A) at NSR 2 (Balnapaling). The significance of the increases in daytime noise levels is Neutral/Slight at all receptors apart from NSR 2 which is of Slight significance.

Table 5-6: Noise Model Results and TAN 1/2011 Assessment; Night-time

Noise-sensitive Receptor ID	1	2	3	4	5
Modelled Specific Level L _S , (1 hour) dB	39.6	44.2	38.1	37	32.8
Acoustic Feature Correction dB(A)	5	5	5	5	5
Rated Noise L _{Ar} , (1 hour) dB	44.6	49.2	43.1	42.0	37.8
Background Noise L _{A90} , (1 hour) dB	35.0	41.9	38.1	36.0	39.1
Rated - Background Noise dB(A)	9.6	7.3	5.0	6.0	-1.3
Sensitivity of Receptor	Medium	Medium	Medium	Medium	Low
Existing Level L _{Aeq} , (1 hour) dB	43.5	45.7	43.8	46.5	41.2
Specific Level + Existing Level L _{Aeq} , (1 hour) dB	45	48	44.8	47.0	41.8
Change in level	1.5	2.3	1.0	0.5	0.6
Magnitude of Impact (After – Before)	Minor	Minor	Minor	Negligible	Negligible
Significance of Effects	Slight	Slight	Slight	Neutral / Slight	Neutral

At night the noise from proposed operations at the Eastern Inner Dock Quay is predicted to result in an increase in noise levels at sensitive receptors of between 1.5 dB(A) at NSR 1 (Balnabruaich) and 2.3 dB(A) at NSR 2 (Balnapaling). The increase in noise levels in receptors in Cromarty varies between 0.5 dB(A) at NSR 4 (Forsyth Place), 0.6 dB(A) at NSR 5 (Shore Street) and 1 dB at NSR 3 (George Street). The significance of the increases in night-time noise levels varies from Neutral at NSR 5 (Shore Street) to Slight at NSRs 1,2 and 3 (Balnabruaich, Balnapaling and George Street, Cromarty).

5.6.5 Operational Noise Assessment

The maximum increase in daytime noise levels is predicted to be 1.1 dB(A) at NSR 2 (Balnapaling), the significance of which is Slight, at night the increase is predicted to be 2.3 dB(A) at the same receptor, the significance of which is Slight. Slight exceedances of 1.5 dB(A) and 1 dB(A) are also predicted at NSR 1 (Balnabruaich) and NSR 3 (George Street, Cromarty) during the night-time period. In terms of human perception of sound, an increase of 3dB(A) is considered to be barely perceptible, therefore the predicted increase of 2.3 dB(A) at receptors in Balnapaling is considered likely to be mostly imperceptible. At receptors in Balnabruaich and Cromarty during the daytime there is predicted to be an increase of less than 0.6dB(A), the significance of any increases being Neutral/Slight. An increase in noise levels of this amount will not be perceptible.

In relation to baseline noise level creep, as noted in Section 5.5.3, the baseline noise levels measured in 2024 are generally noted to be lower or consistent in range with those measured in 2019. L_{A90} levels were generally consistent with the levels of the previous survey with some variation, as would be expected. The survey from 2024 is therefore considered to represent worst-case background noise levels for the area, given that noise against a quieter background level will be more apparent to the listener.

While it is predicted that increases in operational noise levels are likely to be mostly imperceptible to slight it is recommended that site-wide (i.e. existing and proposed Eastern Inner Dock Quay operations) noise mitigation measures and best practices are followed throughout PON to minimise baseline noise level creep.

5.7 Mitigation and Monitoring

The following mitigation measures are identified to reduce noise impacts:

- The Principal Contractor to develop a construction noise management plan specific to the proposed activities. The plan will form part of the CEM Plan which will be submitted to the council for approval prior to work commencing;
- Review and update of the existing Operational Noise Management Plan taking into account any recommendations from the shore to ship power feasibility study which GEN has committed to undertaking in support of the Sumitomo Electrics cable factory planning application; and
- Consideration of utilising electric powered mobile and fixed plant on site.

5.8 Residual Effects

Worst case residual effects as a result of operational industrial noise are predicted to be of slight significance during daytime and Neutral/Slight significance during night-time; and therefore, not considered significant in EIA terms.

5.9 Statement of Significance

The residual effects are compliant with PAN 1/2011 and result in no significant effects in EIA terms. It is therefore recommended that the site is acceptable in terms of airborne operational noise.

6 BIODIVERSITY

6.1 Introduction

EnviroCentre Ltd was commissioned by the Applicant to undertake an Ecological Impact Assessment (EclA) of the proposed development, in order to identify and describe any likely significant effects arising from it. This chapter details the specialist ecological studies undertaken and the results of the assessment. The assessment has been carried out according to the latest guidance from the Chartered Institute of Ecology and Environmental Management (CIEEM)¹⁴ by experienced and competent ecologists who are all Members of CIEEM and follow its Code of Professional Conduct. It is supplemented by the drawings contained within Volume 2: Drawings and the baseline survey reports and assessments contained within Volume 3: Technical Appendices of this EIAR, including the following:

- Technical Appendix 6.1: Preliminary Ecological Appraisal (PEA).
- Technical Appendix 6.2: Shadow Habitat Regulations Appraisal.
- Technical Appendix 6.3: Biodiversity Net Gain Assessment and Biodiversity Enhancement and Management Plan.

Drawing No 677964-GIS007, Volume 2 of this EIAR shows the site boundary, which is referred to as 'the site' throughout this chapter. Details of the site and the proposed development are provided in Chapter 2: Proposed Development.

The purpose of this chapter is to:

- Identify and describe the baseline for Important Ecological Features (IEFs) which may be impacted by the proposed development;
- Identify and describe all potentially significant ecological effects associated with the proposed development;
- Set out the mitigation measures required to ensure compliance with nature conservation legislation and to address any potentially significant ecological effects;
- Identify how mitigation measures will be secured;
- Provide an assessment of the significance of any residual effects;
- Set out the requirements for post-construction monitoring; and
- Detail actions to be taken to deliver biodiversity enhancements.

6.2 Scoping and Consultation

Potential impacts to the following features have been considered within this assessment, based on the results of baseline studies (Technical Appendix 6.1, Volume 3 of this EIAR) and in response to scoping responses (as described in Table 3.1, Chapter 3 of this Written Statement):

- Designated sites;
- Terrestrial, intertidal and sub-tidal habitats;
- Terrestrial protected species;
- Ornithology;
- Marine mammals; and
- Fish.

6.2.1 Potential Impacts and Zone of Influence

Potential impacts considered during scoping were as follows:

- Removal of rock armour and construction of the temporary piling platform could give rise to suspended sediments within the water.
- Construction and operational activities could increase the risk of a pollution incident.
- Increased marine traffic during construction and operation of the quay could increase the risk of marine Invasive Non-Native Species being introduced or spread.
- Increased marine traffic could also cause an increased risk of collision with marine mammals as well as disturbance.
- Construction activities could cause over land visual and noise disturbance to fauna.

As stated in Section 2.6.1, the quay is unlikely to be used for turbine assembly and testing due to its restricted water depth being unsuitable for these activities. In relation to wet storage, this has also been discounted from further assessment within the Biodiversity Chapter. The primary function of the quay is to export HV cable from the Sumitomo Electrics cable factory. There are currently no manufacturing proposals which link wet storage and the use of the quay. Should wet storage, wind turbine integration or testing at the quay-side be a requirement of future capital projects the potential for collision risks on sensitive bird species would be subject to further work under specific development proposals and supporting licence applications.

The consideration of collision risks on sensitive bird species is therefore discounted from further consideration within this assessment.

Due to the piling methodology (through a temporary platform within the inner dock) it is not anticipated that underwater noise will be significantly generated through construction and so is not considered further within this assessment.

The CIEEM Guidelines identify the Zone of Influence (Zol) as the area over which ecological features may be subject to significant effects as a result of the proposed development and associated activities. This is likely to extend beyond the project site, for example where there are mobile species or hydrological links beyond the site boundaries. Features found to be present or likely to be present within the predicted Zone of Influence (Zol) and which have potential to be significantly affected (positively and negatively) by the proposed development are included within the scope of this assessment. The features considered, associated Zol, scoping decision and justification are summarised in Table 6-1 below. Where impacts to features are considered to be similar, these have been grouped within the scoping and impact assessment for succinctness.

¹⁴ CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, version 1.2. Chartered Institute of Ecology and Environmental Management, Winchester. Available at: [https://cieem.net/wp-](https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-2018-Terrestrial-Freshwater-Coastal-and-Marine-V1.2-April-22-Compressed.pdf)

[content/uploads/2018/08/ECIA-Guidelines-2018-Terrestrial-Freshwater-Coastal-and-Marine-V1.2-April-22-Compressed.pdf](https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-2018-Terrestrial-Freshwater-Coastal-and-Marine-V1.2-April-22-Compressed.pdf) (Accessed 16/01/2023)

Table 6-1: Scoping Summary

Feature	Zol	Scoping Decision	Justification
Designated Sites			
<p>Moray Firth SAC</p> <ul style="list-style-type: none"> • Sandbanks which are slightly covered by sea water all the time • Bottlenose dolphin (<i>Tursiops truncatus</i>) 	<p>Sandbanks: Within the development footprint and dispersal distance of pollutants entering the water.</p> <p>Bottlenose dolphin: Within the footprint of the development and dispersal distance of pollutants entering the water.</p>	<p>Scoped in</p>	<p>The designated site is 400m south of the proposed works and connected via the marine environment. There is potential for any suspended sediment arising from installation of the temporary works platform, or other pollutants to reach the sandbank habitat. Increased vessel movement could also result in the spread of Invasive Non-Native Species (INNS) which could impact on the species present.</p> <p>Bottlenose dolphin may also be affected by the above impacts as well as an increase in vessel movements associated with the development post-construction.</p> <p>There is potential for significant effects in relation to the sites conservation objectives.</p>
<p>Dornoch Firth and Morrich More SAC</p> <ul style="list-style-type: none"> • Habitats including: <ul style="list-style-type: none"> ○ Atlantic decalcified fixed dunes (<i>Calluno Ulicetea</i>) ○ Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) ○ Coastal dunes with <i>Juniperus</i> spp. ○ Decalcified fixed dunes with <i>Empetrum nigrum</i> ○ Embryonic shifting dunes ○ Estuaries ○ Fixed dunes with herbaceous vegetation (“grey dunes”) ○ Humid dune slacks ○ Mudflats and sandflats not covered by seawater at low tide ○ Reefs ○ <i>Salicornia</i> and other annuals colonising mud and sand ○ Sandbanks which are slightly covered by sea water all the time ○ Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (“white dunes”) • Otter • Harbour seal (<i>Phoca vitulina</i>) 	<p>Habitats: Within the development footprint or range of hydrological connections.</p> <p>Otter: Within the footprint of the development and up to 200m from the boundary.</p> <p>Harbour seal: Within the development footprint and 50km buffer.</p>	<p>Scoped in: Harbour seal</p> <p>Scoped out: Habitats and Otter</p>	<p>The designated site is c.13km north, overland or c.40km, via the sea, from the proposed works.</p> <p>Although the coastal habitats are connected via the marine environment the predominant wave action in the Moray Firth is from the north east to the south west, so the distance and direction of the proposed development in relation to the designated habitats greatly reduces the likelihood of high volumes of pollutants being received there. Significant effects are therefore not likely.</p> <p>The site is within commuting distance for otter within the designated site however it is not considered likely that the site or buffer area are a key foraging, commuting or resting area for them and any impacts would have a negligible effect on the SAC population.</p> <p>Harbour seals are mobile species known to range up to 50km from haul out sites in search of food¹⁵. It is therefore possible that individuals from the SAC could forage in the waters in the vicinity of the proposed development. There is potential for significant effects in relation to the sites conservation objectives.</p>

¹⁵ NatureScot. Habitats Regulations Appraisal (HRA) on the Moray Firth – A guide for developers and regulators. Accessed online at: <https://www.nature.scot/doc/habitats-regulations-appraisal-hra-moray-firth-guide-developers-and-regulators> on 22/11/2023.

Feature	Zol	Scoping Decision	Justification
<p>Cromarty Firth SPA</p> <ul style="list-style-type: none"> Breeding Bar-tailed Godwit (<i>Limosa lapponica</i>) Breeding common tern (<i>Sterna hirundo</i>) Breeding osprey (<i>Pandion haliaetus</i>) Non -Breeding Whooper swan (<i>Cygnus cygnus</i>) Over-winter greylag goose (<i>Anser anser</i>) Waterfowl assemblage, non-breeding: Bar-tailed godwit, Curlew (<i>Numenius arquata</i>), Dunlin (<i>Calidris alpina alpina</i>), Knot (<i>Calidris canutus</i>), Oystercatcher (<i>Haematopus ostralegus</i>), Pintail (<i>Anas acuta</i>), Red-breasted merganser (<i>Mergus serrator</i>), Redshank (<i>Tringa totanus</i>), Scaup (<i>Aythya marila</i>), Whooper swan, Wigeon (<i>Anas penelope</i>) 	<p>Within the development footprint and up to 750m (considered to be the furthest disturbance distance of bird species¹⁶)</p>	<p>Scoped in: Bar-tailed Godwit, Common Tern, Waterfowl assemblage.</p> <p>Scoped out: Greylag Goose, Whooper Swan, Osprey</p>	<p>The designated site is c.500m west of the site and so within the Zol.</p> <p>The species scoped in are reliant on marine habitats available within and surrounding the site and may be exposed to impacts with negative effects in relation to the sites conservation objectives.</p> <p>Greylag Geese and Whooper Swans predominantly utilise agricultural fields and freshwater bodies for foraging and roosting. These habitats are unlikely to be affected by the proposed development works and so any effects are unlikely to be significant.</p> <p>There is no suitable nest sites for Osprey within the vicinity and although they may forage within waters surrounding the development site, any localised displacement as a result of proposed works is likely to have negligible effect on the population as there is sufficient alternative foraging grounds.</p>
<p>Moray Firth SPA</p> <ul style="list-style-type: none"> European Shag (<i>Phalacrocorax aristotelis</i>) (breeding and non-breeding) Great Northern Diver (<i>Gavia immer</i>) (non-breeding) Red-throated Diver (<i>Gavia stellata</i>) (non-breeding) Slavonian Grebe (<i>Podiceps auritus</i>) (non-breeding) Scaup (<i>Aythya marila</i>) (non-breeding) Common Eider (<i>Somateria mollissima</i>) (non-breeding) Long-tailed Duck (<i>Clangula hyemalis</i>) (non-breeding) Common Scoter (<i>Melanitta nigra</i>) (non-breeding) Velvet Scoter (<i>Melanitta fusca</i>) (non-breeding) Common Goldeneye (<i>Bucephala clangula</i>) (non-breeding) Red-breasted Merganser (<i>Mergus serrator</i>) (non-breeding). 	<p>Within the development footprint and up to 1km (considered to be the furthest disturbance distance of bird species¹⁷)</p>	<p>Scoped in: Red-throated Diver, Slavonian Grebe, Greater Scaup, Common Eider, Long-tailed Duck, Common Scoter, Velvet Scoter, Common Goldeneye, Red-breasted Merganser</p> <p>Scoped out: European Shag and Great Northern Diver</p>	<p>The designated site is c.1.7km east of the proposed works and so is outside the Zol.</p> <p>Species scoped in could utilise open waters within the vicinity of the proposed development for foraging and resting and so there is potential for significant negative effects in terms of the sites conservation objectives.</p> <p>European Shag activity within the SPA is concentrated from Brora in the north to around Portsoy in the south¹⁸. As these areas are c. 50 km and 80 km from the proposed development site it is considered that any effects on birds would be negligible.</p> <p>The distribution of Great Northern Diver within the Moray Firth is concentrated within the Dornoch Firth and Spey Bay¹⁹. These are c. 13km and 50km from the proposed development site. It is anticipated that at these distances there would be</p>

¹⁶ Goodship, N.M. and Furness, R.W. (MacArthur Green) Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species. NatureScot Research Report 1283. Available at: <https://www.nature.scot/doc/naturescot-research-report-1283-disturbance-distances-review-updated-literature-review-disturbance> (Accessed 16/04/2024)

¹⁷ Goodship, N.M. and Furness, R.W. (MacArthur Green) Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species. NatureScot Research Report 1283. Available at: <https://www.nature.scot/doc/naturescot-research-report-1283-disturbance-distances-review-updated-literature-review-disturbance> (Accessed 16/04/2024)

¹⁸ NatureScot. Habitats Regulations Appraisal (HRA) on the Moray Firth – A guide for developers and regulators. Accessed online at: <https://www.nature.scot/doc/habitats-regulations-appraisal-hra-moray-firth-guide-developers-and-regulators> on 22/11/2023.

¹⁹ SNH. Habitats Regulations Appraisal (HRA) on the Moray Firth – A guide for developers and regulators. Accessed online at: <https://www.nature.scot/habitats-regulations-appraisal-hra-moray-firth-guide-developers-and-regulators> on 22/11/2023.

Feature	Zol	Scoping Decision	Justification
			negligible effects to birds from the proposed development.
<p>Cromarty Firth SSSI</p> <ul style="list-style-type: none"> • Mudflats • Saltmarsh • Sandflats • Non-breeding waterfowl: Bar-tailed Godwit, Red-breasted Merganser, Redshank, Whooper Swan and Wigeon. 	<p>Habitat: Within the development footprint and dispersal distance of pollutants entering the water.</p> <p>Non-breeding waterfowl: Within the development footprint and up to 300m (considered to be the furthest disturbance distance of bird species²⁰)</p>	Scoped in	<p>The site is c.500m west of the proposed works and is connected via the marine environment.</p> <p>Although it is out with the predicted Zol for birds, there is potential for significant negative effects on their supporting habitat and so all features have been scoped in.</p>
<p>Rosemarkie to Shandwick Coast SSSI</p> <ul style="list-style-type: none"> • Breeding Cormorant (<i>Phalacrocorax carbo</i>) • Maritime cliff • Vascular plants • Sand dunes • Upland birch woodland • Mesozoic palaeobotany • Earth sciences 	<p>Habitats: Within the development footprint and within dispersal distance of pollutants entering the water</p> <p>Cormorant: Within the development footprint.</p> <p>Geological features: Within the development footprint</p>	Scoped out	<p>The designated site is c.1km east of the proposed works.</p> <p>Cormorants from the SSSI may use rock armour within the development footprint for loafing as well as waters within and adjacent for foraging, however the development site is a small area of their overall range and not considered key habitat. Significant effects as a result of temporary displacement during construction are not considered likely.</p> <p>Whilst there is some connectivity to the habitats via the marine environment due to the distance and orientation of the site compared to the predominant wave action no significant effects are likely.</p> <p>Geological features are outwith the Zol.</p>
<p>Morangie Forest SPA</p> <ul style="list-style-type: none"> • Capercaillie (<i>Tetrao urogallus</i>), breeding 	Within the development footprint and up to 1km	Scoped out	<p>The designated site is c.9km north east of the proposed work and therefore outside the Zol.</p> <p>Whilst Capercaillie are mobile there is no suitable habitat within the site and very limited connecting habitat.</p>
<p>Pitmaduthy SSSI and SAC</p> <ul style="list-style-type: none"> • Flies • Raised bog • Bog Woodland 	Within the development footprint or range of hydrological connections.	Scoped out	The designated site is c.8km north east of the proposed work and there are no connecting water courses and so it is outside the Zol.
<p>Calrossie SSSI</p> <ul style="list-style-type: none"> • Lowland dry heath • Lowland wet heath • Native pinewood 	Within the development footprint or range of hydrological connections.	Scoped out	The designated site is c.8.5km north of the proposed work and there are no connecting water courses and so it is outside the Zol.
Terrestrial Habitats			
Other developed land	Within the development footprint	Scoped out	The habitat is of limited value to biodiversity and will be re-instated, albeit in an altered state post-development, with no overall loss.
Benthic Habitats			

²⁰ Goodship, N.M. and Furness, R.W. (MacArthur Green) Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species. NatureScot Research Report 1283. Available at: <https://www.nature.scot/doc/naturescot-research-report-1283-disturbance-distances-review-updated-literature-review-disturbance> (Accessed 16/04/2024)

Feature	Zol	Scoping Decision	Justification
Horse mussel (<i>Modiolus modiolus</i>) beds	Within the development footprint and dispersal distance of pollutants entering the water	Scoped out	The recorded habitat is c. 1.2km from the proposed work. Although it is connected via the marine environment it is considered that any suspended sediment or pollution arising from the works would be dispersed to levels where no significant effects would be likely.
Terrestrial Faunal Species			
<ul style="list-style-type: none"> Bats Otter 	Within the development footprint and up to 200m buffer	Scoped out	<p>The site has some limited suitability for foraging bats which will be retained in a similar state post-development.</p> <p>No otter resting sites are within the Zol. Commuting and foraging otter may use the site and be temporarily displaced during construction works. Given there is plenty of alternative, more suitable habitat in the locale no significant effects are likely to arise. Habitat will be re-instated post-development.</p>
Ornithology			
<ul style="list-style-type: none"> Common terns (<i>Sterna hirundo</i>) Eider Long-tailed Duck Common Scoter Goldeneye Red-breasted Merganser Red-throated Diver Cormorant Shag Grey Heron (<i>Ardea cinerea</i>) Oystercatcher Bar-tailed Godwit Curlew Redshank Guillemot (<i>Uria aalge</i>) 	Within the development footprint and up to 750m (considered to be the furthest disturbance distance of bird species ²¹)	Scoped out	<p>These species have all been recorded within the site itself of the vicinity of the site. Whilst they may be present within the Zol it is anticipated that any birds present will be habituated to a certain amount of disturbance through existing port activities.</p> <p>They may be impacted by pollution events but as these are likely to be highly localised and can be managed via implementation of standard good practice mitigation significant effects are not considered likely.</p>
Marine Mammals			
<ul style="list-style-type: none"> Harbour seal (<i>Phoca vitulina</i>) Grey seal (<i>Halichoerus grypus</i>) Harbour porpoise (<i>Phocoena phocoena46nguilla</i>) Bottlenose dolphin (<i>Tursiops truncates</i>) White-beaked dolphin (<i>Lagenorhynchus albirostris</i>) Minke whale (<i>Balaenoptera acutorostrata</i>) Humpback whale (<i>Megaptera novaeangliae</i>) Orca (<i>Orcinus orca</i>) 	Within the development footprint and dispersal distance of pollutants entering the water.	Scoped out	<p>The distribution of these species overlaps with the Zol and so could be present, however, the potential impacts (suspended sediment and pollutants) will be temporary and highly localised and can be managed via implementation of standard good practice mitigation and so are unlikely to result in significant effects.</p> <p>Increased vessel movements could result in greater risk of vessel collision and disturbance, with cumulative effects possible, however, vessel movements to and from the port are outwith the control of the applicant. Mitigation is already</p>

²¹ Goodship, N.M. and Furness, R.W. (MacArthur Green) Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species. NatureScot Research Report 1283. Available at: <https://www.nature.scot/doc/naturescot-research-report-1283-disturbance-distances-review-updated-literature-review-disturbance> (Accessed 16/04/2024)

Feature	Zol	Scoping Decision	Justification
			managed by the Cromarty Firth Harbour Authority via shipping lanes and speed limited and additional movements are considered to be negligible against baseline figures.
Fish			
Priority Marine Feature Fish including: <ul style="list-style-type: none"> • Whiting (<i>Merlangius merlangus</i>) • Saithe (<i>Pollachius virens</i>) • Atlantic mackerel (<i>Scomber scombrus</i>) • Ling (<i>Molva molva</i>) • Horse mackerel (<i>Trachurus trachurus</i>) • Cod (<i>Gadus morhua</i>) • Sandy ray (<i>Leucoraja circularis</i>) • Spiny dogfish (<i>Squalus acanthias</i>) • Porbeagle shark (<i>Lamna nasus</i>) • Flapper and blue skate (<i>Dipturus intermedius</i> and <i>D. flossada</i>) • Sandeel (<i>Ammodytes marinus</i> and <i>A. tobianus</i>) 	Within the development footprint and dispersal distance of pollutants entering the water.	Scoped out	The distribution of these species overlaps with the Zol and so could be present however the potential impacts (suspended sediment and pollutants) will be temporary and highly localised and can be managed via implementation of standard good practice mitigation and so are unlikely to result in significant effects.
Diandromonous fish including: <ul style="list-style-type: none"> • Sea trout (<i>Salmo trutta</i>) • Atlantic salmon (<i>Salmo salar</i>) • European eel (<i>Anguilla anguilla</i>) • Sea lamprey (<i>Petromyzon marinus</i>) • River lamprey (<i>Lampetra fluviatilis</i>) 	Within the development footprint and dispersal distance of pollutants entering the water.	Scoped out	The distribution of these species overlaps with the Zol and so could be present however the potential impacts (suspended sediment and pollutants) will be temporary and highly localised and can be managed via implementation of standard good practice mitigation and so are unlikely to result in significant effects.
Basking shark (<i>Cetorhinus maximus</i>)	Within the development footprint and dispersal distance of pollutants entering the water.	Scoped out	There are occasional records of basking shark from the wider Moray Firth area and so they could be present within the Zol, however the potential impacts (suspended sediment and pollutants) will be temporary and highly localised and can be managed via implementation of standard good practice mitigation and so are unlikely to result in significant effects.
Shellfish and Marine Invertebrates			
Ocean quahog (<i>Arctica islandica</i>)	Within the development footprint and dispersal distance of pollutants entering the water.	Scoped out	The closest record for this species is 3.5km west of site and out with the expected Zol

6.3 Policy, Legislation and Guidance

The compilation of this chapter has taken cognisance of the legislation, planning policies, conservation initiatives and general guidance presented in Table 6-2 below.

Table 6-2: Relevant Legislation, Policy and Guidance Documents

Scope	Document
International	<ul style="list-style-type: none"> International Union for the Conservation of Nature (IUCN) Red List of Threatened Species
European	<ul style="list-style-type: none"> Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna (The Habitats Directive) Water Framework Directive (WFD) 2000/60/EC of the European Parliament Environmental Impact Assessment (EIA) Directive (2014/52/EU) on assessing the potential effects of projects on the environment
Scottish	<ul style="list-style-type: none"> Wildlife and Countryside Act 1981 (as amended) (WCA); The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended); The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017; National Planning Framework 4²²; Scotland's National Marine Plan²³; Scottish Biodiversity List (SBL)²⁴ Priority Marine Features (PMFs) list²⁵ Scotland's Biodiversity Strategy to 2045²⁶
Planning Policy & Other Advice Documents	<ul style="list-style-type: none"> Marine Biosecurity Planning Guidance²⁷ The Inner Moray Firth Local Development Plan (2015)²⁸; and Highland Nature Biodiversity Action Plan (2021 to 2026)²⁹ CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, Version 1.2

²² Available at: <https://www.gov.scot/publications/national-planning-framework-4-revised-draft/> (Accessed 16/01/2023)

²³ Scottish Government (2015) Scotlands Marine Plan, A Single Framework for Managing our Sea. Available online at: <https://www.gov.scot/publications/scotlands-national-marine-plan/> (Accessed 11/01/2023).

²⁴ Available at: <https://www.nature.scot/doc/scottish-biodiversity-list> (Accessed 16/01/2023)

²⁵ Available at: <https://www.nature.scot/doc/priority-marine-features-scotlands-seas-habitats> (Accessed 16/01/2023)

²⁶ Available at: <https://www.gov.scot/publications/scottish-biodiversity-strategy-2045-tackling-nature-emergency-scotland/documents/> (Accessed 16/01/2023)

²⁷ Payne, R.D., Cook, E.J. and Macleod, A. (2014). Marine Biosecurity Planning – Guidance for producing site and operation-based plans for preventing the introduction of non-native species. Report by SRS Ltd. in conjunction with Robin Payne to the Firth of Clyde Forum and Scottish Natural Heritage. Available online at: https://www.webarchive.org.uk/wayback/archive/20210929132843mp_/https://www.nature.scot/sites/default/files/2019-02/Marine%20Biosecurity%20Planning.pdf (Accessed 11/01/2023)

²⁸ Available at: <https://www.highland.gov.uk/downloads/file/15008/adopted-inner-moray-firth-local-development-plan> (Accessed 26/03/2024)

²⁹ Available at: <https://www.highlandenvironmentforum.info/biodiversity/action-plan/> (Accessed 26/03/2024)

³⁰ NBN Atlas occurrence download at [NBN Atlas](https://www.nbnatlas.org/) accessed on 22/01/2024.

6.4 Methodology

6.4.1 Desk Study

In order to anticipate the potential ecological sensitivities at the site, a desk study was conducted in January 2024. The following sources were checked:

- Highland Biological Recording Group (HBRG) for records of species up to 10km from the site;
- NBN Atlas³⁰ for commercially available records of Priority Marine Features up to 10km from the site;
- The National Marine Plan Interactive (NMPi)³¹ for Priority Marine Features up to 10km from the site;
- NatureScot Sitelink website³² for statutory designated sites up to 10km from the site.
- The Inner Moray Firth Local Development Plan (LDP)³³ for non-statutory designated sites up to 2km from the site;
- Records of ancient woodland and Scottish native woodland available through Scotland's Environment Web³⁴, within or adjacent to the site;
- The Scottish Biodiversity List³⁵ for Priority Habitats and Species;
- The National Marine Plan interactive map for Priority Marine Features (PMFs)³⁶ within 2km of the site;
- Highland Nature Biodiversity Action Plan (LBAP)³⁷ for Local Priority Habitats and Species;
- A search for Buglife, B-Lines and Important Invertebrate Areas (IIA) within 2km of the site;
- Aerial imagery from Google Earth³⁸; and
- Review of the PON East Quay Environmental Impact Assessment Report (EIAR)³⁹ for data relating to species and habitats.

6.4.2 Field Studies

A Preliminary Ecological Appraisal was undertaken by EnviroCentre Ecologist Mhairi Mackintosh, who is a Full member of the Chartered Institute of Ecology and Environmental Management (MCIEEM). The survey was designed using the guidelines endorsed by NatureScot and CIEEM⁴⁰. The surveys focussed on plants and habitats on the site and those faunal species that are most likely to be found in the habitats which make up the landscape in and around the site. Full details of field survey methods can be found in Technical Appendix 5.1. The survey was undertaken on the 31st October 2023 when conditions were dry and sunny with light winds. The average air temperature was 5°C.

³¹ Available at: <https://marinescotland.atkinsgeospatial.com/nmpi/> (Accessed 18/01/24)

³² Available at: <https://sitelink.nature.scot/map> (Accessed 18/01/24)

³³ Available at: <https://www.highland.gov.uk/downloads/file/15008/adopted-inner-moray-firth-local-development-plan> (Accessed 18/01/24)

³⁴ Available at: <https://www.environment.gov.scot/maps/scotlands-environment-map/> (Accessed 18/01/24)

³⁵ Available at: <https://www.nature.scot/scottish-biodiversity-list> (Accessed 18/01/24)

³⁶ Available at: <https://www.nature.scot/doc/priority-marine-features-scotlands-seas-habitats> (Accessed 18/12/23)

³⁷ Available at: <https://www.highland.gov.uk/downloads/download/2260/highland-nature-biodiversity-action-plan-2021-to-2026> (Accessed 18/01/24)

³⁸ Available at: <https://www.google.com/earth/> (Accessed 18/01/24)

³⁹ Envirocentre (2019) Nigg East Quay Volume 1: Environmental Impact Assessment Report.

⁴⁰ CIEEM (2017) *Guidelines for Preliminary Ecological Appraisal*. 2nd edition. available at: <https://cieem.net/wp-content/uploads/2019/02/Guidelines-for-Preliminary-Ecological-Appraisal-Jan2018-1.pdf>

6.4.3 Evaluation of Important Ecological Features

The evaluations are applied to those sites, habitats and species that have been scoped into the assessment. These are termed Important Ecological Features (IEFs).

European, national and local governments and specialist organisations have together identified a large number of sites, habitats and species that provide the key focus for biodiversity conservation in the UK and Ireland, supported by policy and legislation. These provide an objective starting point for identifying the important ecological features that need to be considered. Table 6-3 shows a procedure for determining the geographical level of importance of site designations, habitats and species. Where a feature is important at more than one level in the table, its overriding importance is that of the highest level. Usually only the highest level of legal protection is listed.

Table 6-3: Geographical Level of IEFs

Level of Importance	Sites	Habitats	Species
International	Designated, candidate or proposed Special Areas of Conservation, Special Protection Areas and Ramsar sites; UNESCO (Ecological) World Heritage Sites; UNESCO Biosphere Reserves; Biogenetic Reserves.	A viable area of habitat included in Annex I of the EC Habitats Directive; a habitat area that is critical for a part of the life cycle of an internationally important species.	A European Protected Species; an IUCN Red Data Book species that is globally Vulnerable, Endangered or Critically Endangered.
National (UK)	Sites of Special Scientific Interest; National Nature Reserve; Marine Conservation Zones (UK offshore).	An area of habitat fulfilling the criteria for designation as an SSSI or MCZ; a habitat area that is critical for a part of the life cycle of a nationally important species. Ancient woodland.	An IUCN Red Data Book species that is Vulnerable, Endangered or Critically Endangered in the UK; a species that is Rare in the UK (<15 10km grid squares); a Schedule 5 (animal) or Schedule 8 (plant) species included in the Wildlife and Countryside Act (WCA) 1981; any species protected under national (UK) legislation where there is the potential for a breach of the legislation; a species that is Vulnerable, Endangered or Critically Endangered in The Vascular Plant Red Data List for Great Britain ⁴¹ .
National (Scotland)	National Parks; Marine Protected Areas; Marine Consultation Areas.	Scottish Biodiversity List (SBL) Priority Habitats and Priority Marine Features (PMFs) ⁴² (Scotland).	Species of principal importance for biodiversity in the relevant countries ⁴³ , including; SBL Priority Species and PMFs (Scotland). Species protected

⁴¹ Cheffings, C.M. & Farrell, L. (eds), Dines, T.D., Jones, R.A., Leach, S.J., McKean, D.R., Pearman, D.A., Preston, C.D., Rumsey, F.J., Taylor, I. (2005) *The Vascular Plant Red Data List for Great Britain. Species Status No. 7*. JNCC, Peterborough. Available at: <https://hub.jncc.gov.uk/assets/cc1e96f8-b105-4dd0-bd87-4a4f60449907> (accessed 18/01/2024)

Level of Importance	Sites	Habitats	Species
			under the Marine Scotland Act 2010.
Regional	Regional Parks (Scotland).	Regional Local Biodiversity Action Plan habitats noted as requiring protection.	A species that is Nationally Scarce in the UK (present in 16-100 10km grid squares); a species that is included in the Regional LBAP; an assemblage of regionally scarce species.
County / Metropolitan	Woodland Trust Sites; Royal Society for the Protection of Birds Sites; Scottish Wildlife Sites.	County LBAP habitats noted as requiring protection; semi-natural	A species that is included in the County LBAP; an assemblage of species that are scarce at the county level.
Local		Semi-natural, ancient woodland <0.25ha in extent; semi-natural habitats that are unique or important in the local area.	Species as defined by Local Authority lists (if available).
Site		Common and widespread habitats not covered above.	Common and widespread species not covered above.
Negative			An Invasive Non-Native Species (INNS) as defined by the GB Non-Native Species Secretariat (NNSS) and supported by the GB Invasive Non-native Species Strategy (2015).or listed within PoCF Ballast Water Policy.

6.4.4 Impact Assessment

The assessment of impacts describes how the baseline conditions would change as a result of the project and its associated activities and from other developments. The term 'impact' is used commonly throughout the EIA process and is usually defined as a change experienced by a receptor (this can be positive, neutral or negative). The term 'effect' is commonly used at the conclusion of the EIA process and is usually defined as the consequences for the receptor of an impact after mitigation measures have been taken into account. The EIA Regulations specifically require all likely significant effects to be considered. Therefore, impacts and effects are described separately and the effects for the IEFs are assessed as being either significant or not according to the importance and sensitivity of the IEF.

Significant cumulative effects can result from the individually insignificant but collectively significant effects of actions taking place over a period of time or concentrated in a location, for example:

- Additive / incremental;

⁴² In July 2014, Scottish Ministers adopted a list of 81 priority marine features (PMFs) – many of which are features characteristic of the Scottish marine environment. Most are on other conservation status lists so may be valued higher than this.

⁴³ These are all the species that were identified as requiring action in the UKBAP and continue to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework, including any additions.

- Associated / connected.

Assessment Criteria – Magnitude

The CIEEM guidance states that when describing changes/activities and positive or negative impacts, reference should be made to the following parameters where relevant:

- Magnitude;
- Extent;
- Duration;
- Reversibility; and
- Timing and frequency.

Magnitude refers to the size, amount, intensity and volume of an impact, determined on a quantitative basis if possible, but typically expressed in terms of relative severity, such as major, moderate, low or negligible. Extent, duration, reversibility, timing and frequency of the impact can be assessed separately but they tie in to determine the overall magnitude.

Criteria for describing the magnitude of an impact are presented in Table 6-4 below:

Table 6-4: Criteria for Describing Magnitude of Impact

Magnitude	Description
Major	Total or major loss or alteration to the IEF, such that it will be fundamentally changed and may be lost from the site altogether; and/or loss of a very high or high proportion of the known population or range of the IEF.
Moderate	Loss or alteration to the IEF, such that it will be partially changed; and/or loss of a moderate proportion of the known population or range of the IEF.
Low	Minor shift away from the existing or predicted future baseline conditions. Change arising from the loss or alteration will be discernible but the condition of the IEF will be similar to the pre-development conditions; and/or having a minor impact on the known population or range of the IEF.
Negligible	Very slight change from the existing or predicted future baseline conditions. Change barely discernible, approximating to the 'no change' situation; and/or having a negligible impact on the known population or range of the IEF.

Assessment Criteria – Significance

Significance is a concept related to the weight that is attached to effects when decisions are made. For the purposes of EclA, a 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for IEFs. In broad terms, significant effects encompass effects on the structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution).

Significant effects are quantified with reference to an appropriate geographic scale (see section 6.4.1 above). The CIEEM guidance has one 'level of importance' and a geographical 'scale of significance'. This is to deal with the fact that the geographical scale at which the effect is significant is not necessarily the same as the geographic level of importance of the IEF.

A sensitivity scale is used to assist in the determine the significance of effects, as shown in

Table 6-5:

Table 6-5: Sensitivity of Important Ecological Features

Sensitivity	Definition
High	Tolerance: The IEF has a very limited tolerance of the effect.
	Adaptability: The IEF is unable to adapt to the effect.
	Recoverability: The IEF is unable to recover, resulting in permanent or long term (>10 years) change.
Medium	Tolerance: The IEF has limited tolerance of the effect.
	Adaptability: The IEF has limited ability to adapt to the effect.
Low	Recoverability: The IEF is able to recover to an acceptable status over the medium term (5-10 years).
	Tolerance: The IEF has some tolerance of the effect.
Negligible	Adaptability: The IEF has some ability to adapt to the effect.
	Recoverability: The IEF is able to recover to an acceptable status over the short term (1-5 years).
	Tolerance: The IEF is generally tolerant of the effect.
Negligible	Adaptability: The IEF can completely adapt to the effect with no detectable changes.
	Recoverability: The IEF is able to recover to an acceptable status near instantaneously (<1 year).

Consideration of conservation status is important for assessing the significance of effects of impacts on individual habitats and species. The Habitats Directive provides a helpful definition of conservation status for habitats and species (as defined by Articles 1(e) and 1(i)):

For habitats, conservation status is determined by the sum of the influences acting on the habitat and its typical species, that may affect its long-term distribution, structure and functions as well as the long-term survival of its typical species within a given geographical area; and

The conservation status of natural habitats will be taken as 'favourable' when:

- i. its natural range, and areas it covers within that range, are stable or increasing, and*
- ii. the species structure and functions, which are necessary for its long term maintenance, exist and are likely to continue to exist for the foreseeable future, and*
- iii. the conservation status of its typical species is favourable as defined in Article 1(i).*

For species, conservation status is determined by the sum of influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within a given geographical area.

The conservation status of species will be taken as 'favourable' when:

- i. population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and*
- ii. the natural range of the species is neither being reduced for the foreseeable future, and*
- iii. there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.*

The scientific evidence gathered during the assessment process is used along with professional judgement where appropriate to determine the significance of effects according to the guidance above. Where it is not possible to justify a conclusion of no significant effect, a significant effect is assumed based on the Precautionary Principle.

Assessment Criteria – Confidence in Predictions

CIEEM does not cover levels of confidence in predictions adequately, therefore a simple, qualitative index based on professional judgement is assigned to each predicted effect as follows:

- A: high confidence.
- B: intermediate confidence.
- C: low confidence.

Factors influencing confidence include:

- The frequency and effort of field sampling;
- Constraints to the field survey;
- The completeness of the data (field and desk);
- The age of the data (although recent data are not necessarily always more reliable than old data);
- The state of scientific knowledge relating to the predicted effects of development activities on the IEF (the accuracy of the magnitude assessment); and
- The accuracy of the assessment of significance.

Assessment Criteria – Success of Mitigation

The word ‘mitigation’ has developed a wider meaning and common usage in environmental assessment than its strict meaning related to reducing the severity of something. Mitigation can sometimes be used as a generic term for a wide range of counter-acting measures, all of which, as the Directive and Regulations prescribe, are intended to *prevent, reduce and where possible offset any significant adverse effect on the environment*. Mitigation can be used to encompass measures intended to avoid, minimise or compensate for adverse effects (this is the ‘mitigation hierarchy’).

Mitigation and compensation measures often carry a degree of uncertainty. Uncertainty associated with a design will vary according to a number of factors, such as:

- The technical feasibility of what is proposed;
- The overall quantity of what is proposed;
- The overall quality of what is proposed;
- The level of commitment provided to achieve what is proposed;
- The provision of long-term management; and
- The timescale for predicted benefits.

The following objective scale is used for the success of mitigation:

- Certain/near certain: probability estimated at 95% chance or higher.
- Probable: probability estimated above 50% but below 95%.
- Unlikely: probability estimated above 5% but less than 50%.
- Extremely unlikely: probability estimated at less than 5%.

6.5 Baseline

6.5.1 Designated Sites

The location of the designated sites in relation to the proposed works can be seen in Drawing No 677964-GIS008, Volume 2 of this EIAR.

⁴⁴ Cheney, B., Graham, I.M., Barton, T.R., Hammond, P.S. & Thompson, P.M. 2018. Site Condition Monitoring of bottlenose dolphins within the Moray Firth Special Area of Conservation: 2014-2016. Scottish Natural Heritage Research Report No. 1021.

Moray Firth SAC

The Moray Firth SAC comprises an area of 151,274ha. It extends from the estuary north of Inverness, along the eastern coast to Lossiemouth and the northern coast to Helmsdale. The qualifying features for this site are subtidal sandbanks and bottlenose dolphins.

The sandbank feature is currently assessed as being in favourable condition within the SAC. The wider conservation status within Britain is assessed as being unfavourable – bad. Accordingly the distribution of sub-tidal sandbanks available on the NMPi was reviewed and the nearest sandbank location within the SAC is c.800m to the south east of the site. The general distribution of sandbanks within the Cromarty Firth is shown in Figure 6-1 below.

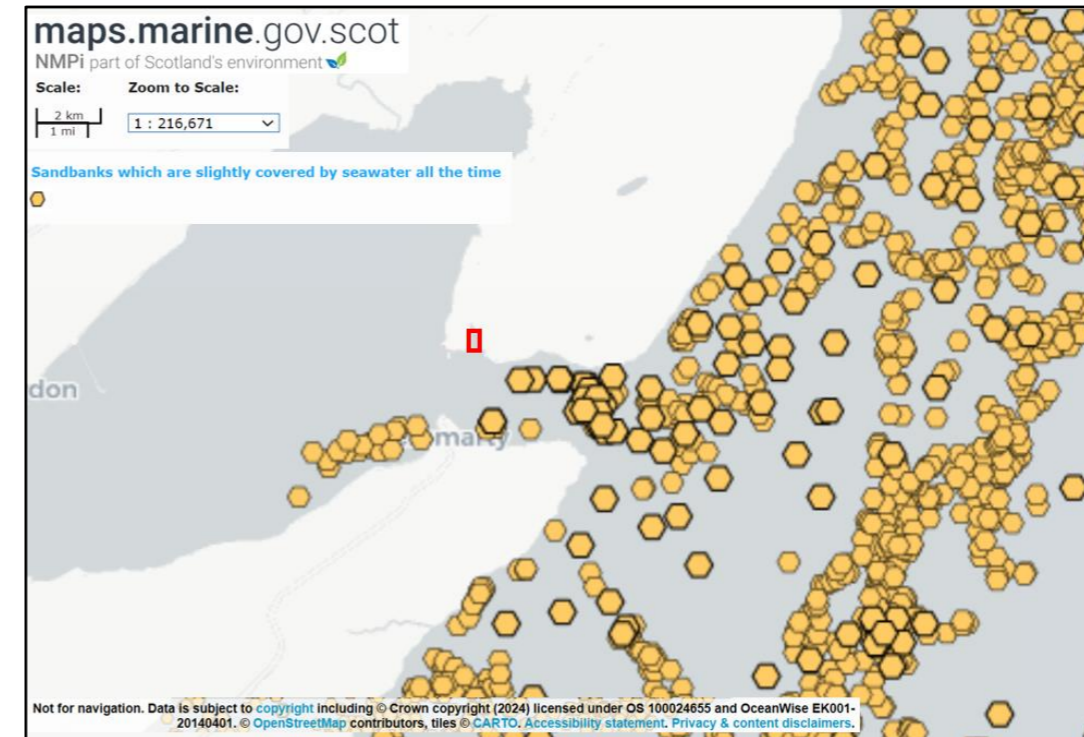


Figure 6-1: Location of sub-tidal sandbanks in proximity to the site (shown in red). Data reproduced from the NMPi, data provided by NatureScot.

The bottlenose dolphin feature are also assessed as being favourable maintained. The Moray Firth SAC supports the only known resident population of bottlenose dolphin in the North Sea and is one of only two UK sites designated for the species as a primary qualifying feature. The north east of Scotland population is estimated to comprise approximately 200 individuals. Bottlenose dolphins are present within the Moray Firth year round, although abundance and distribution varies between summer and winter with the number of animals peaking in the summer months; and animals appearing more dispersed and ranging further down the east coast in winter. Although dolphins are found throughout the Moray Firth they seem to prefer certain parts of the Inner Firth, the southern Moray Firth coastline and the mouth of the Cromarty Firth. The population also ranges outside of the Moray Firth, with small groups regularly occurring off the Aberdeenshire, Fife and East Lothian coasts and occasionally as far as Northumberland.

The latest site condition monitoring survey⁴⁴ found that:

- Mark-recapture photograph analysis indicated that the estimated number of individual dolphins using the SAC during the summer of 2016 was 103, which is over half of the estimated 200 bottlenose dolphins which frequent the coastal North Sea off Scotland.
- Despite inter-annual variability, the number of animals using the SAC between 2001 and 2016 appears to be stable.
- A Bayesian capture-recapture⁴⁵ assessment of the total abundance of the east coast population suggests that this population is increasing.
- During the period of 2001-2015, >50% of the population used the SAC in most years.
- There was a summer peak occurrence at all Passive Acoustic Monitoring (PAM) sites (in particular the site at The Sutors), however dolphins were also frequently present during the winter months.
- The east coast of Scotland bottlenose dolphin population remains small and potentially vulnerable. Nevertheless, as a result of the data collected, it was assessed that no change be made to the SAC condition status (Favourable (recovered)). This was also the case according to the previous assessment in 2010.

Dornoch Firth and Morrich More SAC

The Dornoch Firth and Morrich More SAC encompasses the entire Dornoch Firth as far as Bonar Bridge in the west to where it meets the North Sea in the east. Along the coast it spans from Dornoch in the north towards Portmahomack in the south. The total area is 8701.22ha.

The harbour seal feature is classed as being in unfavourable, declining condition. The seals within the SAC are part of the wider Moray Firth Seal Management Unit (SMU). The latest aerial survey count⁴⁶ shows that there is a trend for decreasing numbers within the SAC but these seals appear to be utilising habitat elsewhere within the SMU such as Culbin sands which is now the main haul out area. The Dornoch Firth SAC supports around 6% of the SMU population.

Cromarty Firth SPA

The Cromarty Firth SPA comprises intertidal habitats along the Cromarty Firth from the Souters in the east to the mouth of the River Conon at Conon Bridge in the west. The site is 3248 ha.

The Bar-tailed Godwit feature is assessed as being in favourable condition. The Common Tern feature is assessed as being in unfavourable, declining condition and the waterfowl assemblage is in favourable condition. Key pressures noted for all these features is recreation/disturbance.

Moray Firth SPA

The Moray Firth SPA includes the Beaully and Moray Firths in the west and stretches eastward to Portsoy in the south. In the north it encompasses the mouth of the Dornoch Firth and the coastline up to Berriedale. It includes a variety of coastal and marine habitats that provide an important foraging resource for the wintering sea birds and breeding shags, for which it is designated.

The condition assessment for the features which have been scoped in for further assessment can be found in

Table 6-6 below.

⁴⁵ The Bayesian mark-recapture method is undertaken to estimate the population of bottlenose dolphins along the entire coastline; and uses a similar approach to the mark-recapture method; however only uses information on whether or not an individual was seen in each year.

Table 6-6: Condition Assessment Summary of Moray Firth SPA designated features scoped in for further assessment

Species	Condition Assessment	Associated Negative Pressures
Red-throated Diver	Favourable, maintained	Game/fisheries management Natural event Other Recreation/disturbance
Slavonian Grebe	Favourable, maintained	Natural event Other Recreation/disturbance
Scaup	Unfavourable, declining	-
Common Eider	Favourable, declining	Plants, pests and disease
Long-tailed Duck	Favourable, declining	Climate change Game/fisheries management Other Plants, pests and diseases
Common Scoter	Favourable, maintained	Game/fisheries management Natural event Other Recreational/disturbance
Velvet Scoter	Unfavourable, declining	Other
Common Goldeneye	Unfavourable, declining	Climate change
Red-breasted Merganser	Favourable, maintained	-

Cromarty Firth SSSI

The Cromarty Firth SSSI covers the same area as the Cromarty Firth SPA.

The sandflat and mudflat habitats are assessed as being in favourable, maintained condition with invasives species being listed as the only negative pressure. The saltmarsh habitat is in favourable but declining condition with negative pressures including; agricultural operations, climate change, development and over grazing.

The non-breeding bird features are all assessed as being of favourable maintained condition apart from Whooper Swan which are unfavourable, no change. Negative pressures include recreation/disturbance for most apart from Whooper Swan which lists other.

6.5.2 Prediction of Future Baseline

In terms of the future baseline of the designated sites, it may reasonably be expected that those features which are assessed as unfavourable declining, or favourable declining may continue to decline. Particularly where declines are being caused by natural changes in distribution (such as harbour porpoise in the Dornoch Firth) in relation to climate or other factors not related to the suitability of the designated sites themselves.

⁴⁶ Morris, C.D., Duck, C.D., and Thompson, D. 2021. Aerial surveys of seals in Scotland during the harbour seal moult, 2016-2019. NatureScot Research Report 1256.

6.5.3 Evaluation

The evaluations have been applied only to those designated sites, habitats and species that have been scoped into the assessment and those where there is the potential for impacts that could result in significant adverse ecological effects as a result of the proposed development. The IEFs and the evaluations are presented in Table 5-7 below.

Table 6-7: Evaluation of Important Ecological Features

IEF	Present on site?	Present in wider area?	Importance	Justification
Moray Firth SAC	N	Y	International	European designated site
Dornoch Firth and Morrich More SAC	N	Y	International	European designated site
Cromarty Firth SPA	N	Y	International	European designated site
Moray Firth SPA	N	Y	International	European designated site
Cromarty Firth SSSI	N	Y	National (UK)	Site designated under national legislation

6.6 Impact Assessment

The following section should be read in conjunction with Technical Appendix 6-2: Shadow Habitat Regulations Appraisal, Volume 3 of this EIAR.

6.6.1 Moray Firth SAC

Sandbanks

The sandbank habitat could be impacted during the construction phase of the works through increased sedimentation within the water column as a result of removal of rock armour and construction of the temporary piling platform. Any sediment arising from construction activities would be temporary and is unlikely to have any long term effects on sandbank habitats. Impacts in relation to water quality via sedimentation are assessed within Chapter 7, Section 7.7.2 and it is considered that the magnitude of such an impact would be low in the immediate works area and negligible outside of this. Given the nearest sandbank is c.800m from the proposed works it would fall into the area of negligible impacts to water quality. Effects on sandbank habitat are therefore likely to be negligible.

The habitat could also be affected by pollution events such as fuel or oil spills or materials such as cement entering the water either during the construction phase or operation of the quay. This could result in loss or alteration of composition of species present within the habitat. The magnitude would vary depending on the severity of the pollution event and could range from low to high. The impact would be temporary but effects on species within the sandbank habitat could range in duration depending on the type of pollutant and the magnitude of the impact.

The sandbank habitat could also be impacted via the introduction and/or spread of mINNS either during construction or operation of the Quay. This may affect the diversity and distribution of typical species associated with the habitat. The impact would be long term and one which is difficult to reverse. Depending on the nature of the species introduced and how many introductions there are the impacts could be of low to high magnitude.

Overall impacts are considered to be of **negligible to high magnitude**. The IEF is considered to have **medium sensitivity** to impacts relating to pollution and sedimentation of water and **high sensitivity** to impacts relating to mINNS. Confidence in the assessment is high.

⁴⁷ Data set available here: <https://marine.gov.scot/node/14617>

Bottlenose Dolphin

Bottlenose dolphins could also be impacted by reduced water quality due to sedimentation or pollution as described in the previous section. This would likely result in avoidance of the affected areas. Individuals directly impacted by pollution could suffer injury, loss of fitness, or in extreme circumstances, death. They may also be impacted indirectly by eating prey items which have been affected, this would likely lead to loss of fitness. The impacts would be temporary and for water sedimentation, highly localised to the works area. Pollution events could affect a wider area but still likely to affect a relatively small area of the habitat bottlenose dolphins utilise. The number of individuals within the population likely to be affected is therefore likely to be small.

Increased numbers of vessels utilising the quay during construction and operation could result in increased collision risk for dolphins. Overall, the number of additional vessels is predicted to be negligible. The majority of construction materials will be delivered by road, with only the piles expected to be delivered by sea. The impact during construction would be temporary and of short duration.

The increase in vessel calls to the port once it is in operation is expected to be c. 20 vessels annually, against a baseline of 250-350 vessels currently.

The baseline level of vessel movements is relatively high in and around the port. Figure 6-2 below shows the annual average vessel density for all vessel types, within the vicinity of the site.

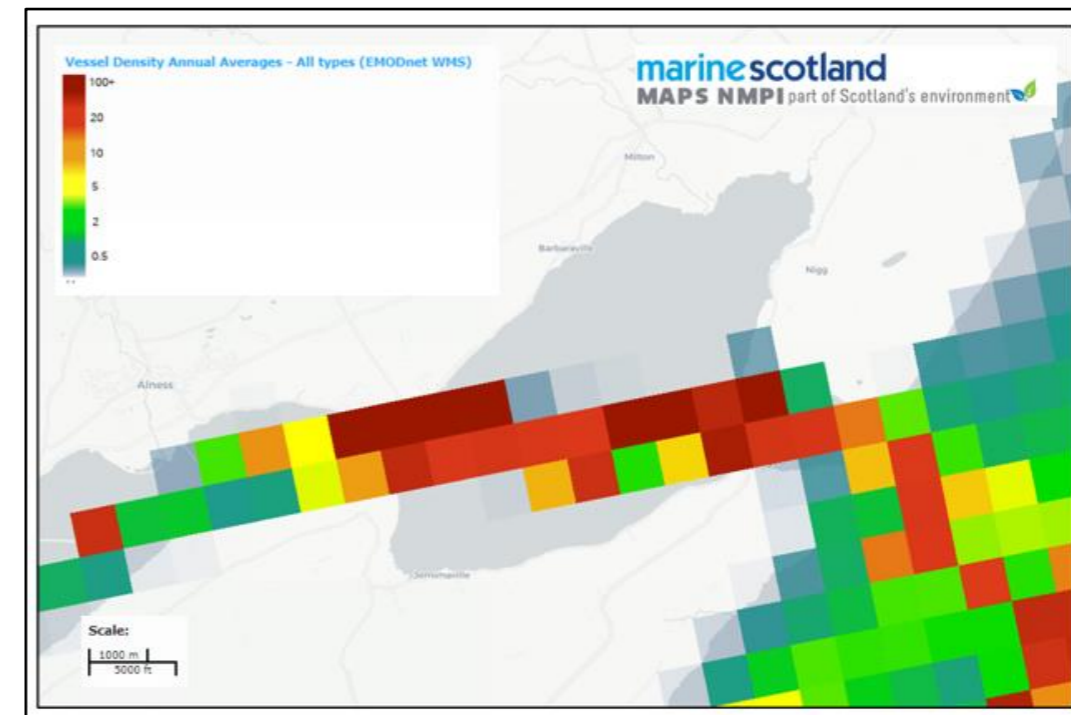


Figure 6-2: Annual average vessel density based on vessel Automatic Identification System data. Image taken from the National Marine Plan Interactive map⁴⁷.

Overall impacts relating to water quality are considered to be of **negligible to low magnitude** with the IEF having **negligible to low sensitivity**.

With regards to vessel movements, the impact is of **negligible magnitude** and the IEF is considered to have **negligible sensitivity**.

Confidence in the assessments is high.

6.6.2 Dornoch Firth and Morrich More SAC

Anticipated impacts to the harbour seal feature of the SAC are as described for bottlenose dolphin. With regards to vessel movements, a 2016 study which looked at telemetry data from seals showed that the seals tracked from the Dornoch Firth SAC did not enter into the Cromarty Firth but utilised the coastline to the east to travel between the Dornoch Firth and haul out sites within the Moray Firth⁴⁸. However, there were high levels of co-occurrences with vessels at the entrance to the Cromarty Firth. Generally, the study found no correlation between areas of high co-occurrence of vessels and seals and areas where injured seals had been reported. They also didn't find evidence of seals actively avoiding vessels.

There is potential for above ground noise to also affect seals at haul out sites, however the overground noise assessment presented in Technical Appendix 5.1: Noise Assessment, concluded that there would not be any significant increase in noise levels, even at receptors within a couple of meters of the port entrance. No haul out sites within the SAC or otherwise would therefore be affected.

Impacts to seals relating to water quality are considered to be of **negligible to low magnitude** and the IEF is considered to have **negligible to low sensitivity**.

With regards to vessel movements, the impact is of **negligible magnitude** and the IEF is considered to have **negligible sensitivity**.

Confidence in the assessment is high.

6.6.3 Cromarty Firth SPA

Suspended sediments could affect species within the SPA which utilise open water in the vicinity of the site for loafing or foraging. Increased sediment in the water could decrease foraging success and/or availability of prey. Impacts would be temporary and of short duration and so unlikely to affect the overall conservation status of any of the species present.

Pollution could directly affect individuals utilising the waters or coastal habitats within the vicinity of the site resulting in injury, death and loss of fitness or indirectly through affected food resources. Impacts would be temporary but duration would vary depending on the type of pollutant and how long it persists in the environment.

There is potential for mINNS to affect availability and distribution of forage and prey species for many of the birds associated with the SPAs too. Depending on the extent of area where prey and forage species are affected, distribution of bird species may be affected as well as the function of the supporting habitat. Introduction of mINNS would be a long term impact and one which is difficult to reverse.

Above ground noise and visual disturbance associated with construction is considered to be unlikely to affect any of the bird species present as they will be habituated to existing port activities and a significant increase in noise is not anticipated.

The impacts described are likely to be limited to the Nigg Bay area of the SPA. It should be noted that this is also an RSPB reserve. Whilst it is one of the most extensive areas for roosting and foraging birds within the SPA, there are areas of alternative habitat which can also be utilised.

For Common Tern which are migratory species and breeding species, effects would only be possible if impacts occur during the summer months. Common Terns are known to nest on the west side of the of the Port of Nigg,

which is over 400m from the proposed works. This is out with the recommended disturbance buffer for this species (200-400m).

Impacts to the SPA relating to water quality are considered to be of **low to moderate magnitude** with the IEF being of **low sensitivity**.

Impacts relating to mINNS are considered to be of **low to moderate magnitude** (depending on the species introduced and the extent of spread), with the IEF having **low sensitivity**.

Overall confidence in the assessment is moderate. The most recent available data has been used to inform the assessment and so assumptions have been made as to how species from the SPA utilise the habitats in and around the development site.

6.6.4 Moray Firth SPA

Given the distance between the site and the SPA it is considered unlikely that there will be impacts to birds or habitats within the SPA boundary, however the species are mobile and may utilise open water within the vicinity of the site for foraging and loafing which could be impacted by sedimentation of water or a pollution event.

Individuals could be affected by temporary reduction in foraging success or availability of prey as a result of suspended sediment. Pollution could directly affect individuals utilising the waters within the vicinity of the site resulting in injury, death and loss of fitness or indirectly through affected food resources. Impacts would be temporary, but duration would vary depending on the type of pollutant and how long it persists in the environment.

mINNS could also affect the availability of foraging resources outside of the SPA.

Although small numbers of individuals could be impacted, as the predicted area of impact is outside of the SPA, key areas for foraging, loafing and roosting are expected to be maintained and so effects are unlikely at the population level. As the designated features scoped in for assessment are all non-breeding, high numbers will only be present for part of the year which further reduces the potential for exposure to impacts.

Impacts to the SPA relating to water quality are considered to be of **negligible to low magnitude** with the IEF being of **low sensitivity**.

Impacts relating to mINNS are considered to be of **negligible to low magnitude** (depending on the species introduced and the extent of spread), with the IEF having **low sensitivity**.

Overall confidence in the assessment is moderate. The most recent available data has been used to inform the assessment and so assumptions have been made as to how species from the SPA utilise the habitats in and around the development site.

6.6.5 Cromarty Firth SSSI

The habitats within the SSSI could be impacted via pollution. This could kill or alter the distribution or composition of species within the habitat. The impact would be temporary and the duration dependent on the type of pollutant.

Similarly, introduction of mINNS could also result in the change of distribution or composition of constituent species within the habitat.

⁴⁸ J Onoufriou, E Jones, G Hastie and D Thompson. (2016). Investigations into the interactions between harbour seals (*Phoca vitulina*) and vessels in the inner Moray Firth. Scottish Marine and Freshwater Science Vol 7 No 24, 40pp. DOI: 10.7489/1805-1.

The closest area of habitat to the site is c.600m round the coast and so it is thought that any increased sediment as a result of the proposed construction works would have dissipated to levels which would have negligible effects.

The bird species designated as part of the SSSI overlap with the SPA birds which have been assessed in Section 6.6.3.

Impacts to the habitats within the SSSI are considered to be of **negligible to moderate magnitude** with the IEF being of **medium sensitivity**.

Impacts to the ornithological features are of **negligible to low magnitude** with the IEF being of **low sensitivity**.

Confidence in the assessment of habitat features is high. Confidence in the assessment of ornithological features is moderate.

6.7 Cumulative Impact Assessment

In the pre-application advice, the Highland Council have highlighted other Port and Harbour developments within the Inner Moray Firth area which should be considered in relation to the Moray Firth SAC. The following project has recently been consented and is located immediately to the east of the site:

- Sumitomo Electrics High Voltage Cable Manufacturing Facility – Erection and operation of cable manufacturing plant, 500m north of Nigg Welding School, Nigg, Tain. (23/04662/FUL).

NatureScot's planning response (CDM 172765) to the Sumitomo Electrics cable manufacturing facility stated that there would be LSE on the Cromarty Firth SPA, particularly in relation to Osprey but these could be avoided with mitigation. It was not anticipated that there would be any effects to other designated sites as a result of the works.

The pre-application advice also recommend that consideration is given to any offshore floating windfarm related activities which the quay development will facilitate in relation to the SPA, particularly activities which could pose a collision risk with birds. This might include dockside assemblage of turbines, 'wet storage' of turbines and turbine testing. It is anticipated that the primary use for the new quay will be relating to the loading of cables. For the reasons provided in Section 5.2.1, no additional activities relating to wet storage, wind turbine assembly and testing are envisaged at this time.

In general, other similar ports and harbour developments within the wider Moray Firth area could result in cumulative impacts. If construction phases occur concurrently then additive cumulative effects may occur. If the construction phases are sequential then the period receptors are exposed to impacts may be prolonged. Any developments resulting in increased vessel movements would result in cumulative effects for marine mammals in particular.

6.8 Mitigation and Monitoring

6.8.1 Mitigation

It is anticipated that potential impacts described above will be avoided by implementation of standard best practice mitigation measures. These would include the environmental management measures identified in Section 2.5.13.

In addition to this it is also recommended that the following measures are implemented/and or are included in the above documents during the construction phase:

- An independent Ecological/Environmental Clerk of Works (ECoW) will be employed to audit and report on adherence to the CEMP as well as any other relevant planning consents, environmental permits, legislation and mitigation.
- The following good practice guidelines shall be adhered to and incorporated into the CEMP:
 - GPP 5: Works and maintenance in or near water;
 - GPP 6: Working on construction and demolition sites;
 - PPG 7: Safe Storage – The safe operation of refuelling facilities;
 - GPP 21: Pollution incident response planning; and
 - GPP 22: Dealing with spills.
- All personnel on the site should be made aware of the environmental sensitivities of the site (proximity to designated sites) via the site induction and additional task specific toolbox talks as required.
- The principal contractor will produce and implement a biosecurity plan throughout the duration of works. This will include the cleaning of equipment and plant machinery prior to deployment to reduce the risk of transmitting non-native and invasive species. The plan will form part of the CEM Plan which will be submitted to the planning authority and other relevant consultees for approval prior to works commencing and implementation would be audited by the ECoW.
- A strict speed limit for onshore traffic of 15 mph will be implemented on site to reduce risk of collision with protected species.

We understand there are existing controls in place which will reduce the likelihood of negative impacts occurring offshore, however the responsibility for these sits with 3rd parties and are not within the control of the Port of Nigg. These include the implementation of industry standard ballast water management practices⁴⁹ which are the responsibility of vessel owners and captains. Vessels approaching the port will be using established shipping lanes with speed restrictions in place under the control of the PoCF.

It is considered that if the above mitigation is implemented it will be sufficient to avoid any adverse effects to the favourable conservation status of any of the qualifying features identified as being potentially impacted by works.

6.8.2 Biodiversity Enhancement

In order to meet NPF4 Policy 3 the development is required to deliver biodiversity enhancements which increase connectivity to habitats in the wider landscape. In order to demonstrate the developments ability to meet this criteria a Biodiversity Net Gain Assessment was conducted using the DEFRA Biodiversity Statutory Metric Tool. The full methodology and results can be found in Technical Appendix 6-3: Biodiversity Net Gain Assessment and Biodiversity Enhancement and Management Plan.

The baseline habitat within the site is all classified as developed land, sealed surface with a secondary code for ports and harbours, which is of limited value to wildlife. Following development, the same habitat type will be present meaning there is no overall loss or gain of habitat units within the site. In order to provide enhancements, an area of greenspace within the wider PON landownership will be improved. This is currently assessed as being other neutral grassland in moderate condition. Actions detailed within the Biodiversity Enhancement and Management Plan (BEMP) should increase the condition to good. Doing this will provide an additional 1.29 habitat units or a 35% net gain.

Further improvements could be made for invertebrates through the installation of invertebrate shelters or bug hotels within the area of neutral grassland. Encouraging use of the area by invertebrates can increase foraging provision for species such as bats and birds present within the wider locale.

The proposed grassland improvement area will connect to coastal grassland habitats to the north and east of the site.

⁴⁹ Available at: <https://www.gov.uk/guidance/control-and-management-of-ballast-water> (Accessed 10/04/2024)

6.8.3 Monitoring

In order to determine if the aims of the BEMP are being met, monitoring of the habitat should be conducted. This should comprise repeating the condition assessment, including collection of quadrat data and fixed photography to assess changes over time.

To assess the impact of the habitat enhancement on the invertebrate assemblage it is also recommended that insect surveys are conducted. Flower-Insect Timed Count (FIT) methodology⁵⁰ employed within the UK Pollinator monitoring scheme is easy and repeatable and could be used to monitor changes in pollinator presence within the habitat.

Following the implementation of management, monitoring should be undertaken annually for the first three years to determine successful establishment. Management and need for further monitoring will be reviewed after each monitoring period.

6.9 Residual Effects

The significance of residual effects considered to be likely, once mitigation has been taken into consideration are summarised in Table 6-8 below.

⁵⁰ <https://ukpoms.org.uk/fit-counts>

Table 6-8: Summary of Impacts on Important Ecological Features

IEF	Importance of IEF	Type of impact	Nature	Source	Duration	Magnitude	Sensitivity	Significance of effect	Confidence	Success of mitigation
Moray Firth SAC	International	Construction negative	Loss or alteration of composition of species present within the sandbank habitat	Pollution or sedimentation. Introduction of mINNS	Short to medium term	Negligible to high	High	Not significant at any geographic level	High	Near certain
Moray Firth SAC	International	Operation negative	Loss or alteration of composition of species present within the sandbank habitat	Pollution or introduction of mINNS	Short to long term	Negligible to high	High	Not significant at any geographic level	High	Near certain
Moray Firth SAC	International	Construction negative	Injury, loss of fitness or death of bottlenose dolphin. Alteration of their distribution within the SAC	Pollution or sedimentation	Short to medium term	Negligible to low	Negligible to low	Not significant at any geographic level	High	Near certain
Moray Firth SAC	International	Construction negative	Injury or death of bottlenose dolphin.	Increased vessel movement	Short term	Negligible	Negligible	Not significant at any geographic level	High	Near certain
Moray Firth SAC	International	Operation negative	Injury, loss of fitness or death of bottlenose dolphin. Alteration of their distribution within the SAC	Pollution	Short to medium term	Negligible to low	Negligible to low	Not significant at any geographic level	High	Near certain
Moray Firth SAC	International	Operation negative	Injury or death of bottlenose dolphin.	Increased vessel movement	Short term	Negligible	Negligible	Not significant at any geographic level	High	Near certain
Dornoch Firth and Morrich More SAC	International	Construction negative	Injury, loss of fitness or death of harbour seal.	Pollution	Short to medium term	Negligible to low	Negligible to low	Not significant at any geographic level	High	Near certain
Dornoch Firth and Morrich More SAC	International	Construction negative	Injury or death of harbour seal.	Increased vessel movements	Short term	Negligible	Negligible	Not significant at any geographic level	High	Near certain
Dornoch Firth and Morrich More SAC	International	Operation negative	Injury, loss of fitness or death of harbour seal.	Pollution	Short to medium term	Negligible to low	Negligible to low	Not significant at any geographic level	High	Near certain
Dornoch Firth and Morrich More SAC	International	Operation negative	Injury or death of harbour seal.	Increased vessel movements	Long term	Negligible	Negligible	Not significant at any geographic level	High	Near certain
Cromarty Firth SPA	International	Construction negative	Injury, loss of fitness or death of individual birds, altered distribution within the SPA and reduced habitat functionality	Pollution, sedimentation and introduction of mINNS	Short to long term	Negligible to low	Low	Not significant at any geographic level	High	Near certain

IEF	Importance of IEF	Type of impact	Nature	Source	Duration	Magnitude	Sensitivity	Significance of effect	Confidence	Success of mitigation
Cromarty Firth SPA	International	Operation negative	Injury, loss of fitness or death of individual birds, altered distribution within the SPA and reduced habitat functionality	Pollution and introduction of mINNS	Short to long term	Negligible to low	Low	Not significant at any geographic level	Moderate	Near certain
Moray Firth SPA	International	Construction negative	Injury, loss of fitness or death of individual birds. Reduced foraging outside of SPA	Pollution and introduction of mINNS	Short to long term	Negligible to low	Low	Not significant at any geographic level	Moderate	Near certain
Moray Firth SPA	International	Operation negative	Injury, loss of fitness or death of individual birds. Reduced foraging outside of SPA	Pollution and introduction of mINNS	Short to long term	Negligible to low	Low	Not significant at any geographic level	Moderate	Near certain
Cromarty Firth SSSI	National (UK)	Construction negative	Death, change of distribution or composition of constituent species within the habitat	Pollution and introduction of mINNS	Short to long term	Negligible to moderate	Moderate	Not significant at any geographic level	High	Near certain
Cormarty Firth SSSI	National (UK)	Construction negative	Injury, loss of fitness or death of individual birds, altered distribution within the SSSI and reduced habitat functionality	Pollution and introduction of mINNS	Short to long term	Negligible to low	Low	Not significant at any geographic level	Moderate	Near certain
Cromarty Firth SSSI	National (UK)	Operation negative	Death, change of distribution or composition of constituent species within the habitat	Pollution and introduction of mINNS	Short to long term	Negligible to moderate	Moderate	Not significant at any geographic level	High	Near certain
Cormarty Firth SSSI	National (UK)	Operation negative	Injury, loss of fitness or death of individual birds, altered distribution within the SSSI and reduced habitat functionality	Pollution and introduction of mINNS	Short to long term	Negligible to low	Low	Not significant at any geographic level	Moderate	Near certain

6.10 Statement of Significance

There is potential for significant impacts to arise on qualifying features of SACs, SPAs and the Cromarty Firth SSSI which are connected to the site. If no mitigation is implemented there could be adverse effects on the conservation objectives of these sites, however, it is anticipated that any potential impacts can be avoided by the implementation of standard best practice mitigation measures. No impacts to the favourable conservation status of any of the designated sites or their qualifying features is therefore anticipated.

The project will not result in any overall loss of habitat of value to biodiversity and the actions provided within the BEMP will allow for enhancement of off-site habitats (within the same landownership) which will help to build connectivity with existing coastal grassland to the east and north of the site and provide better quality habitat for invertebrates present in the locale. The proposed development therefore meets the requirements of NPF4, Policy 3.

7 TRAFFIC ASSESSMENT

7.1 Introduction

This section of the EIA Report assesses the likely significant environmental effects of the Proposed Development on the surrounding transport network and sensitive receptors with respect to transportation and access.

The assessment methodology and effect significance criteria used are explained, prior to setting out baseline conditions. An assessment of potential effects for the construction phase of the Development is then set out, with mitigation measures prescribed to remove, reduce or offset any potential adverse effects as far as possible. Residual effects are then assessed, taking into account any necessary mitigation measures.

This assessment has been undertaken by ECS Transport Planning Ltd (ECS) and is informed by a Transport Statement (TS), also by ECS (refer to Technical Appendix 7.1, Volume 3 of this EIAR).

7.2 Scoping and Consultation

Scoping discussions were undertaken at the outset of the project with THC to determine the methodology for assessing the effects of the proposed development and details are included within Chapter 3.

7.3 Policy, Legislation and Guidance

The potential effects of traffic generated during the construction stage of the Proposed Development has been assessed with reference to published guidance, consultation and baseline studies. The following guidance documents have formed the basis of the assessment:

- Institution of Highways and Transportation (IHT): ‘Guidelines for Traffic Impact Assessment’, October 1994, (the IHT Guidelines);
- Scottish Government: ‘Transport Assessment Guidance’, 2012, (the SG Guidelines); and
- Institute of Environmental Management and Assessment (IEMA): ‘Environmental Assessment of Traffic and Movement’ 2023, (the IEMA Guidelines).

7.4 Methodology

The methodology utilised for this assessment combines a number of approaches from the aforementioned documents and has been selected to best represent current views and policy trends. The main focus is the effect of changes to traffic flows on the local road network and associated users, and also on neighbouring land uses. In particular, the methodology comprises:

- Review of the existing character of the road network and traffic levels;
- Determination of baseline traffic levels for the commencement of works;
- Estimation of the level of traffic generated during the construction phase;
- Assessment of the potential effects of construction traffic;
- Recommendation of mitigation, where appropriate; and
- Assessment of residual effects, taking any mitigation measures into account.

Quantifying the significance of the traffic effects that result from the Proposed Development depends on several key factors. The main factors influencing the significance of an effect relate to the magnitude of change, taking into account the time frame of change and the number and sensitivity of any sensitive receptors.

For the purposes of this assessment, sensitive receptors are those that could potentially be affected by the traffic movements generated by the development proposals. Examples of sensitive receptors can include residential properties, settlements, schools, or areas of pedestrian and cycle movement.

The criteria used to determine the significance level of traffic associated with the proposals has been sourced from the SG Guidelines. This document states the following regarding perceived traffic impacts:

“The significance of a traffic impact depends not only on the percentage increase of traffic but the available capacity. A 10% increase on a lightly trafficked route may not be significant, whereas a 1% increase on a congested motorway will be”.

The above statement also applies in reverse in terms of environmental effects, i.e. a 10% increase on a lightly trafficked route may not represent a significant capacity issue but could be considered to have a major environmental effect.

The IHT Guidelines state the following in paragraph 3.9.5:

“In general, the impact of marginal changes in traffic on the perceptible environment is less sensitive than changes in traffic flows at junctions in the surrounding network. It is recommended that the following criteria should be adopted to assess whether particular links in the network should be subject to environmental assessment:

- *Include traffic links where traffic flows will increase by more than 30% in the opening year as a result of development traffic;*
- *Include any other sensitive areas affected by traffic increases of at least 10%, or similar changes in HGV movements.”*

Similarly, the IEMA Guidelines make reference to the above as two broad rules that can be used as a screening process to delimit the scale and extent of the assessment. Increases in traffic which amount to less than 10% of the baseline flows are generally considered to have a negligible impact on the road network given that daily fluctuations equal to this figure can occur.

For the purposes of this assessment, the significance of effects has been assessed based on the above guidance and also on the local characteristics of the road network using professional judgement and experience of similar developments.

The sensitivity of receptors to traffic effects was evaluated on a scale of Negligible, Minor, Moderate and Major as detailed in Table 7-1.

Table 7-1: Sensitivity of Receptor

Sensitivity	Examples of Receptors
Major	The receptor / resource has little ability to absorb change without fundamentally altering its present character, or is of international or national importance.
Moderate	The receptor / resource has moderate capacity to absorb change without significantly altering its present character, or is of high importance.
Minor	The receptor / resource is tolerant of change without detriment to its character, is of low or local importance.
Negligible	The receptor is unlikely to experience any change.

The criteria for assessing the magnitude of any effects are defined within Table 7-2.

Table 7-2: Magnitude of Effects

Magnitude of effect	Criteria for Assessing Effects
Major	Total loss or major/substantial alteration to key elements / features of the baseline (pre-development) conditions such that the post development character / composition / attributes would be fundamentally changed.
Moderate	Loss or alteration to one or more key elements / features of the baseline conditions such that post development character / composition / attributes of the baseline would be materially changed.
Minor	A minor shift away from baseline conditions. Change arising from the loss / alteration would be discernible / detectable but not material. The underlying character / composition/attributes of the baseline condition would be similar to the pre-development circumstances / situation.
Negligible	Very little change from baseline conditions. Change barely distinguishable, approximating to a 'no change' situation.

The significance of an environmental effect is determined by the combination of sensitivity and magnitude, which can be beneficial or adverse, as set out in Table 7-3.

Table 7-3: Effect Significance Matrix

Magnitude	Sensitivity			
	Major	Moderate	Minor	Negligible
Major	Major	Major	Moderate	Minor
Moderate	Major	Moderate	Minor	Negligible
Minor	Moderate	Minor	Negligible	Negligible
Negligible	Minor	Negligible	Negligible	Negligible

Assumptions have been provided on the likely construction traffic volumes based on information provided by the preferred contractor and experience of similar projects of this scale and complexity. However, it should be recognised that the traffic volumes are estimates given the early stage of the project. Figures will be confirmed within the final Construction Traffic Management Plan (CTMP) once a contractor has been appointed.

The area of influence on the local road network includes the full length of the B9175 between the private quarry access to the south of the site and Tore Roundabout in the north.

7.5 Baseline

7.5.1 Pedestrian and Cycle Access

A footway is present on the eastern side of the B9175 carriageway and extends from circa 1.5km north of the development site to Nigg Ferry Terminal in the south. Due to the location of the site, pedestrian infrastructure is limited, although a core path is present to the east of Nigg Ferry Terminal connecting the B9175 with Castlecraig in the east.

Settlements to the north of the site are out with reasonable walking distances, however, the Nigg Hotel and ferry service are available within a walking distance of circa 150m from the southern boundary of the site, connecting with the town of Cromarty in the south.

The B9175 forms part of National Cycle Route 1, from Nigg Ferry Terminal to the north of the site prior to diverting east at Lower Pitcalzean. The carriageway is of a good standard in the main and traffic flows are low, making the route conducive to cycling.

7.5.2 Public Transport Access

A bus stop is located on the B9175 to the south of the site at the Nigg Ferry Terminal turning circle. This bus stop provides access to Stagecoach Highland services 23A and 23C which connect the site with Tain in the northeast. These services operate once daily. However, more frequent services, 21, 21A, 21B, 26, 26A, 126 and 424, are available within Cromarty and accessible via the Cromarty – Nigg Ferry Service.

Highland Ferries operate the Cromarty to Nigg ferry at 30 minute intervals between 0800 – 1815 between June – September. The ferry service connects the site with additional bus services and reduced the road journey to Nigg from Inverness by circa 60km.

7.5.3 Surrounding Road Network

Access to the site is proposed via two priority junctions with the B9175. Access point 1 will be via the main gate of PON which will be used for general deliveries. Access point 2 is located further south and is normally locked. However, to minimise the impact on the B9175, the Contractor will be given restricted access for the sole purpose of importing material from Castlecraig Quarry.

The B9175 is a single carriageway road subject to a 60mph limit (national speed limit), with the exception of a short section through Arabella, which has a limit of 40mph. Operating in a north – south direction, the B9175 links the A9 in the north with Nigg Ferry Terminal in the south. The route is circa 10km in length.

The B9175 connects to the A9 (T) via a four arm roundabout known locally as the Nigg Roundabout junction approximately 10km north of the site. The A9 is a major trunk road operating from Thurso on Scotland's north coast to Bridge of Allan in Stirlingshire, connecting several towns and cities including Inverness and Perth.

A network of local minor roads allows vehicles to navigate the Fearn Peninsula to the east of the site, with a private access road providing access to Castlecraig Quarry to the south of the site opposite Nigg Ferry Terminal.

7.6 Impact Assessment

The volumes of traffic will be distributed onto the B9175 which will provide direct links to Castlecraig Quarry and Alness via the A9 trunk road network, where crushed rock and ready-mix concrete will be sourced, respectively. Key receptors are generally densely populated residential areas, schools etc and the site is not expected to result in a material impact on the transport network or any sensitive receptors. Nevertheless, a detailed review of the vehicle increase has been undertaken on the B9175, with particular focus given to the section of carriageway through Arabella. The study focuses on traffic impact on the local road during the construction phase only as the operational stage will only result in 14 additional employees who will operate from the South Quay offices.

Whilst the various guidance provides details on percentage increases that would quantify measurable impacts, traffic generation should be considered in context. The B9175 is a rural single carriageway of industrial standard. Due to the location of the site, traffic volumes on the road in the immediate vicinity are considered to be extremely low.

Automatic traffic counts (ATC) were undertaken by Transurveys Ltd at three locations on the B9175 to support the Sumitomo Electrics cable manufacturing plant planning application opposite. Initially volumes and speeds were recorded opposite the development site at the beginning of June 2023, however, following a review of the route additional information was recorded towards the end of June 2023 to the north and south of Arabella. Results are provided in Table 7-4.

Table 7-4: Observed Traffic

Link	All Vehicles AADT	HGV's Only (24 Hours)
B9175 – North of Arabella	2568	406
B9175 – South of Arabella	961	182
B9175 – Opposite the Site	456	135

Although withdrawn, the document TA 46/97 'Traffic flow ranges for use in the assessment of new rural roads' suggested that a single-carriageway road with one lane in each direction could have a maximum daily capacity of 13,000 vehicles. The traffic flows shown in Table 7-4 above show that all sections of road surveyed have traffic flows substantially below their capacities. The busiest section of road, the B9175, experiences traffic flows equal to around 20% of its daily capacity.

Given that the B9175 is currently operating at a maximum of 20% of capacity and as low as 4% of capacity, the increase in traffic associated with the development should be considered in context.

Construction materials will arrive by both sea and road. Construction materials arriving by sea will primarily be tubular steel piles. The materials will be offloaded at one of the existing quays at Nigg. Once offloaded, the material will be transported to the designated work or storage area without the need to access the public road.

For deliveries by road, two access points are anticipated. Access point 1 will be via the main gate of PON which will be used for general deliveries. Access point 2 is located further south and is normally locked. However, to minimise impact on the B9175, the Contractor will be given restricted access for the sole purpose of importing material from Castlecraig Quarry.

It is estimated that around 129,692 m³ of infill material will be brought to site from Castlecraig Quarry circa 1.5km east of the site. This equates to a maximum number of daily movements of 250 per day based on 8 m³ tipper lorries being used to transport the material from the quarry to the construction site over a circa 21 week period.

In relation to concrete, this will also be transported to site via road with a total of 680 m³ being required for the coping beam formation and a further 2,900 m³ to form the final concrete slab. It is estimated that this will equate to approximately 10 ready mix concrete wagons accessing the construction site per day (i.e. 20 two-way trips) during the relevant concreting phases of the development which is estimated to extend to 25 weeks. It is expected that the ready mix concrete will be delivered from Pat Munro Caplich Quarry, Alness.

In addition, the construction works would be temporary, therefore, effects associated with HGV traffic on the local road network would only occur over the duration of operations. It is estimated that construction will be complete within 18 months. The crushed rock and ready-mix cement phases are unlikely to overlap, however, for the purposes of this exercise it is considered that the maximum daily HGV generation from both phases occurs at the same time.

In terms of staff, it is anticipated that there could be 20 – 30 employees on site at any time. Staff would travel to the site in groups of 2 in vans. As such, Light Goods Vehicle generate could be in the region of 15 arrivals in the AM and 15 departures in the PM.

Based on the materials required on-site and the location of the available source, there are two proposed haulage routes, as follows:-

Northern Route

A9 from the west (likely to be Alness or surrounding area) – Exit A9 (T) at Nigg Roundabout – B9175 southbound towards Site.

Southern Route

Private Road from Castlecraig Quarry to the B9175. Route north circa 300m on the B9175 turn left to access site.

The proposed haulage routes are strategic routes formed by a set of roads designed to accommodate large vehicles with limited key receptors located within the vicinity.

Based on above, it is considered that the site could generate a maximum of 300 two-way movements per day, consisting of 270 two-way HGV movements and 30 two-way car / LGV movements.

This element of the impact is temporary and can be controlled through a CTMP.

In addition, the effects associated with HGV traffic on the local road network would only occur over the duration of operations and it is estimated that HGV generation on the northern route would be over a 26 week period and a 21 week period on the southern route. Staff trips would continue to access the site over the whole 18 month construction period.

To assess the impact of proposals, baseline traffic conditions on the surrounding road network were established. As agreed with THC, traffic information was taken from independent surveys of the surrounding road network.

Average annual weekday traffic (AADT) flows were considered to be the most reflective traffic conditions on which to assess construction traffic against the significance criteria.

The maximum daily traffic two-way (entering and exiting) movements associated with the construction of the proposed development are detailed within Table 7.5 below which indicates a peak flow of 250 two-way HGV vehicles south and 50 two-way movements north (30 small vehicle and 20 HGV's) per day.

Table 7-5: Construction Traffic (Average Day)

Link	All Construction Traffic (Two-Way)	AADT Flow	Percentage Change
B9175 – North of Arabella	50	2568	1.95%
B9175 – South of Arabella	50	961	5.20%
B9175 – Opposite the Site	250	456	54.82%

Table 7-6: Construction Traffic (HGV Traffic)

Link	HGV Construction Traffic (Two-Way)	Average Daily HGV Flow	Percentage Change
B9175 – North of Arabella	20	406	4.93%
B9175 – South of Arabella	20	182	10.99%
B9175 – Opposite the Site	250	135	185.19%

Results of the assessment above need to be considered in context and the individual routes should also be considered separately.

Although the percentage of HGVs on the proposed northern haulage route would increase marginally (4.93% and 10.99%), the hierarchy of the route is considered sufficient to accommodate the additional demand with the potential increase likely to be non-material. Traffic volumes are also much greater on the strategic road network (A9), thereby the impact of construction traffic will become further diluted once on the wider proposed haulage route.

Impact opposite the site indicates a 189.19% increase, however, this additional traffic will only be travelling approximately 300m on the public road between the private quarry road and the site. Furthermore, there is a significant element of double counting in these figures. The quarry currently transports crushed rock along this route to alternative clients. With this contract, the trips will simply divert into the development site. Therefore, the 250 crushed rock trips are already likely to be on the road network. Finally, there are no key receptors between the site and the private road on the B9175.

From Table 7-5/Table 7-6, construction based vehicles would have a negligible impact on the total AADT traffic flows on the northern haulage route in the area with sensitive receptors and there are no identified receptors to the south of the site, therefore, in line with the Scottish Government Guidelines, it is not considered necessary to undertake further assessment as this could amount to daily traffic fluctuations. The increase of 185.19% opposite the site is a direct result of negligible traffic volumes in this area rather than a significant volume of development related traffic.

On this basis, any disturbance to local residents and other road users in terms of delay or impact is considered to be temporary, minor adverse effect, in the absence of any mitigation measures.

Accidents and Safety

As detailed previously, there are no existing road safety issues attributed to the layout or arrangement of the road network in the vicinity of the Site. A review of www.crashmap.co.uk indicates that there have been no accidents on the B9175 in the last 5 years.

The predicted changes in traffic levels would have no significant effects on the operation of nearby junctions and would therefore have little effect on the safety or efficiency of the road network. As detailed, the road network is currently operating well within capacity.

It is considered that the small changes to travel patterns on the local road network as a result of the Proposed Development would be of negligible significance in terms of accidents and safety.

Disruption and Driver Delay

The volumes of vehicles expected to / from the Site would be insignificant in comparison to the volumes of traffic currently utilising the A9 trunk road network. In addition, the local road network currently accommodates larger vehicles, with PON opposite the site and the Castlecraig Quarry to the south and is suitable to support operations associated with the proposals.

Construction vehicles would increase HGV traffic levels on the proposed haulage route, and, in the absence of mitigation measures, dirt and debris from these vehicles could cause disruption or delay for existing road users. Vehicle breakdowns on single carriageway sections of the haulage route could have a potential impact on existing journey times.

However, notwithstanding the above, the majority of construction traffic will be routing from Castlecraig Quarry and only utilising a short section of the public road (circa 300m).

It is considered that in the absence of any mitigation measures the addition of construction traffic on the local road network would represent a temporary, local effect of minor adverse significance due to the possibility of disruption and delay caused by vehicle breakdowns or dirt and debris on the roads.

Fear, Intimidation and Pedestrian / Cyclist Amenity

The HGVs could increase noise levels, create additional dust and/or increase the volume of large vehicles in proximity to pedestrian and cycle routes. National Cycle Route 1 operates on the B9175 for a short section of the construction route to the north of the site. However, given the rural location of the site, it is considered that the existing pedestrian and cyclist activity in the area is limited. As part of the Sumitomo Electrics cable manufacturing

planning consent, a 3m shared footway will be introduced on the eastern side of the carriageway to take cyclists off the public road.

Overall, therefore, it is considered that the addition of construction traffic on the local road network would result in a negligible effect in terms of fear, intimidation and pedestrian / cyclist amenity.

Severance

The site forms part of the wider PON which is private land with no access available to the general public. A footway is present on the eastern side of the B9175 which will remain open during construction works. There would, therefore, be a temporary negligible effect in terms of severance of pedestrian accessibility with pedestrians crossing the private access road to Castlecraig Quarry.

Public Transport

The construction phase would not cause any disruption to surrounding bus routes. The predicted increase in hourly HGV movements, circa 21 two-way movements to the south of the site over a 300m section and 2 two-way movements to the north of the site, would not result in increases to bus journey times. It is therefore considered that there would be a negligible impact on public transport during construction.

7.7 Mitigation and Monitoring

The following provides a summary on the specific transport related measures that will be introduced to minimise any potential impacts on the road network due to the proposals.

To enhance the operation and safety of the construction phase, a CTMP as part of a wider CEM Plan would be developed and implemented to the satisfaction of THC. The CTMP would detail any mitigation measures deemed necessary to remove, reduce or offset any temporary adverse effects of construction vehicles and operations and would detail information on operational times and haulage routes.

It is expected that the construction Site would be registered with the Considerate Constructors Scheme which requires constructors to comply with a Code of Considerate Practice, and seeks to:

- Minimise any disturbance or negative impact (in terms of noise, dirt and inconvenience) sometimes caused by construction Sites to the immediate neighbourhood;
- Eradicate offensive behaviour and language from construction sites; and
- Recognise and reward the constructor's commitment to raise standards of Site management, safety and environmental awareness beyond statutory duties.

The existing galvanised palisade gate at the entrance to the site would be maintained for safety purposes and to control vehicles entering and exiting the Site. Existing security fencing would also be maintained around the perimeter of the Site to protect the equipment store on the Site and control access given the type of use.

An internal route system will be established to ensure vehicle turnover is optimised. The existing gates are a suitable distance from the public road to ensure vehicles can be accommodate off the adopted road network. A banksman would be responsible for ensuring the safe manoeuvring of HGVs into, out of and within the Site. Vehicle swept paths will be provided to demonstrate vehicles can enter and exit the site in a forward gear.

If deemed necessary, the construction vehicles could also be installed with GPS tracker systems to ensure the defined haulage route is maintained. However, given the short direct journeys, particularly associated with the crushed rock deliveries from Castlecraig Quarry, it would be difficult for the vehicles to take alternative paths.

Measures would be undertaken to mitigate potential dust nuisance by covering HGVs to / from the Site where necessary, which would minimise dust dispersion and material falling from vehicles during transportation. In

addition, during prolonged dry periods, dust suppression measures would be implemented on-site appropriate to the hazard, such as, spraying or hosing of material prior to excavation and loading.

Scheduling operating times out with the commuter peak periods and school opening / closing times would minimise any potential travel disruption and could be investigated by the contractor, if required, for the ready-mix cement deliveries. Furthermore, management would be in place to assist with vehicle break-downs to minimise network disruption.

Signage will be in place to advise all network users that an increased number of HGV's will be present in the area. The construction traffic will impact on a limited number of crossing points in the vicinity of the site ensuring that there will be little disruption to pedestrian routes. Whilst the percentage of HGV movements would increase on the proposed haulage route it is not considered to be a significant increase.

To reduce the deposition of mud on the surrounding road network, a road cleansing system would be implemented.

7.8 Residual Effects

Public Road Network

Following the implementation of mitigation proposed it is not predicted that the Proposed Development would result in significant environmental effects from traffic and transport.

Although the percentage of HGVs on the proposed haulage route would increase, the hierarchy of the route is considered sufficient to accommodate the additional demand and the overall background traffic flows. In addition, the construction works would be temporary, therefore, effects associated with HGV traffic on the local road network would only occur over the duration of operations.

A Framework CTMP (refer to Technical Appendix 7.2, Volume 3 of this EIAR) has been developed to support the planning application for the proposed Development. It is expected this document will be updated by the appointed contractor. The updated CTMP would be submitted to THC prior to any construction commencing on-site to ensure that the proposed approach to managing construction traffic, including potential effects of dust and debris, is satisfactory and considers key receptors appropriately.

It is therefore considered that residual effects to the public road network during construction would be of temporary, negligible significance.

Accidents and Safety

The haulage route would be well signposted and, if considered necessary, vehicles fitted with GPS systems to ensure drivers do not deviate from the agreed haulage route. There is no current road safety issue in the area and the addition of construction vehicles would not introduce any new material safety risks.

It is considered that with the introduction of the mitigation measures described above that the increase in traffic associated with construction vehicles on the surrounding road network would have a negligible effect on accidents and safety.

Disruption and Driver Delay

Scheduling the ready-mix concrete deliveries out with the commuter peak periods and school opening / closing times would assist with minimising any potential travel disruption. Dirt and debris from the crushed stone deliveries would be controlled with netting and covers. Management would be in place to assist with vehicle break-downs to minimise network disruption. There would therefore be a negligible effect to disruption and driver delay from vehicle breakdowns or dirt and debris on the roads.

The haulage route consists of roads regularly utilised for similar purposes. It is considered that there would be a negligible significant effect as a result of construction operations.

Fear, Intimidation and Pedestrian / Cyclist Amenity

Pedestrians / cyclists will be well advised that an increased number of HGV's will be present in the area. The construction traffic will impact on a limited number of crossing points in the vicinity of the site ensuring that there will be little disruption to pedestrian routes. Whilst the percentage of HGV movements would increase on the proposed haulage route it is not considered to be a significant increase.

Overall, therefore, it is considered that the addition of construction traffic on the local road network would result in a negligible effect in terms of fear, intimidation, and pedestrian / cyclist amenity.

Severance

The Site and proposed point of entry currently has limited access due to the gate controls at this end of the site, therefore, there would be negligible effects in terms of severance of pedestrian, cycle or vehicular routes during the construction phases.

Public Transport

The construction phase would not cause any disruption to surrounding bus routes. The predicted increase in hourly HGV movements would not result in increases to bus journey times. It is therefore considered that there would be negligible effects to public transport during construction.

7.9 Statement of Significance

Table 7-7 summarises the potential effects to transport and access of the construction phase of the Proposed Development. It also outlines the recommended mitigation measures and summarises the resultant residual effects.

Table 7-7: Summary of Effects

Issue	Potential Effect	Mitigation Measures	Residual Effect
Traffic flows on public road network	Temporary, local, minor adverse	Traffic Management Plan as part of a wider CEMP. Considerate Constructors Scheme.	Negligible
Accidents and safety	Negligible		Negligible
Disruption and Driver Delay due to vehicle breakdowns or dirt and	Temporary, local, minor adverse		Negligible
Disruption and Drive Delay due to vehicle breakdowns or dirt and debris on road	Temporary, local, minor adverse		Negligible
Fear, Intimidation and Pedestrian / Cyclist Amenity	Negligible		Negligible
Severance	Negligible		Negligible
Public Transport	Negligible		Negligible

8 WATER ENVIRONMENT AND COASTAL PROCESSES

8.1 Introduction

This chapter of the EIAR provides an assessment of the implications of the proposed development on the water environment and coastal processes. The water environment is considered to encompass hydrology, hydrogeology and water quality, whilst coastal processes are considered to encompass tides, waves and sediment transport processes.

The Water Framework Directive (WFD) (Council Directive 2000/60/EC) aims to protect and enhance water bodies within Europe and covers all estuarine and coastal waters out to 1 nautical mile. This requires that there is no deterioration in the quality of surface or groundwater bodies and aims to achieve good ecological status or potential. The implications of the WFD must be considered when assessing this project and the details of how compliance will be achieved provided in the EIAR.

Details of the site and the proposed development are provided in Chapter 2: Proposed Development. The assessment will identify sensitive issues within the site by establishing the current baseline and examining the proposed development within this context.

This chapter is supplemented by Technical Appendix 8.1: Nigg Energy Park – Previous Modelling Reports and Technical Appendix 8.2: Nigg Eastern Inner Dock Flood Risk Assessment and Drainage Impact Assessment within Volume 3 of this EIAR, along with the relevant drawings within Volume 2.

8.2 Scoping and Consultation

Scoping Opinions have been received from Marine Scotland and The Highland Council (THC), comments are contained within these from other consultees, including SEPA and NatureScot. A summary of the relevant scoping responses is set out in Table 3.1, Volume 3 of this Written Statement.

8.3 Policy, Legislation and Guidance

The assessment for the water environment and coastal processes has been undertaken with reference to the following relevant planning policy, legislation and guidance.

8.3.1 Relevant Planning Policy

- National Planning Policy 4 (NPF4) (2023);
- UK Marine Policy Statement (2011); and
- Scotland's National Marine Plan (2015).

8.3.2 Relevant Legislation

- Water Framework Directive (WFD) 2000;
- Water Environment and Water Services (Scotland) Act 2003;
- Marine (Scotland) Act 2010;
- Coast Protection Act 1949;
- Flood Risk Management (Scotland) Act 2009;
- Water Environment (Controlled Activities) (Scotland) Regulations 2011, as amended (CAR);

- Water Environment (Miscellaneous) (Scotland) Regulations 2017;
- National Planning Framework 4
- Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna (The Habitats Directive);
- Environmental Impact Assessment (EIA) Directive (2014/52/EU);
- The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017; and
- The Marine Works (Environmental Impact Assessment) Regulations (Scotland) 2017.

8.3.3 Relevant Guidance

- Guidelines for Water Pollution Prevention from Civil Engineering Contracts;
- Land Use Planning System (LUPS) SEPA Guidance CC1: Climate change allowances for flood risk assessment in land use planning;
- LUPS-GU24: Flood Risk and Land Use Vulnerability Guidance;
- Guidelines for Pollution Prevention (GPP) 1 Understanding your environmental responsibilities – good environmental practices;
- GPP 2 Above ground oil storage;
- GPP 3 Use and design of oil separators in surface water drainage systems;
- GPP 5 Works and maintenance in or near water;
- GPP 6 Working on construction and demolition sites;
- Pollution Prevention Guidelines (PPG) 7 Safe operation of refuelling facilities;
- GPP 8 Safe Storage and Disposal of Used Oil;
- GPP 13 Vehicle washing and cleaning;
- GPP 21 Pollution Incident Response Planning;
- GPP 22 Dealing with spills; and
- GPP 26 Safe Storage – Drum and intermediate bulk containers.
- WAT-SG-26: Good Practice Guide – Sediment Management; and
- WAT-SG-29: Good Practice Guide – Construction Methods.

8.4 Methodology

8.4.1 General

The assessment follows standard EIA procedures which include:

- Desk based review of the design of the proposed development in relation to the local water environment, soils and coastal processes;
- Consultation with key stakeholders to obtain relevant information and to ensure their concerns are addressed within the study;
- Establishing the existing baseline conditions:
 - Review topography, soils, geology and ground conditions at the site and environs;
 - Review of hydrology, catchment characteristics, and water quality conditions;
 - Review of coastal processes including bathymetry, tidal levels, and tidal flow currents, wave action, bed sediment type and distribution, sediment transport and deposition, geology;
 - Review of previous detailed hydrodynamic modelling report displayed within Technical Appendix 8.1: Nigg Energy Park – Additional Sediment Plume Modelling;
 - Reporting of baseline conditions to provide a basis for assessment of the potential impact.
- Impact Assessment:
 - Identification of sensitive receptors and environmental constraints;
 - Identification of potential impacts;

- Assessment of impact magnitude;
- Identification and assessment of mitigation measures to reduce or avoid any potential impacts of the proposed development; and
- Statement of residual effects.

Potential impacts arising from the proposed development have been predicted and evaluated. The observed baseline data was used along with professional opinion to qualitatively assess the potential impacts and the significance to receptors.

8.4.2 Assessment Criteria

The assessment criteria set out in Table 8-1 and Table 8-2 has been used to develop a matrix to assess the significance of effects from the proposed development on the local water environment (Table 8-3). The assessment of residual effects also takes into consideration the probability of the effect occurring (certain, likely, possible or unlikely) and the duration of the effect (short (less than 2 years), medium (2 - 5 years), long term (more than 5 years) or permanent).

All direct and indirect impacts causing moderate or major effects as identified in Table 8-3 are considered to be significant.

Table 8-1: Criteria for Assessing Receptor Sensitivity

Receptor Sensitivity	Description
Low	<p>Receptors with a high capacity to accommodate change, low value or poor condition and no significant uses, for example:</p> <ul style="list-style-type: none"> • Receptor is not an internationally, nationally or locally designated site. • Not classified as a surface water body for the River Basin Management Plan (RBMP). • Surface water body not significant in terms of fish spawning and no other sensitive aquatic ecological receptors e.g. freshwater pearl mussels. • Surface water body not used for abstraction. • Surface water body not used for recreation directly related to water quality e.g. angling, swimming, watersports. • Surface water body not used by commercial or recreational vessels. • Low or very low productivity aquifer with no identified abstractions.
Medium	<p>Receptors with a moderate capacity to accommodate change, medium value or condition and limited use, for example:</p> <ul style="list-style-type: none"> • Receptor is not an internationally or nationally designated site. May be a locally designated site. • Salmonid species may be present and surface water body may be locally important for spawning. No other sensitive aquatic ecological receptors e.g. freshwater pearl mussels. • Surface water body used for private water supply or medium scale industrial/ agricultural abstractions. • Surface water body used for occasional or local recreation e.g. local angling clubs. • Navigable surface water body used by commercial or recreational vessels. • Moderate productivity aquifer. • Groundwater body supports identified private water supplies or medium scale industrial/ agricultural abstractions.
High	<p>Receptors with a low capacity to accommodate change, high value or condition and significant use, for example:</p> <ul style="list-style-type: none"> • Receptor is an internationally or nationally designated site. • Surface water body supports sensitive aquatic ecological receptors e.g. freshwater pearl mussels. • Surface water body used for public water supply or large scale industrial/ agricultural abstractions. • Surface water body important for recreation directly related to water quality e.g. swimming, watersports, angling. • High or very high productivity aquifer. • Groundwater body supports public water supply or large scale industrial/ agricultural abstractions.

Table 8-2: Criteria for Assessing Impact Magnitude

Magnitude of Impact	Description
Negligible	Very light change from baseline conditions. Change barely distinguishable, approximating to the 'no change' situation.
Low	Minor shift away from baseline conditions. Change arising from the loss/alteration will be discernible but underlying character/composition/attributes of the baseline condition will be similar to pre-development circumstances/patterns.
Medium	Loss or alteration to one or more key elements/features of the baseline conditions such that post-development character/ composition/ attributes of baseline will be partially changed.

Magnitude of Impact	Description
High	Total loss or major alteration to key elements/features of the baseline (pre-development) conditions such that post-development character/composition/attributes will be fundamentally changed.

Table 8-3: Criteria for Assessing Effects

Receptor Sensitivity	Magnitude of Impact	Predicted Effect
High	High	Major
High	Medium	
Medium	High	Moderate
High	Low	
Low	High	
Medium	Medium	Minor
Medium	Low	
Low	Medium	
Low	Low	
High, Medium or Low	Negligible	Negligible

8.5 Baseline

8.5.1 Site Description

The proposed development site is situated at PON, located on the northern shore at the mouth of the Cromarty Firth. The Cromarty Firth extends over 28km in length, and around 12km in width at its widest point. At the mouth, near the development site, the firth is around 1.5km in width. In total the firth covers an area in excess of 78km² ⁵¹.

8.5.2 Designated Sites

The following designated sites, with designations associated to the water environment, soils and coastal processes contents of this EIAR, are located within 2km of the proposed development:

- The proposed development is within 500m of the Moray Firth Special Area of Conservation (SAC), which has been selected for its bottlenose porpoise and subtidal sandbanks interests.
- The proposed development is within 650m of the Cromarty Firth Site of Scientific Special Interest (SSSI), which has been designated for breeding and non-breeding birds, and within 900m of the Rosemarkie to Shandwick Coast SSSI for designated for coastal environments and breeding birds.
- The proposed development is within 650m of the Cromarty Firth Special Protection Area (SPA), which has been designated for its breeding and non-breeding bird interests.
- The proposed development is within 650m of the Cromarty Firth RAMSAR Site, which has been designated for its breeding and non-breeding birds and intertidal mudflats and sandflats environments.

8.5.3 Geology, Soils and Hydrogeology

The online British Geological Survey (BGS) 1:50,000 mapping² identifies that the site is underlain by sandstone of the Raddery Formation, formed in a fluvial or estuary setting during the Devonian Period (383 – 393 million years ago).

Coastal superficial deposits in the vicinity of the site take the form of marine beach deposits, gravel, sand and silt formed up to 3 million years ago during the Quaternary Period. Immediately inland wind blown sand deposits are present, also of the Quaternary Period, with glacial till present further inland.

The National Soil Map of Scotland⁵², available through Scotland's Environment, shows the proposed development's soils to consist of windblown sands. The Map of Topsoil Organic Carbon Concentrations indicates that soils across the majority of the proposed development have moderate organic carbon concentrations (between 1.5 – 3.0%). The soils present are not considered to be natural, as due to previous phases of development they are likely to have been disturbed and replaced.

Due to the non-natural nature of the soils underlying the proposed development, as a result of previous land-use and development phases, soils are not considered further within this EIAR.

BGS 1:625,000 hydrogeological mapping identifies the underlying bedrock as moderately productive aquifer consisting of sandstones, siltstones and conglomerates which locally yield small amounts of groundwater.

Groundwater Quality

The site is formed from the dredging of estuarine sediments to form a large yard which has historically been used for industrial purposes associated with gas and oil production. Activities at the site now include services associated with the offshore renewables industries.

In the 1990's it was determined that a large quantity of diesel had seeped from corroded underground fuel lines within the southern and eastern sections of the site. The resulting remediation programme comprised soil vapour extraction / air sparging and surface pump, treatment and re-injection of nutrient enriched groundwater. Following the remediation programme the source of hydrocarbons in the unsaturated zone was considered to be significantly reduced however it was identified that a residual source of hydrocarbons remained in the groundwater.

Since the remediation programme was completed a series of routine monitoring events have been conducted to assess the impacts of the groundwater pollution since 2006. Sampling was conducted in 2016 following enhanced biodegradation remediation of the groundwater. This involved the introduction of Oxygen Release Compounds (ORC) into the groundwater in February 2014 and October 2015.

The 2016 investigation⁵³ concluded that:

- The groundwater flow direction was to the south, in the direction of the Inner Dock;
- No measurable free product thickness was noted during the groundwater monitoring event;
- No TPH were detected in any groundwater or surface water samples;
- One PAH (Naphthalene) was detected marginally above the limit of detection in the surface water samples, taken from within the graving dock;
- The Environmental Quality Standards (EQS) for Naphthalene was not exceeded in water samples from the dock; and
- Data gathered during the remediation and monitoring programmes suggests that biodegradation of the contaminants is occurring.

⁵¹ BGS Onshore GeoIndex (<https://www.bgs.ac.uk/map-viewers/geoindex-onshore/>)

⁵² Scotland's Environment (2019). National Soil Map of Scotland [Online]. Available at: http://map.environment.gov.scot/Soil_maps/?layer=1

⁵³ Nigg Energy Park Combined Factual and Interpretative Report Routine Groundwater Monitoring Event July 2016, ERS Report Ref 0841-003, dated 10/11/2016

A further monitoring event was undertaken on 05/12/2023 by ERS with the laboratory results⁵⁴. The results confirm there are no hydrocarbon pollutants recorded above the laboratory limit of detection in any of the samples analysed. This indicates that the remediation measures implemented in 2014 and 2015 have had a positive effect on groundwater quality.

8.5.4 Hydrology

The three main watercourses discharging to the Outer Cromarty Firth are the Balnagown River, Pollo Burn, and Fearn Canal. The Balnagown River and Fearn Canal are larger watercourses with catchment areas in excess of 50km². All three are classified waterbodies under the Water Framework Directive (WFD) monitoring programme⁵⁵.

The River Conon represents the largest watercourse discharging to the wider Cromarty Firth, joining the firth near Dingwall at the western extremity, with a contributing catchment in excess of 1,000km².

There are no watercourses located within the Site boundary and no direct impacts on surface watercourses is anticipated.

Overall, the inflow of freshwater remains insignificant relative to the much larger volume of seawater exchanged within the Cromarty Firth.

8.5.5 Water Quality

The waters of the Outer Cromarty Firth are classified under the WFD monitoring programme as a transitional waterbody. The waterbody is classified as being of overall 'Good' status in 2022, with a physico-chem status of 'High' and a hydromorphology status of 'Good'.

8.5.6 Tidal Water Levels

The nearest standard port to the development site is Invergordon, situated around 8km further west within the Cromarty Firth. Tidal levels at Invergordon as presented within the Admiralty Tide Tables⁵⁶ are shown in Table 8-4. The mean tidal range at Invergordon is 3.6m during spring tides, and 1.7m during neap tides.

Table 8-4: Tidal Range at Invergordon

Tide Condition	Chart Datum (mCD)	Ordnance Datum (mOD)*
Highest Astronomical Tide (HAT)	5.0	2.9
Mean High Water Spring (MHWS)	4.3	2.2
Mean High Water Neap (MHWN)	3.3	1.2
Mean Low Water Neap (MLWN)	1.6	-0.5
Mean Low Water Spring (MLWS)	0.7	-1.4

* Height of Chart Datum (m) relative to Ordnance Datum is -2.1mOD Newlyn

Extreme sea levels have been predicted around the whole UK coastline and published by the Environment Agency/Department for Environmental Food and Rural Affairs report⁵⁷. These extreme levels include the effects of

⁵⁴ ERS (2023). Nigg Dock, Nigg Energy Park. Technical File Note 01 – Water Sampling.

⁵⁵ SEPA Water Classification Hub (<https://www.sepa.org.uk/data-visualisation/water-classification-hub/>)

⁵⁶ UKHO (2019). Admiralty Tide Tables Volume 1B: United Kingdom and Ireland (Excluding Isles of Scilly, English Channel to River Humber, Channel Islands and European Channel Ports) (Vol. 1).

⁵⁷ McMillan, A., Batstone, C., Worth, D., Tawn, J., Horsburgh, K. & Lawless, M. (2011). Coastal flood boundary conditions for UK mainland and islands; Project: SC060064/TR2: Design sea levels. Bristol: Environment Agency.

both tides and storm surge but not the effect of amplification within estuaries or sea lochs. The extreme sea levels predicted at a point adjacent to Nigg, are 3.32m Above Ordnance Datum (AOD) for the 1 in 200 year return period event with a lower and upper confidence interval of 3.18 mAOD and 3.69 mAOD respectively.

8.5.7 Tidal Currents

The prevailing tidal currents within the Inner Moray Firth are of generally low velocity, flowing parallel to the shoreline across the mouth of the Cromarty Firth, where they are locally influenced by flows entering and leaving the firth.

At the entrance to the Cromarty Firth both flood and ebb tidal currents follow the alignment of the main channel (east – west), between the opposing headlands known as the Sutors. Here peak tidal velocities of 0.75m/s occur on both the flood and ebb tide. However, generally the ebb tide currents are greater in magnitude than those on the flood tide. To the west, between the proposed development and Cromarty, the ebb currents have been reported as increasing to over 1m/s, whilst further west between Cromarty and Invergordon velocities rarely exceed 0.6m/s⁵⁸.

Previous assessments have shown that the wider pattern of the flooding and ebbing tides is affected by temporary perturbations in current speed and does not follow a typical 'smooth' flooding or ebbing tide curve, due to the complex pattern of eddies that form at different states of the tidal cycle in the Cromarty Firth.

A gyre exists across Nigg Bay, acting to circulate currents locally. Further west as the Cromarty Firth widens the tidal currents are generally low. This is also the case over the intertidal flats, such as those of Nigg Bay, current speeds are generally low but can increase within drainage channels. As the proposed development is located within the footprint of the existing quay, which was reclaimed from the estuary in the 1970's, 'natural' flows are considered to be locally affected⁵⁹.

8.5.8 Wind Climate

In the Moray Firth the prevailing wind direction is from the south-west, whilst the offshore wave direction is predominantly from the north-east. The prevailing wind direction in the wider Cromarty Firth is from the southwest. Average wind speeds in excess of 5m/s occur during winter months at Tain⁶⁰, the nearest Meteorological Office (MET Office) climate station which is located approximately 13km north of the proposed development.

8.5.9 Wave Climate

The dominant offshore wave direction within the Moray Firth is from the north and northeast (0 to 40°). Given the orientation of the Moray Firth coastline and the entrance to the Cromarty Firth, swell wave penetration from the Moray Firth into the Cromarty Firth is limited to the eastern sectors and may be locally significant during storm approach from the east. More generally however, the wave climate within the Cromarty Firth is dominated by wind waves generated within the Cromarty Firth, with longest fetches from the south-west¹⁰.

Wave modelling undertaken for the South Quay development at PON⁶¹ showed significant wave heights between 0.5 - 1.0m under 1 in 1 year return period conditions and between 1.0 - 1.5m under 1 in 50 year return period

⁵⁸ Ramsay, D.L. & Brampton, A.H. (2000) Coastal Cells in Scotland: Cell 3 – Cairnbulg Point to Duncansby Head. Scottish Natural Heritage Research, Survey & Monitoring Report, No. 145.

⁵⁹ Royal Haskoning DHV (2013). Nigg Energy Park: Sedimentation and Wave Modelling (Main Report & Appendices). Global Energy Nigg Ltd.

⁶⁰ Met Office (2019). Tain Range climate. <https://www.metoffice.gov.uk/public/weather/climate/gfm0vv8h1>

⁶¹ Royal Haskoning DHV (2013). Nigg Energy Park: Sedimentation and Wave Modelling (Main Report & Appendices). Global Energy Nigg Ltd.

conditions for the area seaward of the proposed development. In the immediate vicinity of the existing PON localised disturbance to the wave climate occurs as a result of diffraction and reflection from quay walls and the surrounding shoreline.

Further details of wave climate and modelling undertaken are presented within Technical Appendix 8.1: Previous Modelling Reports.

8.5.10 Sediment Processes

The Cromarty Firth is a glacial valley formed during the last Ice Age and subsequently flooded as a result of post-glacial sea level rise. Significant sediment deposits are present within the firth as a result of post-glacial erosion and sedimentation processes, with present day sediment processes within the firth largely relating to the re-working of this material⁶².

Review of historical mapping⁶³, as well as the Dynamic Coast National Coastal Change Assessment map⁶⁴ and associated reports⁶⁵, highlights the local changes to the coastline at the development site as a result of land reclamation and hard engineering during previous phases of development. It also highlights that the coastline to the east of the development site, and on the opposite shore of the firth to the south, has remained relatively stable throughout the mapped record.

Previous assessments of sediment transport in the vicinity of the proposed development site indicate that sediment can move from sandbanks in the Inner Moray Firth to the Cromarty Firth episodically as a result of storm wave driven transport, with sand stirred as a result of wave action off the shallower areas of seabed. This material then subsequently becomes re-worked by wave action towards the shoreline, with resultant long-shore transport westwards into the Cromarty Firth. These processes result in sediment being deposited within deeper waters of the dredged channels at the proposed development site. These sediment deposits therefore originate predominately from the Inner Moray Firth, with limited sediment input from the Nigg Bay to the west.

Bathymetric survey data described within previous assessments (Technical Appendix 8.1: Previous Modelling Reports) indicated that average deposition rates within dredged areas in the vicinity of the development site are around 100mm/year⁶⁶. It is also acknowledged that in some locations sedimentation can be higher than average and there will be some variation in values.

8.5.11 Flood Risk

There are no watercourses on or adjacent to the site, so there is no risk of river flooding. The SEPA flood maps indicate that two small areas within the centre and north of the proposed development lie within the medium likelihood (0.5% annual exceedance probability (AEP) or 1 in 200 year return period) surface water flood extents. These areas represent topographic low points that are no longer present due to recent groundworks.

The proposed development is situated within the 1 in 200 year return period coastal flood extent as shown on the SEPA flood map. As detailed above and noted in the Pre-application and Advice for Major Developments note (Refer to Technical Appendix 3.1, Volume 3 of this EIAR), the 1 in 200 year coastal flood level is 3.32mAOD. Whilst the development is situated within the 1 in 200 year coastal flood extent as shown by the SEPA flood map, the development represents a water compatible use, and requires to be located within this flood zone for operational reasons.

⁶² Ramsay, D.L. & Brampton, A.H. (2000) Coastal Cells in Scotland: Cell 3 – Cairnbulg Point to Duncansby Head. Scottish Natural Heritage Research, Survey & Monitoring Report, No. 145.

⁶³ National Library of Scotland (<https://maps.nls.uk/>)

⁶⁴ The Scottish Government (2017). Dynamic Coast: Scotland's National Coastal Change Assessment. Retrieved from <http://www.dynamiccoast.com/webmap.html>

It is considered that the development will have negligible impact on coastal flood levels as the new quay wall will be within the footprint of the existing revetment, and given the small scale of proposed works in relation to the large volume of coastal water exchanged within the Cromarty Firth. Further consideration to flood risk and drainage is presented in Technical Appendix 8.1. In light of the above, it is proposed to scope out further assessment of flood risk within this chapter.

8.5.12 Future Projections and Effects of Climate Change

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.

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)

Figure 8-1 presents the UKCP18 RCP predictions for carbon dioxide concentrations, along with resulting changes in global mean surface temperatures. Figure 8-2 presents UKCP18 RCP predictions for time-mean sea level change based on an average of UK ports, along with the spatial pattern of sea level change around the UK coastline at year 2100. Review of these predictions highlights that the proposed development is within a zone of lower sea level change in a UK context.

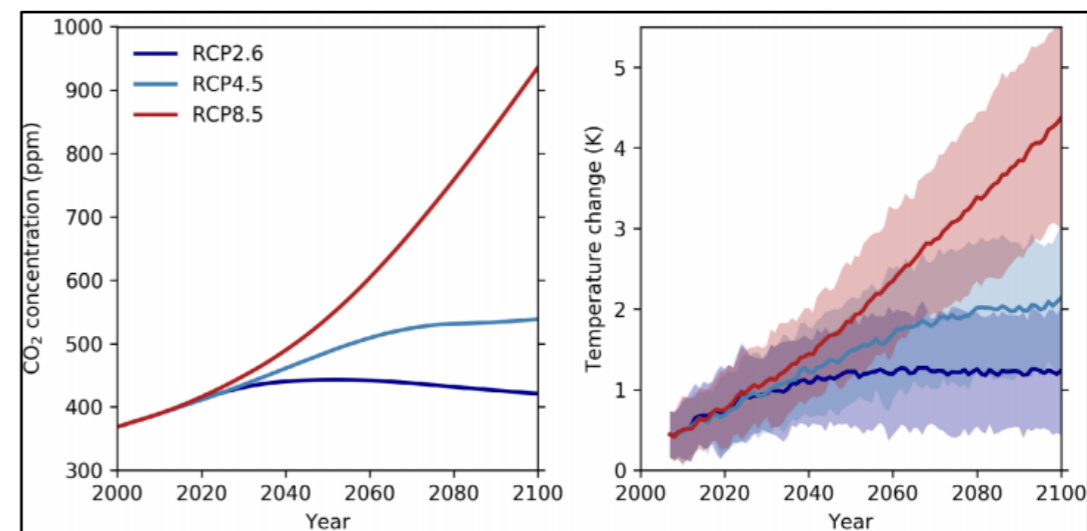


Figure 8-1: UKCP18 RCP predictions over the 21st century for carbon dioxide concentrations (left) and global mean surface temperature change resulting from carbon dioxide and other climate forcings (right)

⁶⁵ Hansom, J.D., Rennie, A.F. & Fitton, J. M. (2017). Dynamic Coast - National Coastal Change Assessment: Cell 3 - Cairnbulg Point to Duncansby Head. CREW.

⁶⁶ Royal Haskoning DHV (2013). Nigg Energy Park: Sedimentation and Wave Modelling (Main Report & Appendices). Global Energy Nigg Ltd.

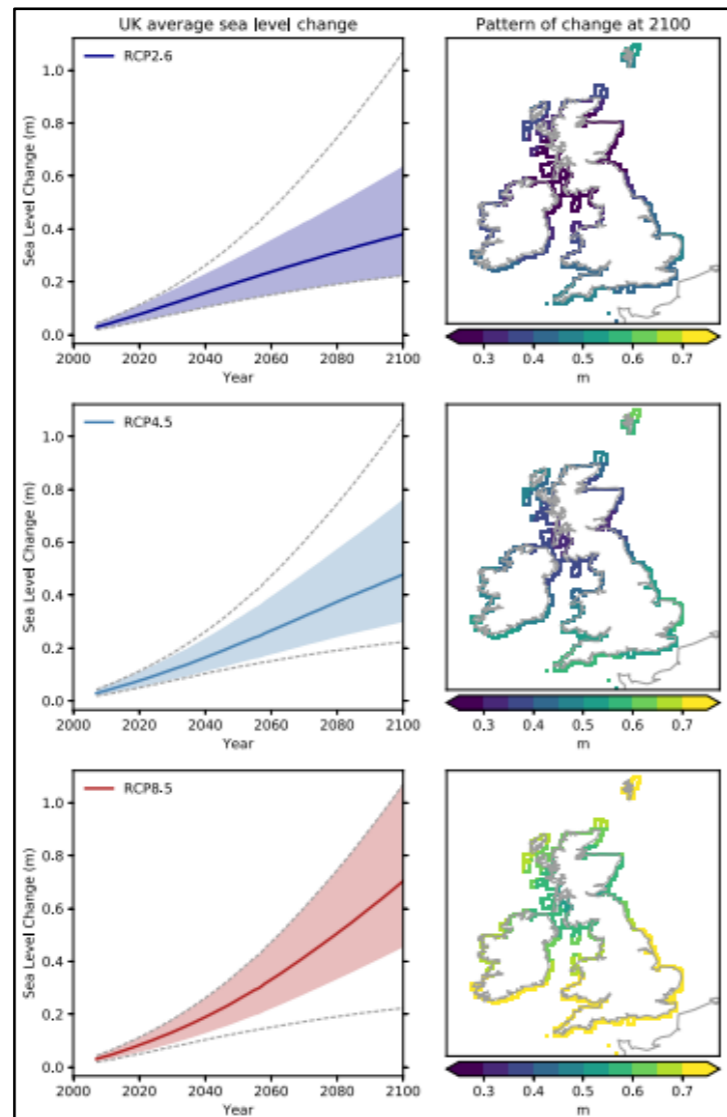


Figure 8-2: UKCP18 time series of time-mean sea level change for RCPs based on average of UK ports (left) and the spatial pattern of change at 2100 (right)

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.

8.6 Receptor Sensitivity

On the basis of the baseline assessment, Table 8-5 identifies the receptor sensitivity using the criteria outlined in Table 8-1.

Table 8-5: Receptor Sensitivity

Receptor	Sensitivity	Comment
Operational coastal waters and sediment of Outer Cromarty Firth within the vicinity of the proposed development	Medium	Classified waterbody under WFD.
Moray Firth SAC	High	Internationally or nationally designated sites.
Cromarty Firth SPA	High	Internationally or nationally designated sites.
Cromarty Firth RAMSAR	High	Internationally or nationally designated sites.

8.7 Impact Assessment

8.7.1 Potential Impacts

This section identifies the potential environmental impacts on the water environment, soils and coastal processes, at and around the site during the construction and operational phases of the proposed development.

The proposed works will involve the following key activities which have the potential to impact the water environment within the site and environs:

- Construction activities (bulk excavations, port infrastructure including quay and platform);
- Site surface water drainage; and
- Port operations.

The potential impacts on the water environment, soils and coastal processes include:

- Water Environment:
 - Hydrology alterations including increased run-off and alteration of flow patterns.
 - Contamination of coastal water and sediments through spillages, leakages and/or sediment transfer (oils, fuels, welfare facilities, and suspended solids).
- Coastal Processes:
 - Changes in local wave climate.
 - Changes in local tidal regime.
 - Changes in local sediment transport regime.

The potential interactions between water environment impacts and ecology are assessed within Chapter 6: Biodiversity

The following sections consider the potential impacts and provide an assessment of the likely level of significance.

8.7.2 Construction Phase

The potential impacts identified are assessed under the following headings:

- Hydrology;
- Water and sediment quality;
- Tidal regime;
- Wave climate; and
- Sediment transport.

The degree of potential environmental impact is provided as appropriate.

Hydrology

During construction there is potential for increased run-off due to the introduction of impermeable and semi-permeable surfaces arising from the compaction of soils and construction of proposed infrastructure. This will reduce the infiltration capacity and increase the rate and volume of direct surface run-off, and potentially concentrate diffuse flows. The potential environmental effect of this is to increase or alter groundwater and surface water flow rates and routes, potentially leading to increases in erosion and sediment transport.

However, due to the small catchment and the site consisting of reclaimed land on the coastal edge, the potential impacts of surface water flow alterations and increased run-off to coastal waters would be of a negligible magnitude giving rise to effects of negligible significance.

Water and Sediment Quality

Sediment Discharge from Piling Works and Quay Infill

Following the removal of the existing rock armour, piling access will require the formation of a temporary stone piling platform as detailed in Section 2.4.4. The proposed piling platform will have a volume of approximately 129,700 m³ and be formed from imported selected well graded stone. Given the coarse nature of the imported material it is considered that potential for dispersion and discharge of sediment is minimal.

The temporary piling bund material is to subsequently be used as infill material behind the new quay wall.

The formation of the temporary platform could potentially cause plumes of suspended solids and a reduction in water quality with a resultant impact on aquatic life. Given the relatively coarse nature of the imported stone and the localised nature of the temporary platform within the confines of the inner dock, impacts will be localised and short term in duration.

Overall, it is considered that prior to mitigation the magnitude of impact of sediment discharge and dispersion from piling and quay formation works will be low within the immediate area, and negligible out with this area, giving rise to effects of minor and negligible significance respectively, prior to mitigation.

Pollution Incidences

During construction there is a risk of accidental pollution incidences affecting the water environment (i.e. coastal waters and sediment and associated designations) from the following sources:

- Spillage or leakage of oils and fuels stored on site;
- Spillage or leakage of oils and fuels from construction machinery or site vehicles;
- Spillage of oil or fuel from refuelling machinery on site;
- Spillage or leakage from on-site toilet facilities;
- Suspended solids from construction works; and
- The use of concrete and cement in construction works.

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.

Concrete (specifically the cement component) is generally highly alkaline and any spillage to the water environment and/or soils could be detrimental to water/sediment quality, fauna and flora.

The effect of the potential pollution incidences during construction on water quality would be dependent on the scale and nature of the incident, therefore the magnitude of impact prior to mitigation may range from low to high, giving rise to effects of minor to major significance, prior to mitigation.

Groundwater Contamination

⁶⁷ Royal Haskoning DHV (2013). Nigg Energy Park: Sedimentation and Wave Modelling (Main Report & Appendices). Global Energy Nigg Ltd.

Recent chemical analysis indicates that groundwater remediation has had a positive effect on groundwater quality as detailed in Section 8.5.3. There remains the potential for piling activities to lead to the generation of flow pathways that would allow any remaining previously undetected contaminants to flow from the existing quay side area to the inner dock and the waters of the wider Moray Firth. However, the likelihood of piling contributing to the release of contaminated groundwater is considered low.

Should such an event occur, on the basis of previous site investigation, monitoring and analysis, it is considered that the position, limited extent and previous successful remediation, would limit the scale and nature of any potential contaminant release. Therefore, the magnitude of impact prior to mitigation may range from negligible to low, giving rise to effects of negligible to minor significance, prior to mitigation.

Tidal Regime

The proposed construction works, could result in alterations to the local tidal regime.

Hydrodynamic modelling⁶⁷ was previously undertaken for the adjacent South Quay development using a MIKE21 HD model, to simulate over one month of tidal conditions with and without the South Quay development. Details of tidal water levels within the vicinity of the proposed development are presented in Section 8.5.7. Due to the similarities spatially between the developments, this previous modelling exercise has been used to inform the assessment of the likely impact on tidal regime at the proposed development. Comparison of the hydrodynamic modelling results for the South Quay development, with and without the development, highlighted that at time of maximum tidal current velocities the development impacts were minor and localised in their extent, with a slight reduction of velocity (-0.2 to -0.7 m/s) within the newly formed basin to the west of Nigg Oil Terminal, and slight increases in velocity immediately west of the quay (+0.1 to +0.2m/s). The overall scheme was displayed to have no significant far-reaching effect on maximum tidal velocities within the wider Cromarty Firth, with only minor changes shown to be confined locally to the development.

The proposed development is located on the eastern edge of the South Quay development and is considered to form an extension of similar character. The development footprint is situated entirely within the existing dry dock, with an existing rock revetment present along the alignment of the proposed quay wall. As a result of the presence of the surrounding existing developments, and their associated dredge channels and quay walls, the alteration to tidal currents as a result of the proposed development is expected to represent only a very minor change from existing conditions. Due to the sheltered location of the proposed development within the existing dry dock, and the existing hard engineered character of the shoreline, the anticipated impact to tidal currents would, if anything, be reduced in comparison to those predicted for the South Quay development.

During the construction phase the greatest potential for impact would occur towards the end of the construction process, where the quay wall is in place. All stages of construction prior to this would have a more limited footprint, and thus more limited potential for impact. Overall, during the construction phase the impact of the proposed development on the tidal regime is considered to be of negligible magnitude within the immediate vicinity of the site and negligible magnitude within the wider Cromarty Firth, giving rise to effects of negligible significance, prior to mitigation.

Wave Climate

The proposed development could result in alterations to local wave climate within the immediate vicinity, and the wider Cromarty Firth. Spectral wave modelling was previously undertaken for the adjacent South Quay development using the MIKE by DHI software platform, to inform the assessment of the likely impact on the wave climate⁶⁸. However, the dry dock location of the proposed development is largely sheltered from waves by the surrounding infrastructure. Furthermore, the proposed development will be within the footprint of the existing rock revetment. As such no impacts on wave climate out with the confines of the dry dock are anticipated as a result of

⁶⁸ Royal Haskoning DHV (2013). Nigg Energy Park: Sedimentation and Wave Modelling (Main Report & Appendices). Global Energy Nigg Ltd.

the proposed development. Impacts are anticipated to be restricted to limited localised disturbance within the dry dock resulting from wave reflections and diffraction.

During the construction phase the greatest potential for impact would occur towards the end of the construction process, where the quay wall is in place. All stages of construction prior to this would have a more limited footprint, and thus more limited potential for impact. Overall, during the construction phase the impact of the proposed development on the wave climate is considered to be of low magnitude within the immediate vicinity and of negligible magnitude within the wider Cromarty Firth, giving rise to effects of minor and negligible significance respectively, prior to mitigation.

Sediment Transport

Due to the confined and sheltered location of the proposed development within the existing dry dock, and the existing hard engineered character of the surrounding shoreline, it is predicted that there will be negligible impact to tidal currents, and only limited additional disturbance to wave climate within the immediate vicinity.

Therefore, in the absence of significant impact to the key drivers of sediment transport, and no significant change to coastal alignment, it is considered that during the construction phase the impact of the proposed development on sediment transport within the immediate vicinity of the proposed development, and within the wider Cromarty Firth, will be of negligible magnitude, giving rise to effects of negligible significance, prior to mitigation.

8.7.3 Operational Phase

The potential impacts identified are assessed under the following headings:

- Hydrology;
- Water and sediment quality;
- Tidal regime;
- Wave climate; and
- Sediment transport.

The degree of potential environmental impact is provided as appropriate.

Hydrology

As during construction, there is potential for increased run-off due to the presence of impermeable and semi-permeable surfaces. The impact of surface water flow alterations and increased run-off would be of a negligible magnitude prior to mitigation measures due to the small contributing catchment and coastal location of the proposed development, giving rise to effects of negligible significance, prior to mitigation.

Water and Sediment Quality

It is understood that maintenance dredging will continue to be required, as is the case under existing conditions, the likely effects of which would be localised to the existing graving dock.

There is unlikely to be any requirement for further terrestrial groundworks during the operational phase, beyond any required maintenance works, and therefore the risk of erosion and sedimentation from groundworks will be reduced from the construction phase.

Prior to obtaining a maintenance dredging licence, sediment sampling and laboratory analysis of the sediment is undertaken to ensure the dredged material is uncontaminated. Therefore, the risk associated with disposal of the dredging arisings is considered to be negligible. There will be a potential risk of pollution as a result of spillages, during the operational phase. Additionally, there is the potential risk of contamination of surface water run-off from the proposed development platform, as well as contamination of coastal waters as a result of discharges from boats. The limited and unlikely risk of contaminant release from groundwater would remain as per the construction phase.

The impacts on water quality would therefore range from low to high magnitude prior to mitigation measures, giving rise to effects of minor to major significance, prior to mitigation.

Tidal Regime

The sub-tidal and inter-tidal operational character of the proposed development is considered to be the same as that of the late construction phase, with the quay wall in place. Therefore, the impact of the proposed development during the operational phase on the tidal regime is considered to be the same as during the construction phase. The magnitude of impact on the tidal regime is considered to be of negligible magnitude within the immediate vicinity of the site, and negligible magnitude within the wider Cromarty Firth, giving rise to effects of negligible significance, prior to mitigation.

Wave Climate

The sub-tidal and inter-tidal operational character of the proposed development is considered to be the same as that of the late construction phase, with the quay wall in place. Therefore, the impact of the proposed development during the operational phase on the wave climate is considered to be the same as during the construction phase. The magnitude of impact on the wave climate is considered to be of low magnitude within the immediate vicinity of the site and negligible magnitude within the wider Cromarty Firth, prior to mitigation.

Sediment Transport

The sub-tidal and inter-tidal operational character of the proposed development is considered to be the same as that of the late construction phase, with the quay wall in place. Therefore, the impact of the proposed development during the operational phase on sediment transport is considered to be the same as during the construction phase. The magnitude of impact on sediment transport is considered to be of negligible magnitude within the immediate vicinity of the site and negligible magnitude within the wider Cromarty Firth, giving rise to effects of negligible significance, prior to mitigation.

8.7.4 Cumulative Assessment

From the sites identified in the cumulative assessment provided in Chapter 3 of the EIAR, the proposed development is not predicted to add to the associated impacts from any of these sites, due to the localised nature of predicted impacts and the distance between the proposed development and those sites considered in the cumulative assessment.

8.8 Mitigation and Monitoring

Mitigation aims to avoid, manage, control and further minimise environmental impacts and is discussed within the following sections.

General Management

A CEM Plan will be developed to ensure that the mitigation measures outlined in the EIAR are followed during the proposed construction works. The CEM Plan includes surface water management and pollution prevention measures (e.g. Pollution Prevention Plan) that will be in place during construction and operation. The CEM Plan will remain a live document and will be continually updated as the work progresses. The CEM Plan 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.

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

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.

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.

All 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). The level of authorisation required is dependent on the anticipated environmental risk posed by the activity to be carried out. These activities could include construction drainage. Construction activities below MHWS with potential to affect the water environment require to be authorised under a Marine Licence.

Surface Water Management

The surface water drainage will be designed to ensure that there are no untreated surface water discharges directly to surrounding coastal waters. It is proposed to replicate natural drainage around construction areas and to use source control to deal with rainwater in proximity to where it hits the ground in line with current Sustainable Drainage Systems (SuDS) guidance. Suitable prevention measures will be in place at all times to prevent the release of pollutants to the water environment, including adjacent coastal waters. These will be regularly inspected and maintained to ensure optimal performance.

Site Compounds

Run-off from compounds will be captured and passed through construction drainage features prior to discharge. Foul drainage will either be contained in a closed system and disposed of at a suitable off-site facility with private treatment and discharge or, where possible, directed via a connection to the PON foul drainage treatment system.

Concrete

In the case that concrete batching was 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 GPP6:

- 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.
- 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.

Oil, Fuel, Site Vehicle Use and Storage

The risk of oil contamination will be minimised by good site working practice (further described below) but should a higher risk of oil contamination be identified then installation of an oil separator will be considered.

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:
 - Storage for oil and fuels on site will be designed to be compliant with GPP2 and GPP8.
 - The storage and use of loose drums of fuel on site will not be permitted.
 - Bunded tanks will provide storage of at least 110% of the tank's maximum capacity.
- Refuelling and maintenance:
 - Fuelling and maintenance of vehicles and machinery, and cleaning of tools, will be carried out in a designated area where possible in line with PPG7.
 - Multiple spill kits will be kept on site.
 - Drip trays will be used while refuelling.
 - Regular inspection and maintenance of vehicles, tanks and bunds will be undertaken.

Emergency procedure: The Pollution Incident Response Plan will include measures to deal with accidental spillages.

Groundwater Contamination

Monitoring and analysis undertaken to date has indicated that previous groundwater remediation has been successful. In the unlikely event that potential groundwater release of hydrocarbons is detected during piling operations, sampling and laboratory analysis will be undertaken. Should chemical analysis indicate presence of hydrocarbon release, or any associated deterioration in groundwater quality, discussions will be held with the appropriate regulatory authorities i.e. THC and SEPA in order to design and implement measures to prevent impacts on coastal waters.

8.8.1 Monitoring and Enhancement

Specific auditing and monitoring plans will be developed by the contractor and will cover the following:

- The contractor's own Environmental Management System;
- The CEM Plan, schedule of mitigation register, relevant legislation and industry good practice;
- All project 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).

8.8.2 Operational Phase Mitigation

General Management

An Operational Environmental Management Document (OEMD) will be in place throughout the operational phase. 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 Management

It is proposed that drainage of surface water will adopt SuDS principles and be by means of surface mounted drainage channels which will include catch pits at changes in direction and the outflow will pass through suitable oil separators with sampling chambers included as detailed in Technical Appendix 8.2, Volume 3 of this EIAR.

Details of the operational surface water management proposals and methodology will be included within the OEMD and will be submitted to SEPA's operations team for agreement consent. Plans of the surface water management system will be located within the Site office, with foul water systems clearly marked.

Where a site use or development proposal is such that it will require a Pollution Prevention and Control (PPC) authorisation from SEPA, then specific processes, techniques and technologies will be included within the surface

water management system in that location in order to meet the requirements of the PPC authorisation. Such measures would be in line with best practice guidance.

Oil, Fuel, Site Vehicle Use and Storage

The existing PON Pollution Incident Response Plan takes full consideration of best practice, statutory requirements and identification of areas of highest sensitivity. It provides site spill response procedures, emergency contact details and equipment inventories and their location. All operation staff are made aware of this document, and its contents, and it is available in the port office. Appropriate spill kits and absorbent materials are stored in suitable locations on site which are easy to access. Staff/contractors are trained in the use of spill kits and other pollution control equipment and the operation of pollution control devices. The existing Pollution Incident Response Plan already includes the Eastern Inner Dock Quay.

8.9 Residual Effects

The residual effects expected to arise following implementation of the mitigation measures detailed above are summarised in Table 8-6. These residual effects reflect receptor sensitivity, the post-mitigation magnitude and detail the resultant effect on each receptor. The residual effects are considered to be either minor or negligible, and accordingly no significant effects have been identified.

8.10 Statement of Significance

Overall the effects of the proposed development on the water environment, soils and coastal processes are not considered to be significant.

Table 8-6: Residual Effects

Effect	Receptor	Receptor Sensitivity	Source of Impact	Type of Effect	Duration	Probability of Occurrence	Magnitude of Impact Pre-mitigation	Magnitude of Impact Post-mitigation	Residual Effect (Post-mitigation)
Construction Phase									
Hydrology	Operational coastal waters and sediment within the vicinity of the proposed development	Medium	Terrestrial construction works	Negative	Short	Possible	Negligible	Negligible	Negligible
Water and sediment quality - excavation and reclamation	Operational coastal waters and sediment within the vicinity of the proposed development	Medium	Construction Works	Negative	Short	Possible	Low	Negligible	Negligible
	Cromarty Firth SSSI	High	Construction Works	Negative	Short	Unlikely	Negligible	Negligible	Negligible
	Rosemarkie to Shandwick Coast SSSI	High	Construction Works	Negative	Short	Unlikely	Negligible	Negligible	Negligible
	Moray Firth SAC	High	Construction Works	Negative	Short	Unlikely	Negligible	Negligible	Negligible
	Cromarty Firth SPA	High	Construction Works	Negative	Short	Unlikely	Negligible	Negligible	Negligible
	Cromarty Firth RAMSAR	High	Construction Works	Negative	Short	Unlikely	Negligible	Negligible	Negligible
Water and sediment quality - sediment discharge and dispersion	Operational coastal waters and sediment within the vicinity of the proposed development	Medium	Construction Works	Negative	Short	Possible	Low	Negligible	Negligible
	Cromarty Firth SSSI	High	Construction Works	Negative	Short	Unlikely	Negligible	Negligible	Negligible
	Rosemarkie to Shandwick Coast SSSI	High	Construction Works	Negative	Short	Unlikely	Negligible	Negligible	Negligible
	Moray Firth SAC	High	Construction Works	Negative	Short	Unlikely	Negligible	Negligible	Negligible
	Cromarty Firth SPA	High	Construction Works	Negative	Short	Unlikely	Negligible	Negligible	Negligible
	Cromarty Firth RAMSAR	High	Construction Works	Negative	Short	Unlikely	Negligible	Negligible	Negligible
Pollution incidences – construction activities	Operational coastal waters and sediment within the vicinity of the proposed development	Medium	Construction oils, fuels & concrete	Negative	Short	Possible	Low - High	Negligible	Negligible
	Cromarty Firth SSSI	High	Construction oils, fuels & concrete	Negative	Short	Possible	Low - High	Negligible	Negligible
	Rosemarkie to Shandwick Coast SSSI	High	Construction oils, fuels & concrete	Negative	Short	Unlikely	Low - High	Negligible	Negligible
	Moray Firth SAC	High	Construction oils, fuels & concrete	Negative	Short	Possible	Low - High	Negligible	Negligible
	Cromarty Firth SPA	High	Construction oils, fuels & concrete	Negative	Short	Possible	Low - High	Negligible	Negligible
	Cromarty Firth RAMSAR	High	Construction oils, fuels & concrete	Negative	Short	Possible	Low - High	Negligible	Negligible
Pollution incidences - contamination	Operational coastal waters and sediment within the vicinity of the proposed development	Medium	Groundwater contaminant release	Negative	Short	Unlikely	Negligible - Low	Negligible	Negligible
	Cromarty Firth SSSI	High	Groundwater contaminant release	Negative	Short	Unlikely	Negligible - Low	Negligible	Negligible
	Rosemarkie to Shandwick Coast SSSI	High	Groundwater contaminant release	Negative	Short	Unlikely	Negligible - Low	Negligible	Negligible
	Moray Firth SAC	High	Groundwater contaminant release	Negative	Short	Unlikely	Negligible - Low	Negligible	Negligible
	Cromarty Firth SPA	High	Groundwater contaminant release	Negative	Short	Unlikely	Negligible - Low	Negligible	Negligible
	Cromarty Firth RAMSAR	High	Groundwater contaminant release	Negative	Short	Unlikely	Negligible - Low	Negligible	Negligible
Changes to tidal regime	Operational coastal waters and sediment within the vicinity of the proposed development	Medium	Construction Works	Negative	Permanent	Possible	Negligible	Negligible	Negligible
	Cromarty Firth SSSI	High	Construction Works	Negative	Permanent	Unlikely	Negligible	Negligible	Negligible
	Rosemarkie to Shandwick Coast SSSI	High	Construction Works	Negative	Permanent	Unlikely	Negligible	Negligible	Negligible
	Moray Firth SAC	High	Construction Works	Negative	Permanent	Unlikely	Negligible	Negligible	Negligible

Effect	Receptor	Receptor Sensitivity	Source of Impact	Type of Effect	Duration	Probability of Occurrence	Magnitude of Impact Pre-mitigation	Magnitude of Impact Post-mitigation	Residual Effect (Post-mitigation)
	Cromarty Firth SPA	High	Construction Works	Negative	Permanent	Unlikely	Negligible	Negligible	Negligible
	Cromarty Firth RAMSAR	High	Construction Works	Negative	Permanent	Unlikely	Negligible	Negligible	Negligible
Changes to wave climate	Operational coastal waters and sediment within the vicinity of the proposed development	Medium	Construction Works	Negative	Permanent	Likely	Low	Low	Minor
	Cromarty Firth SSSI	High	Construction Works	Negative	Permanent	Unlikely	Negligible	Negligible	Negligible
	Rosemarkie to Shandwick Coast SSSI	High	Construction Works	Negative	Permanent	Unlikely	Negligible	Negligible	Negligible
	Moray Firth SAC	High	Construction Works	Negative	Permanent	Unlikely	Negligible	Negligible	Negligible
	Cromarty Firth SPA	High	Construction Works	Negative	Permanent	Unlikely	Negligible	Negligible	Negligible
	Cromarty Firth RAMSAR	High	Construction Works	Negative	Permanent	Unlikely	Negligible	Negligible	Negligible
Sediment transport	Operational coastal waters and sediment within the vicinity of the proposed development	Medium	Construction Works	Negative	Permanent	Possible	Negligible	Negligible	Negligible
	Cromarty Firth SSSI	High	Construction Works	Negative	Permanent	Unlikely	Negligible	Negligible	Negligible
	Rosemarkie to Shandwick Coast SSSI	High	Construction Works	Negative	Permanent	Unlikely	Negligible	Negligible	Negligible
	Moray Firth SAC	High	Construction Works	Negative	Permanent	Unlikely	Negligible	Negligible	Negligible
	Cromarty Firth SPA	High	Construction Works	Negative	Permanent	Unlikely	Negligible	Negligible	Negligible
	Cromarty Firth RAMSAR	High	Construction Works	Negative	Permanent	Unlikely	Negligible	Negligible	Negligible
Operational Phase									
Hydrology	Operational coastal waters and sediment within the vicinity of the proposed development	Medium	Operational Activities and Infrastructure	Negative	Short	Possible	Negligible	Negligible	Negligible
Water and sediment quality – maintenance works	Operational coastal waters and sediment within the vicinity of the proposed development	Medium	Operational Activities	Negative	Short	Possible	Low	Negligible	Negligible
	Cromarty Firth SSSI	High	Operational Activities	Negative	Short	Unlikely	Negligible	Negligible	Negligible
	Rosemarkie to Shandwick Coast SSSI	High	Operational Activities	Negative	Short	Unlikely	Negligible	Negligible	Negligible
	Moray Firth SAC	High	Operational Activities	Negative	Short	Unlikely	Negligible	Negligible	Negligible
	Cromarty Firth SPA	High	Operational Activities	Negative	Short	Unlikely	Negligible	Negligible	Negligible
	Cromarty Firth RAMSAR	High	Operational Activities	Negative	Short	Unlikely	Negligible	Negligible	Negligible
Water and sediment quality - sediment discharge and dispersion	Operational coastal waters and sediment within the vicinity of the proposed development	Medium	Operational Activities	Negative	Short	Possible	Low	Negligible	Negligible
	Cromarty Firth SSSI	High	Operational Activities	Negative	Short	Unlikely	Negligible	Negligible	Negligible
	Rosemarkie to Shandwick Coast SSSI	High	Operational Activities	Negative	Short	Unlikely	Negligible	Negligible	Negligible
	Moray Firth SAC	High	Operational Activities	Negative	Short	Unlikely	Negligible	Negligible	Negligible
	Cromarty Firth SPA	High	Operational Activities	Negative	Short	Unlikely	Negligible	Negligible	Negligible
	Cromarty Firth RAMSAR	High	Operational Activities	Negative	Short	Unlikely	Negligible	Negligible	Negligible
Pollution incidences – operational activities	Operational coastal waters and sediment within the vicinity of the proposed development	Medium	Operational activities, oils, fuels & concrete	Negative	Short	Possible	Low - High	Negligible	Negligible
	Cromarty Firth SSSI	High	Operational activities, oils, fuels & concrete	Negative	Short	Possible	Low - High	Negligible	Negligible
	Rosemarkie to Shandwick Coast SSSI	High	Operational activities, oils, fuels & concrete	Negative	Short	Unlikely	Low - High	Negligible	Negligible
	Moray Firth SAC	High	Operational activities, oils, fuels & concrete	Negative	Short	Possible	Low - High	Negligible	Negligible
	Cromarty Firth SPA	High	Operational activities, oils, fuels & concrete	Negative	Short	Possible	Low - High	Negligible	Negligible
	Cromarty Firth RAMSAR	High	Operational activities, oils, fuels & concrete	Negative	Short	Possible	Low - High	Negligible	Negligible
	Operational coastal waters and sediment within the vicinity of the proposed development	Medium	Groundwater contaminant release	Negative	Short	Unlikely	Negligible - Low	Negligible	Negligible

Effect	Receptor	Receptor Sensitivity	Source of Impact	Type of Effect	Duration	Probability of Occurrence	Magnitude of Impact Pre-mitigation	Magnitude of Impact Post-mitigation	Residual Effect (Post-mitigation)
Pollution incidences - contamination	Cromarty Firth SSSI	High	Groundwater contaminant release	Negative	Short	Unlikely	Negligible - Low	Negligible	Negligible
	Rosemarkie to Shandwick Coast SSSI	High	Groundwater contaminant release	Negative	Short	Unlikely	Negligible - Low	Negligible	Negligible
	Moray Firth SAC	High	Groundwater contaminant release	Negative	Short	Unlikely	Negligible - Low	Negligible	Negligible
	Cromarty Firth SPA	High	Groundwater contaminant release	Negative	Short	Unlikely	Negligible - Low	Negligible	Negligible
	Cromarty Firth RAMSAR	High	Groundwater contaminant release	Negative	Short	Unlikely	Negligible - Low	Negligible	Negligible
Changes to tidal regime	Operational coastal waters and sediment within the vicinity of the proposed development	Medium	Operational quay structure	Negative	Permanent	Possible	Negligible	Negligible	Negligible
	Cromarty Firth SSSI	High	Operational quay structure	Negative	Permanent	Unlikely	Negligible	Negligible	Negligible
	Rosemarkie to Shandwick Coast SSSI	High	Operational quay structure	Negative	Permanent	Unlikely	Negligible	Negligible	Negligible
	Moray Firth SAC	High	Operational quay structure	Negative	Permanent	Unlikely	Negligible	Negligible	Negligible
	Cromarty Firth SPA	High	Operational quay structure	Negative	Permanent	Unlikely	Negligible	Negligible	Negligible
	Cromarty Firth RAMSAR	High	Operational quay structure	Negative	Permanent	Unlikely	Negligible	Negligible	Negligible
Changes to wave climate	Operational coastal waters and sediment within the vicinity of the proposed development	Medium	Operational quay structure	Negative	Permanent	Likely	Low	Low	Minor
	Cromarty Firth SSSI	High	Operational quay structure	Negative	Permanent	Unlikely	Negligible	Negligible	Negligible
	Rosemarkie to Shandwick Coast SSSI	High	Operational quay structure	Negative	Permanent	Unlikely	Negligible	Negligible	Negligible
	Moray Firth SAC	High	Operational quay structure	Negative	Permanent	Unlikely	Negligible	Negligible	Negligible
	Cromarty Firth SPA	High	Operational quay structure	Negative	Permanent	Unlikely	Negligible	Negligible	Negligible
	Cromarty Firth RAMSAR	High	Operational quay structure	Negative	Permanent	Unlikely	Negligible	Negligible	Negligible
Sediment transport	Operational coastal waters and sediment within the vicinity of the proposed development	Medium	Operational quay structure	Negative	Permanent	Possible	Negligible	Negligible	Negligible
	Cromarty Firth SSSI	High	Operational quay structure	Negative	Permanent	Unlikely	Negligible	Negligible	Negligible
	Rosemarkie to Shandwick Coast SSSI	High	Operational quay structure	Negative	Permanent	Unlikely	Negligible	Negligible	Negligible
	Moray Firth SAC	High	Operational quay structure	Negative	Permanent	Unlikely	Negligible	Negligible	Negligible
	Cromarty Firth SPA	High	Operational quay structure	Negative	Permanent	Unlikely	Negligible	Negligible	Negligible
	Cromarty Firth RAMSAR	High	Operational quay structure	Negative	Permanent	Unlikely	Negligible	Negligible	Negligible

9 SUPPORTING ASSESSMENTS

9.1 Accident and Natural Disaster

9.1.1 Introduction

Accidents and Natural Disasters (A&ND) was considered at the Scoping Stage of the EIAR against the criteria provided in The Institute of Environmental Management and Assessment (“IEMA”) ‘Major Accidents and Disasters in EIA: A Primer’ (September 2020), hereafter referred to as ‘The Primer’ to identify whether there was potential for significant A&ND impacts to occur as a result of the proposed development. The scoping assessment concluded that as the development was determined to be compliant with the ‘Primer’ criteria, that it was unlikely that the development would increase the risk of significant effects occurring during the construction phase. The consideration of A&ND was therefore scoped out of forming a full Chapter of the EIAR.

The following sections provides further details on this conclusion.

9.1.2 Assessment Scope and Methodology

Policy, Legislation and Guidance

Current policy, legislation and guidance relative to A&ND are provided below.

National Planning Framework 4 - National Planning Framework 4 (NPF4) was adopted in February 2023, replacing the previous National Planning Framework 3 (NPF3) and forming part of the Development Plan. The Scottish Planning Policy (SPP) (2014) was amalgamated with NPF4 in the adoption of the new framework.

The Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 - Regulation 5, Part 4 of the Regulations states that:

“The effects to be identified, described and assessed under paragraph (2) include the expected effects deriving from the vulnerability of the works to risks, so far as relevant to the works, of major accidents and disasters”.

Schedule 4, paragraph 9 requires an Environmental Impact Assessment Report (EIAR) to provide:

“A description of the expected significant adverse effects of the works on the environment deriving from the vulnerability of the works to risks of major accidents and/or disasters which are relevant to the project concerned.”

Health and Safety at Work etc. Act 1974 - The Act provides the framework for the regulation of workplace health and safety in the UK. It provides a legal framework for the provision of safe plant and equipment and prevention of harm to people from occupation hazards present in a workplace, including emergencies which may affect those offsite, or visiting the site.

Many associated regulations have been made under the HSWA including, but not limited to the following of relevance to the control of A&NDs of the proposed development:

Construction (Design and Management) Regulations 2015 (CDM) - These regulations place legal duties on almost all parties involved in construction work. The regulations place specific duties on

clients, designers and contractors, so that health and safety is taken into account throughout the life of a construction project from its inception to its subsequent final demolition and removal.

The Client, Designers and Contractors have to avoid foreseeable risks so far as is reasonably practicable by eliminating hazards associated with the design, construction, operation and maintenance aspects of the Proposed Scheme.

Therefore, the regulations ensure that mechanisms are in place to continually identify, evaluate and manage safety risks throughout the design, construction phase and operational phase of the Proposed Scheme. Many of the risks identified and managed out at the design phase also serve to eliminate or reduce the risk of a major accident (and therefore environmental consequence) occurring during the construction, operational and maintenance phases.

The Town and Country Planning (Hazardous Substances) (Scotland) Regulations 2015 - The controls ensure that hazardous substances can be kept or used in significant amounts only after the responsible authorities have had the opportunity to assess the degree of risk arising to persons in the surrounding area and to the environment. Even after all reasonably practicable measures have been taken to ensure compliance with health and safety legislation (e.g. Health and Safety at Work etc Act 1974); there will remain the residual risk of an accident which cannot entirely be eliminated.

Hazardous substance consents focus on ensuring the safety of the public around the consented site from potential major accident hazards.

Contravention of hazardous substances regulations (e.g. failing to obtain the required consent or failing to comply with the conditions of a consent) could expose people in the surrounding area to serious and immediate risk. Consequently, contravention of the regulations is a criminal offence and the Council has the power to prosecute offenders, which may result in an unlimited fine.

Pollution Prevention and Control (Scotland) Regulations 2012 - The primary purpose of the regulations is to protect the environment and human health by minimising emissions to air, water, and land. The requirements include obtaining permits, implementing pollution prevention measures, monitoring emissions, and reporting to regulatory authorities. The regulations apply to industrial facilities in Scotland that engage in specified activities listed under the regulations. Compliance with these regulations is essential to operate legally and sustainably while minimising their environmental impact.

Control of Major Accident Hazards Regulations 2015 (COMAH) - The purpose of the COMAH Regulations is to prevent major accidents involving dangerous substances and limit the consequences to people and the environment of any accidents which do occur.

The COMAH Regulations 2015 place an obligation on the operators of establishments that store, handle or process dangerous substances above certain thresholds to take all necessary measures to prevent major accidents and to limit the consequences for human health and the environment. Under the Regulations, a COMAH establishment may qualify as upper tier or lower tier, depending on the inventory of dangerous substances; sites that store, handle or process dangerous substances below a certain threshold do not qualify as establishments under the Regulations.

There are two types (tiers) of establishment which are subject to COMAH, known as ‘Upper Tier’ and ‘Lower Tier’ depending on the quantity of dangerous substances they hold. Upper Tier establishments will hold greater quantities of dangerous substances meaning that additional requirements are placed on them by the Regulations.

The Dangerous Substances and Explosive Atmospheres Regulations 2002 - The Dangerous Substances and Explosive Atmospheres Regulations 2002 are concerned with protection against risks

from fire, explosion and similar events arising from dangerous substances used or present in the workplace. From June 2015 DSEAR also covers gases under pressure and substances that are corrosive to metals.

Other Relevant Legislation include:

- Occupiers Liability (Scotland) Act 1960;
- The Civil Contingencies Act 2004 and the Civil Contingencies Act 2004 (Contingency Planning) (Scotland) Regulations 2005;
- The Provision and Use of Work Equipment Regulations 1998;
- Classification, Labelling and Packaging (CLP) Regulations 2015;
- Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016; and
- Pressure Equipment (Safety) Regulations 2016.

Guidance - There is no specific guidance available which sets out the approach for undertaking a A&ND assessment within an EIA. However, the scope of the assessment has been developed with reference to “Major Accidents and Disasters in EIA: An IEMA Primer” (IEMA, 2020) which lays out emerging best practice. In addition to this guidance, there is a considerable amount of information and guidance available to developers on the identification and control of major hazards associated with industrial chemical processes, the storage and use of chemicals, and major accident hazard pipelines conveying hazardous fluids.

The IEMA Primer defines Major Accidents as

‘Events that threaten immediate or delayed serious environmental effects to human health, welfare and/ or the environment and require the use of resources beyond those of the client or its appointed representatives to manage. Whilst malicious intent is not accidental, the outcome (e.g. train derailment) may be the same and therefore many mitigation measures will apply to both deliberate and accidental events.’⁶⁹

The impact of major accidents can be significant, with the potential to impact people both on and off-site, assets and property on and off-site, and the surrounding environment.

Disasters can be a natural hazard such as earthquakes, storms, flooding etc. or a man-made/external hazard (e.g. act of terrorism) which can result in consequences for people or the environment.

The National Risk Register 2023 (NRR) contains 89 threats that have been identified as having the potential to significantly impact the UK's safety, security, or critical systems at a national level. These threats include terrorism, cyber-attacks, state threats, pandemics, wildfires, and industrial action. In highlighting these risks, the NRR provides a foundation to enhance collective resilience and ensure the protection of our nation's vital interests.

Methodology

Unlike other assessments within the EIAR, the assessment does not deal with likely effects. The scope of this assessment focuses on potential sudden events of low likelihood, which may reasonably occur, resulting in major negative impacts on receptors. This approach directs the assessment to focus on “low likelihood but potentially high consequence events” such as a major spill, explosion, fire etc. Smaller incidents (spills, sediment loss etc.) are addressed elsewhere in this EIAR in the relevant topic chapters. The A&ND assessment focuses on major events only.

⁶⁹ Major Accidents and Disasters in EIA: An IEMA Primer- <https://www.iema.net/resources/reading-room/2020/09/28/major-accidents-and-disasters-in-eia-an-iema-primer>

The scope and methodology of this assessment is centred on the understanding that the proposed development will be designed, built and operated in line with best international current practice. As such, major accidents resulting from the proposed development would be unlikely.

In accordance with the approach presented in the IEMA Primer (IEMA, 2020), this assessment follows three stages (screening, scoping, assessment) as follows:

Stage 1 Screening: The IEMA Primer (2020) states that “during screening it should be sufficient to identify if a development has a vulnerability to major accidents and / or disasters and to consider whether a development could lead to a significant effect.”

The Primer provides 3 high level tests to identify if a development has a vulnerability to major A&ND's as follows:

- Is the development a source of hazard itself that could result in a major accident and/or disaster occurring?
- Does the development interact with any sources of external hazards that may make it vulnerable to a major accident and/or disaster?
- If an external major accident and/or disaster occurred, would the existence of the development increase the risk of a significant effect to an environmental receptor occurring?

Stage 2 Scoping: Scoping is undertaken to determine in more detail whether there is potential for significant effects as a result of major accidents and/or disasters associated with the Proposed Scheme. If the Proposed Development is screened in for the assessment of impacts in relation to major accidents and/or disasters at Stage 1, Stage 2 aims to provide a more detailed determination as to whether there is potential for significant effects.

The IEMA Primer (2020) further states that the assessment of impacts in relation to major accidents and/or disasters may be scoped out if it can be shown that:

“There is no source-pathway-receptor linkage of a hazard that could trigger a major accident and/or disaster or potential for the scheme to lead to a significant environmental effect”; or

“All possible major accidents and/or disasters are adequately covered elsewhere in the assessment or covered by existing design measures or compliance with legislation and best practice.”

The Primer further notes that:

“A major accidents and/or disasters assessment will be relevant to some developments more than others, and for many developments it is likely to be scoped out of the assessment”.

Stage 3 Assessment: The assessment stage provides further understanding on the likelihood of a risk event occurring and identifies the requirement for further mitigation. If hazard types are screened in at Stage 2, they are brought forward to Stage 3 for detailed consideration of the potential for significant impacts to occur. The following exercises are carried out in the Stage 3 Assessment:

- Setting out the baseline: Hazard identification and receptor tagging;
- Assessment:
 - Identifying reasonable worst-case impact;
 - Selecting the grouped risk events that need further assessment;
 - Understanding the likelihood of a risk event occurring; and

- Mitigation: Identifying the requirements for secondary mitigation.

9.1.3 Baseline Conditions

Current Site Conditions and Proposed Development - The proposed development will be undertaken within the PON which comprises laydown and storage areas, fabrication and assembly shops, staff offices and a deep-water quay. Access to the port can be gained via the B9715.

The operations at PON are controlled via the integrated management system or via the tenant's management systems when operating on a site-within-a-site basis. An OEMP ensures activities at Nigg are undertaken in accordance with good environmental practice.

The site comprises the eastern side of the Inner Dock at PON. It is an existing dry dock with a sloped revetment covered with rock armour. The proposals will see the replacement of the sloped revetment with a vertical retaining quay wall.

Currently the Inner Dry Dock is flooded with the dock gate moored offshore at the adjacent Oil Terminal jetty. This situation is envisaged to remain for the foreseeable future and the proposed construction works would take place within a flooded Dry Dock. Full details of the construction activities is provided in Section 2.5.

Section 2.3.2 and 2.3.3 describes the wider environment including sensitive receptors and ecologically sensitive sites.

Climate - The development site is located within a relatively rural area influenced by maritime weather conditions, as a consequence, the Nigg area does not suffer from the extremes of temperature, tsunamis, hurricanes etc.

Hydrological Regime / Flooding – The Hydrological Regime / Flooding has been considered in Chapter 7. The development is considered to be water compatible.

Earthquakes - Since the 1950's Invergordon (the closest site to Nigg in which data is available) has experienced a total of 36 earthquakes, within a 150 km radius⁷⁰. The last earthquake at Invergordon was 6 years ago and struck 133 km to the southwest with a magnitude of 3.8. On the Richter scale (refer to Table 9.1) this is categorised as minor with the effects felt by many people but no damage.

Table 9-1: Earthquake Magnitude Scale

Magnitude Level	Category	Effects
Less than 1.0 to 2.9	micro	generally not felt by people, though recorded on local instruments
3.0–3.9	minor	felt by many people; no damage
4.0–4.9	light	felt by all; minor breakage of objects
5.0–5.9	moderate	some damage to weak structures
6.0–6.9	strong	moderate damage in populated areas
7.0–7.9	major	serious damage over large areas; loss of life
8.0 and higher	great	severe destruction and loss of life over large areas

Road Transport – Road transport has been considered in Chapter 6 and found to be acceptable through the implementation of mitigation measures.

Aircraft - There are no active airfields or airports within 5km of the site.

⁷⁰ [Latest Earthquakes Near Invergordon in Scotland, United Kingdom \(Recently Updated\) \(database.earth\)](#)

Navigation – As identified in Section 2.3.4, the existing Statutory Harbour Authority for the Cromarty Firth is the POCF who, are the responsible authority for overall control and management of navigation within the Firth and its approaches. The statutory harbour operates a Port of Cromarty Firth Marine Safety Management Plan.

COMAH Establishments - The COMAH 2015 Public Information Register indicates that there is one COMAH establishment located within 3 miles of the proposed development site, namely Nigg Oil Terminal. This site is now closed and being remediated.

9.1.4 Screening Assessment

Is the development itself a source of major accidents or is vulnerable to disasters?

The upgrade and operation of the Eastern Inner Dock Quay is not considered to be of a scale that would represent a significant source of major accidents. The construction work would also be covered by the CDM Regs which have been developed to prevent accidents and fatalities occurring.

The proposed works are not located within an area of significant seismic activity, nor are climatic factors prone to creating disasters such as tsunamis, hurricanes or catastrophic flooding. Taking the above into account it is considered that the development itself will not be a source of major accidents or will be vulnerable to disasters.

Does the Development Interact with external hazards or associated activity?

The construction phase works are focussed on the eastern side of the Eastern Inner Dock Quay area and the only external interaction will be related to import of material to site as part of the works. Like other works at Nigg, a CTMP will be agreed with the Council prior to work commencing and will be enforced throughout the construction phase of the development.

Once operational the quay will be utilised for import / export of goods / products including HV cables. It is considered that the external interactions associated with the operation of the quay will be comparable in nature to the current use. The PON has an OEMP and along with its tenants, operates an integrated management system. Any marine traffic accessing the port will need to adhere to the POCF Marine Safety Management Plan which is enforced by POCF as the Statutory Harbour Authority.

It is therefore considered that the development is unlikely to interact with external hazards or associated activities.

If an external major accident or disaster occurred would the existence of the development increase risk of significant effects to environmental receptors?

As noted above the proposed works are concentrated to the east side of the Eastern Inner Dock Quay. The construction area will be segregated from the operational areas by fencing and the area would be covered by the CDM Regs under the control of the principal contractor.

An overarching CEM Document has been developed which provides a framework for developing a site specific CEM Plan by the contractor which would be submitted for regulatory approval prior to works commencing.

The construction works are considered to be temporary in nature. Once the work to upgrade the quay are complete the area would return to being under the control of the PON as site operators and POCF as the Statutory Harbour Authority.

As such it is considered that should an external major accident or disaster occur that the existence of the development would not increase the risk of significant effects to environmental receptors occurring.

9.1.5 Mitigation Measures

On the basis of the assessment carried out above, the mitigation measures with regards to accidents will be addressed in the proposed site specific contractors CEM Plan during the construction phase. No additional mitigation measures are proposed for the Operation of the quay.

9.2 Air Quality

9.2.1 Introduction

The potential for impacts on local air quality was considered at the Scoping Stage of the EIAR. During the review, baseline air quality and the construction phase emissions were considered. The scoping assessment concluded that as the development was not located within an area known to have poor air quality in combination with controlling construction dust emissions through the development of a Construction Dust Management Plan (CDMP), the consideration of Air Quality was therefore scoped out of forming a full Chapter of the EIAR.

The following sections provides further details on this conclusion.

9.2.2 Assessment Scope and Methodology

Public Consultation

The public consultation events held in March 2024 highlighted a concern regarding the potential for shipping emissions to impact local air quality.

Legislation, Policy and Guidance

Legislation – Air quality in the UK is protected by national and regional legislation. In the UK, Part IV of the Environment Act 1995 places a statutory duty on local authorities to periodically review and assess the air quality within their area. This involves consideration of present and likely future air quality against air quality standards and objectives. Guidelines of the “Review and Assessment” process of local air quality were published in the 1997 National Air Quality Strategy (NAQS) and associated guidance and technical guidance. In 2000, the Government reviewed the 1997 Strategy and produced a revised Air Quality Strategy for England, Scotland, Wales and Northern Ireland, which resulted in the production of air quality standards and objectives. The most current revision of the Strategy available is dated March 2011 (DEFRA, 2011).

Policy

National Planning Framework 4 - National Planning Framework 4 (NPF4) was adopted in February 2023 and outlines Scotland’s long-term spatial strategy for development and investment in infrastructure that plays a key role in the delivery of the United Nations Sustainable Development Goals and the transition to net zero. The NPF specifies that development proposals that are likely to have significant adverse effects on air quality will not be supported. NPF4 provides for National Developments of significant importance that will help to deliver the spatial strategy (The Scottish Government, 2023).

Scotland’s Local Air Quality Management Policy and Technical Guidance - Scotland’s Local Air Quality Management Policy Guidance outlines the relation between air quality and the land use planning system. It outlines resolutions for local authorities when faced with air quality problems and gives air quality considerations at the earliest stage of the planning process. It provides guidance on delivery of air quality objectives for the land-use planning system with the main aim of improving air quality (The Scottish Government, 2016).

Standards - The objectives adopted in Scotland are contained within the Air Quality (Scotland) Regulations 2000 and Air Quality (Scotland) Amendment Regulations 2002 for the purpose of Local Air Quality Management and consolidate the provisions of the previous Air Quality Regulations. The Air Quality Standards (Scotland) Regulations 2010 introduce objectives for Particles (Particulate Matter (PM₁₀ and PM_{2.5})), Polycyclic Aromatic Hydrocarbons and lead with the Air Quality (Scotland) Amendment Regulations 2016 amending the Air Quality (Scotland) Regulations 2000 to bring into statute an objective for PM_{2.5}.

Standards for air pollution are concentrations over a given time period that are considered to be acceptable in light of what is known about the effects of each pollutant on health and on the environment. They can also be used as a benchmark to see if air pollution is getting better or worse.

An exceedance of a standard is a period of time (which is defined in each standard) where the concentration is higher than that set down by the standard. In order to make useful comparisons between pollutants, for which the standards may be expressed in terms of different averaging times, the number of days on which an exceedance has been recorded is often reported.

Table 9.2 provides a summary of the air quality objectives from the Air Quality (Scotland) Regulations 2000, as amended in 2002 and the Air Quality (Scotland) Amendment Regulations 2016. An objective is the target date on which exceedances of a standard must not exceed a specified number. The results of air quality modelling will be compared against these objectives.

Table 9-2: Summary of Objectives of the UK Air Quality Strategy

Pollutant	Objective	Measured as	To be achieved by
Benzene (All Authorities)	16.25 µg/m ³	Running Annual Mean	31 December 2003
Benzene (Scotland and Northern Ireland Only)	3.25 µg/m ³	Running Annual Mean	31 December 2010
1,3 Butadiene	2.25 µg/m ³	Running Annual Mean	31 December 2003
Carbon Monoxide (Authorities in Scotland Only)	10.0 mg/m ³	Running 8-Hour Mean	31 December 2003
Lead	0.5 µg/m ³	Annual Mean	31 December 2004
	0.25 µg/m ³	Annual Mean	31 December 2008
Nitrogen Dioxide	200 µg/m ³ Not to be exceeded more than 18 times per year	1 Hour Mean	31 December 2005
	40 µg/m ³	Annual Mean	31 December 2005
Particles (PM ₁₀) (gravimetric) All authorities	50 µg/m ³ Not to be exceeded more than 35 times per year	24 Hour Mean	31 December 2004
	40 µg/m ³	Annual Mean	31 December 2004
Particles (PM ₁₀) (gravimetric) Scotland Only	50 µg/m ³ Not to be exceeded more than 7 times per year	24 Hour Mean	31 December 2010
	18 µg/m ³	Annual Mean	31 December 2010

Pollutant	Objective	Measured as	To be achieved by
Particles (gravimetric)* All authorities	(PM _{2.5}) 25 µg/m ³ (target)	Annual Mean	2020
	15% cut in urban background exposure	Annual Mean	2010 – 2020
Particles (gravimetric) Scotland Only	(PM _{2.5}) 10 µg/m ³ (Limit)	Annual Mean	2020
Sulphur Dioxide	350 µg/m ³ not to be exceeded more than 24 times a year	1-Hour Mean	31 December 2004
	125 µg/m ³ not to be exceeded more than 3 times a year	24 Hour Mean	31 December 2004
	266 µg/m ³ not to be exceeded more than 35 times a year	15-Minute Mean	31 December 2005
PAH *	0.25 ng/m ³	Annual Mean	31 December 2010
Ozone *	100 µg/m ³	8 hourly running or hourly mean *	31 December 2005
* not currently assessed by Scottish Local Authorities			

Guidance

LAQM.TG22 and LAQM.PG16 - Technical Guidance (LAQM.TG(09)) was issued on behalf of the Department of Environment, Food and Rural Affairs (DEFRA) in February 2009 (DEFRA, 2009a). A Policy Guidance (LAQM.PG09) was also issued at the same time (DEFRA, 2009b). This guidance is designed to guide local authorities through the Review and Assessment process and will also be adhered to for the purpose of the air quality assessment.

DEFRA and The Scottish Government updated LAQM.TG(09) in 2016 with the publication of LAQM.TG(16). The main change was in the approach with a greater emphasis on action planning to bring forward improvements in air quality and to include local measures as part of EU reporting requirements. The reporting requirements for Local Authorities also changed with the adoption of an Annual Progress Report.

LAQM.TG(16) was further updated in 2022 with the publication of LAQM.TG(22). The main changes are in relation to the new LAQM Policy Guidance for England, however, the Scottish and Welsh Administrations participated and provided inputs for the updated LAQM.TG(22). LAQM.TG(22) includes updated findings on the relationship between annual and hourly NO₂ and between PM₁₀ and PM_{2.5}. Local Authorities continue to appraise pollutant concentrations of NO₂, PM₁₀ and Sulphur Dioxide (SO₂). Local Authorities are also required to work towards reducing levels of PM_{2.5} (DEFRA, 2022).

Cleaner Air for Scotland 2 – Towards a Better Place for Everyone (CAFS2) - The LAQM Policy Guidance for Scotland was updated in 2023 to LAQM.PG(S)(23). This guidance is intended to help local authorities with their LAQM duties under Part IV of the Environment Act 1995 and is intended to complement the Cleaner Air for Scotland 2 – Towards a Better Place for Everyone (CAFS2) guidance which presents an overarching framework for Scottish air quality strategy.

Land-use Planning & Development Control: Planning for Air Quality - The document “Land-Use Planning & Development Control: Planning for Air Quality” produced by Environmental Protection UK and Institute of Air Quality Management (EPUK & IAQM, 2017) provides guidance on dealing with air quality issues within the development control process. This guidance provides an assessment approach to defining whether the impact on air quality associated with the proposed development should be of material concern.

The methodology used assesses the change in pollutant concentrations, taking into account the air quality objectives, to assess the impacts of proposed developments on air quality. It also states that the effects on the residents of a proposed development need to be assessed as significant if the air quality objectives at the façade are not met. The assessed effect can be reduced if provision is made to reduce the exposure.

Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2024; Version 2.2) - This guidance document has been produced by the Institute of Air Quality Management (IAQM) using the experience of IAQM members within a working group. This guidance document considers relevant literature and updates in the 2012, 2014, 2016, 2023 and 2024 IAQM publications and provides a framework for assessing construction dust as shown in Figure 9.1.

The first step in the Framework is to screen the need for a detailed dust assessment against the following criteria:-

- A ‘human receptor’ within;
 - 250m of the boundary of the site; or
 - 50m of the route(s) used by construction vehicles on the public highway, up to 250m from the site entrance(s).
- An ‘ecological receptor’ within;
 - 50m of the boundary of the site; or
 - 50m of the routes(s) used by construction vehicles on the public highway up to 250m from the site entrance(s).

The criteria are noted to be conservative in nature. If none of the criteria above is met, then it can be concluded that the level of risk associated with construction dust is “negligible” and any effects will not be significant. As such there is no requirement for a detailed dust assessment.

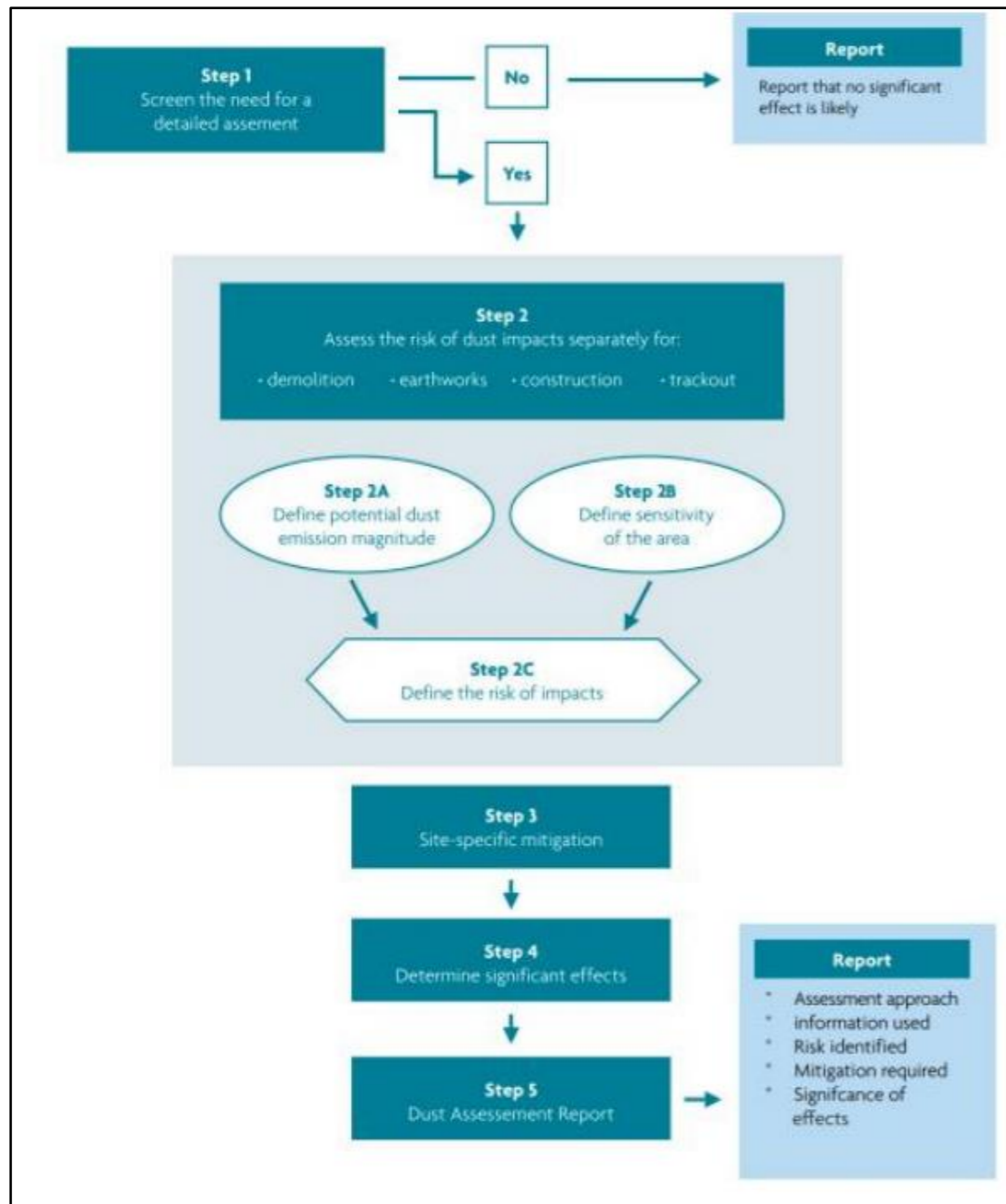


Figure 9-1: Summary of Dust Assessment Framework (from Figure 1 within IAQM (2024) guidance)

9.2.3 Baseline Conditions

The development site is located within PON and influenced by maritime weather conditions.

Background air quality conditions were assessed using data available for 2023 from Air Quality Scotland⁷¹ and DEFRA⁷² (2023) using the methods set out in LAQM.TG(22)⁷³. The background

⁷¹ Air Quality in Scotland (2023). Data for Local Authority Review and Assessment purposes. Air Quality in Scotland. Retrieved from <https://www.scottishairquality.scot/?view=data>

⁷² DEFRA (2024, April). Background Maps. DEFRA. Retrieved from <https://laqm.defra.gov.uk/air-quality-assessment/#about>

concentrations of NO₂, PM₁₀ and PM_{2.5} (known key air pollutants) are available for the base year of 2018 and for all other years up to 2030. The concentrations are available in OS 1 kilometre grid squares.

The site is located within OS 1 kilometre grid square 279500 869500. The background pollutant concentrations for this square are outlined in Table 9.3 below.

Table 9-3: PON 2023 Background Annual Average Air Quality Concentrations

Year	Pollutant Concentration (µg/m ³)		
	NO ₂	PM ₁₀	PM _{2.5}
2023	5.8	5.7	3.3

The 2023 background annual average concentrations of NO₂, PM₁₀ and PM_{2.5} for Nigg indicates that air quality is good with the pollutant concentrations being well below the relevant National Air Quality Objectives of 40µg/m³, 18µg/m³ and 10µg/m³ respectively.

The 2023 Air Quality Annual Progress Report for THC (the most up-to-date report available) identifies one Air Quality Management Area (AQMA) within its boundary. This is Inverness City Centre AQMA which was declared for NO₂ in 2014 and located over 24 km to the southwest of PON.

Review of the Scottish Pollutant Release Inventory identifies no operational industries within the vicinity of the site who need to report their emissions to air to SEPA.

9.2.4 Potential Impacts

Construction Phase - During the construction phase of the development there is risk of impacts arising from;

- Vehicle movements associated with the construction site, both from staff commuting to the site and the movement and delivery of construction materials;
- Dust emissions generated from construction activities, including earthworks, trackout and demolition; and
- Emissions from plant equipment and non-road mobile machinery (NRMM).

These emissions may give rise to air quality impacts at human or ecological receptors and lead to increased particulate matter concentrations and dust nuisance and soiling.

Operational Phase – Once the work to upgrade the quay are complete the area would return to being under the control of the PON as site operators with operational activities being conducted in accordance with the OEMP.

However public consultation events held in March 2024 highlighted a concern regarding the potential for shipping emissions to impact local air quality. It should be noted that shipping emissions are the responsibility of shipping companies as required by amendments to MARPOL Annex VI.⁷⁴ These amendments came into force in November 2022 and from January 2023 it became mandatory for all

⁷³ DEFRA (2022). Local Air Quality Management; Technical Guidance (TG22) (No. LAQM.TG(22)). London: Department for Environment, Food and Rural Affairs

⁷⁴ <https://www.imo.org/en/OurWork/Environment/Pages/Index-of-MEPC-Resolutions-and-Guidelines-related-to-MARPOL-Annex-VI.aspx>

ships to calculate their Energy Efficiency Ship Index EEXI and evidence of carbon intensity reduction must be recorded in a new section of the vessel's existing management system for carbon intensity.

As the PON leases their facilities to tenants on a project-by-project basis the type of vessel visiting the port and its associated emissions are out with their control.

9.2.5 Screening Assessment

Construction - The potential for construction dust to impact surrounding sensitive receptors was screened against the criteria provided in Guidance on the Assessment of Dust from Demolition and Construction. The distances defined within the screening criteria have been transposed into Drawing No 677964-GIS013, Appendix 2 of this EIAR to identify if there are human or ecological receptors within these boundaries.

On review of the drawing, it is noted that there are no residential receptors within 50m of the public highway which will be used by construction vehicles up to 250m of the construction site entrance. In relation to ecological receptors, there are no designated sites in close proximity to the site boundary or public highway construction routes. As such a detailed construction dust risk assessment is not required.

In general, the potential for generation of construction dust is considered to be temporary and can be controlled through standard industrial practices.

9.2.6 Mitigation Measures

It is recommended the Principal Contractor incorporate standard industrial practises to reduce dust emissions within the CEM Plan taking into account the site's surrounding environment.

9.3 Archaeology and Cultural Heritage

9.3.1 Introduction

The potential for impacts on Archaeology and Cultural Heritage as a result of the development was considered at the Scoping Stage of the EIAR.

The Site was found to have a low archaeological potential, and no significant effects were anticipated upon the designated heritage assets within the study area. A Protocol for Archaeological Discoveries (PAD) was proposed in the event that undiscovered archaeological deposits survived. As such it was considered appropriate to scope out Archaeology & Cultural Heritage.

The following section provides the Archaeology & Cultural Heritage information as presented in the East Inner Dock Quay Scoping Report⁷⁵

⁷⁵ EnviroCentre (2023), *Engineering Works to Form New Eastern Inner Dock Quay; Environmental Impact Assessment (EIA) Scoping Report*, Report No 13869

9.3.2 Assessment Scope and Methodology

Methodology

The methodology used comprised a review of the East Quay EIA Scoping Report⁷⁶ (EnviroCentre Report No 671906-001, dated February 2019) which is located in close proximity to the East Quay Inner Dock to identify the baseline conditions and the likely significant potential effects.

A study area up to 2 km from site boundary was considered for the assessment. Historic Environmental Scotland's online database⁷⁷ was referred to identify any designated heritage asset within the study area.

9.3.3 Baseline Conditions

There are no known heritage assets within the Site. Canmore Maritime records note three wrecks in the general area of the Cromarty Firth, but none of them appear to be within the Site boundary.

Within 2km of the Site boundary there is one Scheduled Monument (SM), one Inventory Garden and Designed Landscape (IGDL), two Listed Buildings (LB) and one Conservation Area (CA) and approximately 160 non-designated heritage assets recorded on Pastmap and the Canmore database.

Dunskeath Castle (SM3319) is the SM and is the site of a 12th century castle on a promontory overlooking the Firth 1km east of the Site.

The two Listed Buildings are 1.3 km north-east and consist of one Category B (LB14049; the early nineteenth century Pitcalzean House) and one Category C (LB14050; the Coach House at Pitcalzean House).

The IGDL comprising the grounds of Cromarty House (GDL00120) is located 1.4 km away on the south bank of the Firth and there are five LBs within the IGDL – including two Category A listed buildings.

The CA encompasses the historic fishing village of Cromarty, 1 km south-west of the Site, and includes 185 LBs (refer to Drawing 677964-GIS009, Volume 2 of this EIAR).

* Note - Two further IGDL's are identified in the Seascape, Landscape and Visual Section which are greater than 2km distance from the development and therefore no significant impact on their setting is predicted in relation to Cultural Heritage.

9.3.4 Potential Impacts

Groundworks comprising onshore excavation required for the proposed development have the potential to impact upon hitherto unknown buried archaeological remains. However, the inner dock is part of PON which was reclaimed from the eastern edge of Nigg Bay in 1972 to form the fabrication yard. Due to previous development and ground levelling since it was reclaimed, the Site is considered to be of low archaeological potential – meaning that it is possible, but unlikely, that undiscovered archaeological deposits survive.

⁷⁶ EnviroCentre (2019), *Nigg Energy Park East Quay EIA Scoping Report*, Report No 671906-001

⁷⁷ <https://hesportal.maps.arcgis.com/apps/Viewer/index.html?appid=18d2608ac1284066ba3927312710d16d>

The proposed development has the potential to affect the settings of designated heritage assets including Scheduled Monuments, Listed Buildings, a Conservation Area and an Inventory Garden and Designed Landscape.

Designated heritage assets up to 2 km distant from the Site have been identified. However, as the development site is part of the larger PON comprising laydown areas, fabrication sheds and docks in conjunction with the local topography and the character of the heritage assets, significant setting effects will not occur.

9.3.5 Mitigation Measures

A Protocol for Archaeological Discoveries (PAD) has been developed and included in the CEM Document. The PAD provides a framework to facilitate the reporting of unexpected or chance archaeological finds should any be encountered during the works.

9.4 Carbon Assessment

9.4.1 Introduction

The Carbon Assessment has been undertaken taking cognisance of the IEMA guide, "Assessing Greenhouse Gas Emissions and Evaluating their Significance". The proposed development is considered to be relatively small in scale on comparison to other quay projects, therefore a limited Carbon Impact Assessment of the construction phase was undertaken and involved:

- physical infrastructure assets associated with the proposed development;
- embodied carbon of the proposed development materials; and
- emission associated with construction activities.

In addition to above, the impacts associated with the demolition/deconstruction activities and end of life phase for various elements of the proposed development are included in the assessment.

9.4.2 Assessment Scope and Methodology

Methodology

The methodology adopted for the assessment is based on "Whole life carbon assessment for the built environment - RICS".

The Whole Life Carbon Assessment (WLCA) methodology considers various stages of the lifecycle assessment as shown in Figure 9-2.

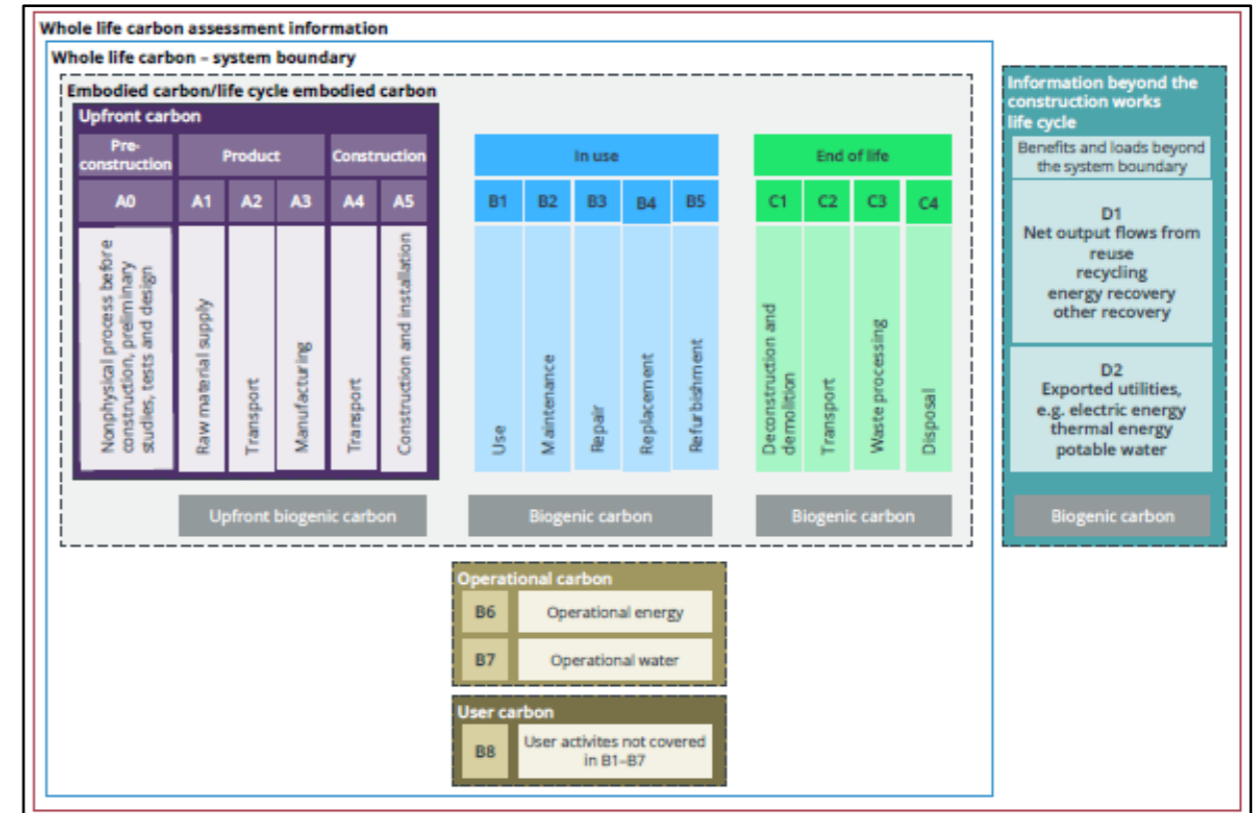


Figure 9-2: WLCA Stages

For the purpose of this assessment, the following WLCA stages are considered:

- A1-A3: The extraction, transportation and manufacturing of the construction products including RD Piles, aggregates, concrete, reinforcements, etc used for the proposed development.
- A4: The impacts associated with the transportation of the materials and products from the factory to the project site such as from Castle Craig quarry to site.
- A5.1: On-site demolition / deconstruction of existing structures, site clearance and rock armour removal
- A5.2: Site preparation; temporary works, onsite construction process and formworks.
- A5.3: The waste material produced onsite during the construction process.
- B2: The carbon impacts from maintenance activities during the operational phase of the development.
- B3: The carbon impacts from repair activities during the operational phase of the development.

The following WLCA stages have not been considered for the assessment as it is anticipated that the expected emission from these would be less than 1% and as per IEMA guide, "Assessing Greenhouse Gas Emissions and Evaluating their Significance", "Activities that do not significantly change the result of the assessment can be excluded where expected emissions are less than 1% of total emissions, and where all such exclusions total a maximum of 5% of total emissions; all exclusions should be clearly stated".

- A 5.4: The emission from transportation of construction workers.
- B1.1: The release of gases with global warming potential from the materials used for the proposed development during the life of the development.

- B1.2: The accidental release of refrigerants with global warming potential from MEP equipment.
- B4: The carbon impacts associated with the anticipated replacement of built asset components, including any impacts from the replacement process, over the reference study period. As no replacement of any proposed development component is anticipated, it has not been considered for the assessment.
- B5: Refurbishment or change in performance of the asset (e.g. retrofit/ refurbishment or extension) planned at the outset of the proposed development to occur at some point after construction is completed. As no such change of retrofit is planned or anticipated, this has not been considered for this assessment.
- B6 and B7: This addresses the energy usage and water usage by the proposed development over the operational phase. As this is a brownfield development, and the existing dock revetment will be converted to a solid vertical quay, no major changes are anticipated in the energy or water usage due to the proposed development.
- C1-C4: This addresses the end-of-life stage of the development and when the quay will be demolished in future it would require demolition warrant application where carbon footprint of alternative demolition strategies might be provided in support.

As the proposed development is at an early design phase, detailed technical specification on proposed development components and product types are not available and hence assumptions as per the WLCA methodology have been adopted for the assessment.

To quantify GHG emissions, the following formula provided in the IEMA guide, "Assessing Greenhouse Gas Emissions and Evaluating their Significance" has been referred to:

$$\text{GHG emission factor} \times \text{Activity data} = \text{GHG emission or removal}$$

The assessment has been carried out based on activity data provided by the client based on the calculation and standard assumptions using CESMM4.

Different carbon conversion factor sources have been referred to for the assessment as detailed in Table 9-4.

Table 9-4: Carbon conversion factor sources

S/N	Source	Lifecycle Stages
1	CESMM4 Carbon & Price Book 2013 by MacDonald Mott, ICE Publishing.	A1-A3, A5.1, A5.2
2	Whole life carbon assessment for the built environment - RICS	A4 (Sea & train), A5.3, B2, B3, C1 and C3/C4.
3	DEFRA GHG conversion factor	A4 (road) and C2 (road)

The following assumptions were considered while undertaking the assessment:

- The proposed development lifetime and the Reference Study Period has been assumed to be 60 years.
- No replacement of any components will take place during the Reference Study Period.
- The distance between the source of construction material (A4) and the proposed development site will be 20 kms except Castlecraig quarry which is 1.5 km.
- The distance between the disposal site (C4) and the proposed development site will be 50 kms.
- The distance between the source of construction material (A4) that will be brought by Sea will be 100 kms.
- No major changes are anticipated in the energy or water usage due to the proposed development compared to existing usage of the site.

9.4.3 Assessment

The total carbon emission from the proposed development is expected to be 14454 tonnes of CO₂e which is considered to be relatively low in comparison to other quay projects.

Table 9-5 and Figure 9-3 indicates that the carbon impact of the proposed development would be mainly due to construction of the main pile wall, anchor piling, concrete slab and creation of the temporary piling platform.

Table 9-5: Project activity-wise carbon emissions

S/N	Project Activity	CO ₂ e Tonnes	Percentage
1	Site Clearance	2	0.01%
2	Rock armour removal	82	0.57%
3	Temporary piling platform formation	1922	13.30%
4	Main Pile wall	6458	44.68%
5	Anchor Piling	1197	8.28%
6	Tie rods	143	0.99%
7	Wailing Beam	146	1.01%
8	Temporary piling platform removal and backfilling tie rods	2845	19.68%
9	Cope Beam	304	2.10%
10	Concrete Slab	1355	9.38%
Total		14454	100%

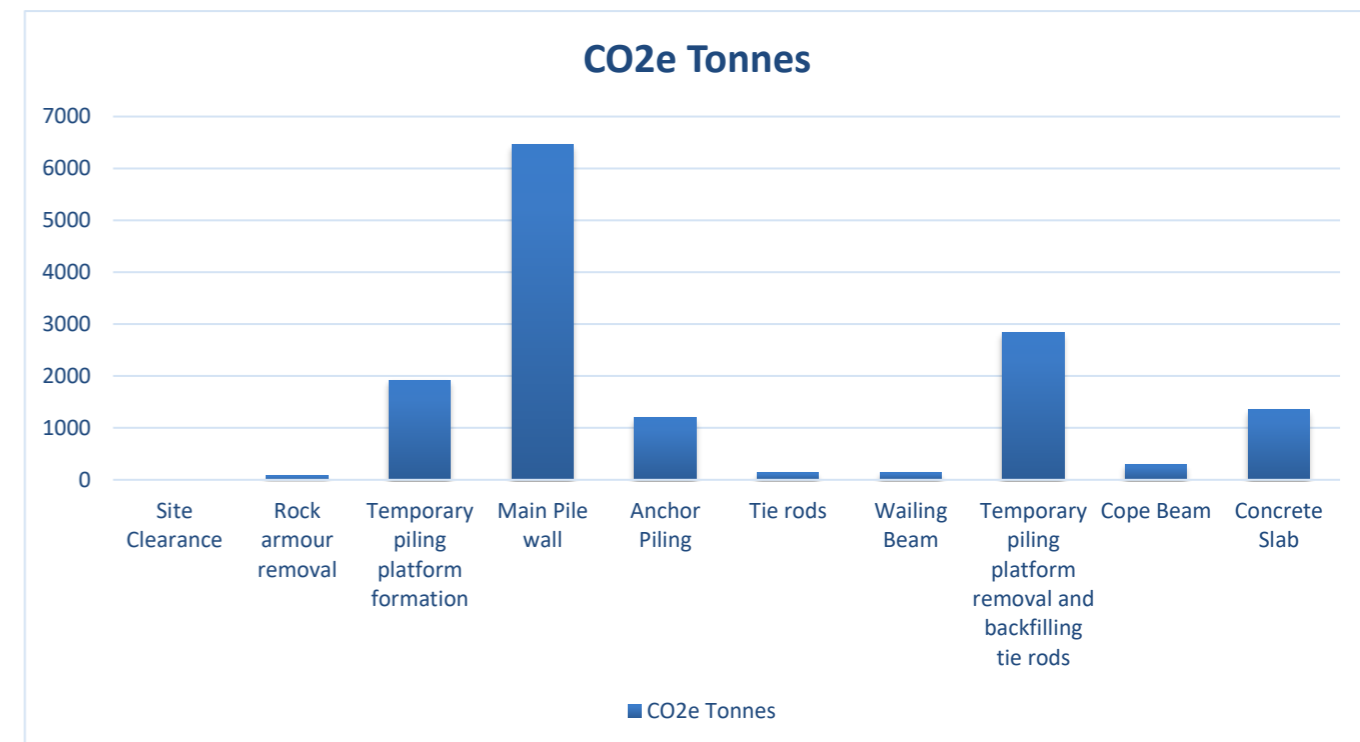


Figure 9-3: Development activity-wise carbon emissions

Table 9-6 and Figure 9-4 shows the WLCA stage wise carbon emissions of the major activities for the proposed development and it is distinctly clear that the majority of the carbon emission relates to A1-A3 followed by A4.

Table 9-6: WLCA stage-wise carbon emissions

Project Activity	A1-A3	A4	A5.1	A5.2	A5.3	B2	B3
Main Pile wall	5813	293	0	98	69	60	15
Anchor Piling	1142	7	0	4	11	12	3
Concrete Slab	822	103	0	80	46	11	3
Temporary piling platform	1405	359	0	313	158	0	0
Total	9182	762	0	495	284	82	20
%	84.82%	7.04%	0.00%	4.57%	2.62%	0.76%	0.19%

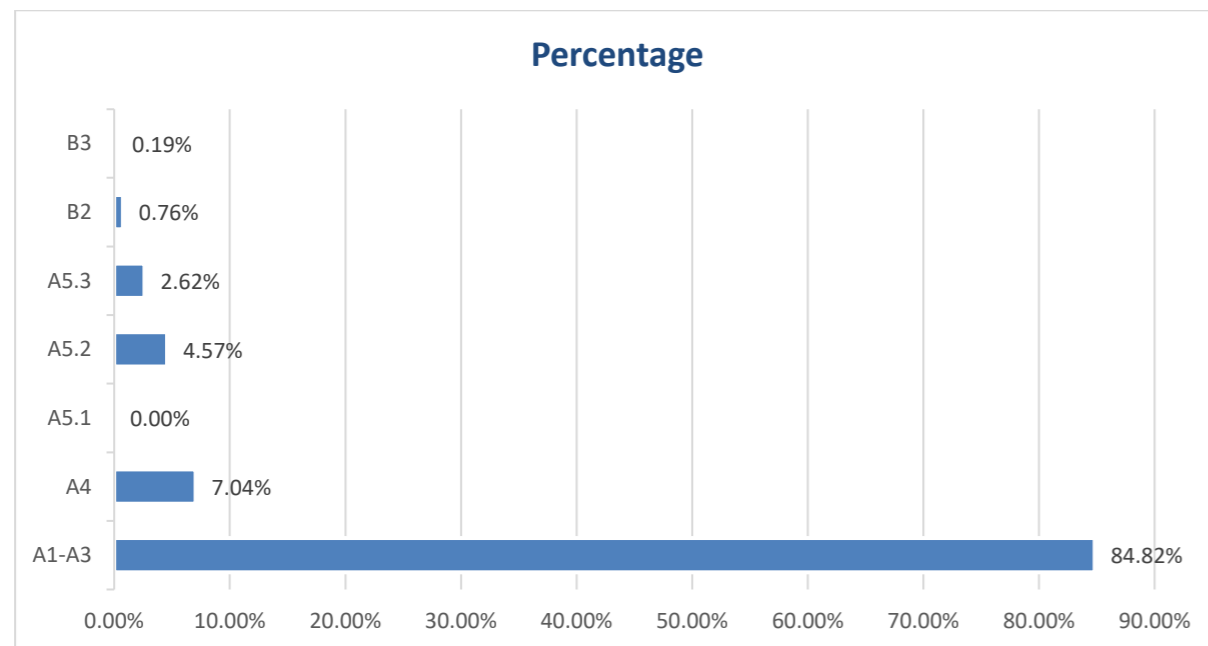


Figure 9-4: WLCA stage-wise carbon emissions

As already discussed above in Section 9.4.2, phase A1-A3 relates to the extraction, transportation and manufacturing processes necessary to produce any construction products, and in this case it is the piles.

9.4.4 Mitigation Measures

IEMA guide, "Assessing Greenhouse Gas Emissions and Evaluating their Significance" provides GHG emission mitigation hierarchy as follows:

- **Do not build:** Evaluate the basic need for the proposed project and explore alternative approaches to achieve the desired outcome/s;
- **Build less:** Realise potential for re-using and/or refurbishing existing assets to reduce the extent of new construction required;

- **Design clever:** Apply low carbon solutions (including technologies, materials and products) to minimise resource consumption and embodied carbon during the construction, operation, user's use of the project, and at end-of-life;
- **Construct efficiently:** Use techniques (e.g. during construction and operation) that reduce resource consumption and associated GHG emissions over the life cycle of the project; and
- **Offset and remove emissions:** As a complementary strategy to the above, adopt off-site or on-site means to offset and/or sequester GHG emissions to compensate for GHG emissions arising from the project.

The carbon reduction strategies that can be considered for the proposed development are as follows:

- Using materials with low embodied carbon impacts: Materials such as recycled steel for reinforcements and timber from sustainably managed forests, would help to minimize the carbon footprint of the proposed development.
- Sourcing construction materials locally: This would result in a reduction of transportation distances, which in turn cuts down on carbon emissions associated with transportation.
- Implementing efficient construction processes: Construction techniques resulting in minimizing the energy consumption and waste generation would reduce the overall environmental impact.
- Reducing wastage during the construction process: It is crucial for minimizing environmental impact and maximizing resource efficiency. Strategies such as careful material planning, recycling and reusing construction waste, and implementing lean construction practices can significantly decrease the amount of waste generated on-site, leading to a more sustainable construction process.

9.5 Material Assets and Waste

9.5.1 Introduction

This section addresses the issue of material assets and waste generation during the construction phase of the proposed development. Once built, the Eastern Inner Dock Quay will be incorporated into the existing operations at PON with activities, including waste management, being undertaken in accordance with the OEMP. As such the operational phase of the development has been scoped out of this assessment.

9.5.2 Baseline Conditions

The proposed development is located within PON and as such the immediate environment is dominated by industrial activities.

In terms of natural assets, Cromarty Firth is located immediately adjacent to the site and is used for commercial and recreational shipping and wet storage of marine structures, The POCF is the Statutory Harbour Authority for the Firth, and its approaches, and such is responsible for navigation and maritime safety within their area. As discussed in more detail in Chapter 6 Biodiversity, there several designated sites located in the immediate vicinity of the site.

9.5.3 Potential Impacts

The waste hierarchy will be employed throughout the construction works and will aim to avoid, or minimise waste production where possible, re-use material where possible, segregate waste which cannot be reused for recycling where available and implement the correct methods of disposal should none of the aforementioned methods be feasible.

As described in Section 2.5.3, the existing rock armour will be removed and transported to a crusher plant located on site where it will be processed, generating ~2,000 m³ of material which will be stockpiled on site for future use. Removal of the existing revetment will generate a further ~23,100m³ comprising ~6,038m³ of sand and 17,064m³ of crushed rock. 2,530m³ of the sand fraction will be reused in the works as pile infill material. The rest will either be stockpiled on site for future use or removed to a suitably licensed disposal facility.

Although ~129,735 m³ of crushed rock will be imported to the development site to form the temporary working platform this will largely be reused as quay infill.

This reuse of material is considered to be in line with Policy 12 of NPF 4 "... support the circular economy and meet identified needs in a way that moves waste as high up the waste hierarchy as possible".

It is considered that other waste materials generated as part of this development will be minor. It is not expected that hazardous waste will be generated as part of the works.

9.5.4 Mitigation Measures

No additional mitigation measures are proposed.

9.6 Socio-economics

9.6.1 Introduction

The following Socio-economic section has taken extracts from the Socio-economic Benefit Statement undertaken by MKA Economics to support the planning and marine applications for the new Eastern Inner Dock Quay. The full report is provided as Technical Appendix 9.1, Volume 3 of this EIAR.

The report defines the objectives of the Socio-economic Benefit Statement as:

- provide a brief overview of the proposed development;
- to outline the strategic fit and alignment with Draft Energy Strategy, National Planning Framework 4, the National Strategy for Economic Transformation, Highlands and Islands Enterprise (HIE) priorities and the economic development framework for THC), including the Inverness and Highland City Deal and the Inverness and Cromarty Firth Green Freeport;
- provide an understanding of the local economy and its direction of travel;
- estimate the socio-economic effects that can be attributed to the Proposed Development at the local level; and
- present the wider, less tangible, effects of the Proposed Development now and into the future.

9.6.2 Assessment Scope and Methodology

The socio-economic effects of the proposed development has been assessed using a bespoke and high level economic model, which has been based on a review of the project documentation and discussions with the PON. It has been split into two phases and the following impacts have been considered:

- Construction: the economic activity, and multiplier effects, associated with the construction of the proposed development, in person year employment and GVA terms; and
- Operation: the economic activity associated with the operation of the proposed development, which includes:
 - Direct: the impact of operating the Proposed Development and the employment required for its operation;
 - Supply spending: the impact associated with supply chain expenditure;
 - Staff spending: impact from employees' spending their salaries and wages with the economy; and
 - An estimate of GVA effects, based on a review of the turnover gains and new employment at an enhanced PON.

The expenditure and employment data has been provided by the PON, with adjustments made where appropriate.

The assumptions about the share of activity that would occur in each spatial area was based on an assessment of the industrial capacity of each area, informed by the socio-economic baseline, and the proportion of expenditure associated with the port operations.

The direct GVA and employment was estimated using the Scottish Annual Business Statistics⁷⁸, which provides information about turnover, GVA and employment for each sector in the economy.

For the indirect impacts, those associated with spending across the supply chain, and induced impacts, those linked to employees spending their salaries and wages in the economy; relevant multipliers from the Scottish Input-Output Tables⁷⁹ were applied.

Since the Scottish multipliers refer to aggregate impacts in the Scottish economy an adjustment was made to reflect the impacts in the Highlands, where it was assumed that 50% of indirect impacts and 50% of induced impacts would take place.

9.6.3 Baseline Conditions

The baseline assessment outlines the socio-economic characteristics of the Highlands, the Inner Moray Firth (IMF) and compares the Highlands and IMF with the Scottish and national economies. It also presents detail on the Easter Ross and local economies.

Population

The Highland Council (THC) area has witnessed an increase of 2.3% over the period 2011 to 2021 – compared to 3.4% at the Scottish and 5.9% at the national (Great Britain (GB)) level (Refer to Table 9-7).

⁷⁸ <https://www.gov.scot/publications/scottish-annual-business-statistics-2021/>

⁷⁹ <https://www.gov.scot/publications/input-output-latest/>

Table 9-7: Population (2021)⁸⁰

	Highland	Scotland	Great Britain
All people (in numbers)	238,100	5,479,900	65,121,700

The Inner Moray Firth area has witnessed a slower rate of population growth in recent times, and is expected to witness a decline in population, which is set against growth recorded at the national level. Although Inverness is expected to see an increase of around 11% and Mid-Ross an increase of 12% in the period to 2041, Easter Ross population is expected to decline by 14% over the same time period.

In terms of the working age population, 60.8% of the regional population is of working age, compared to 63.8% and 62.9% at the Scottish and GB levels respectively indicating that the area has a lower proportion of working age population, which can be seen to be an economic challenge in terms of securing future economic prosperity.

Economic Activity

The Highlands has a higher proportion of working-age people who are economically active compared to the Scottish level suggesting higher economic strength that can be utilized for future economic development (Refer to Table 9-8).

Table 9-8: Employment and Unemployment (October 2022 – September 2023)⁸¹

	Highland (Numbers)	Highland (%)	Scotland (%)	Great Britain (%)
Economically Active	124,700	78.8	77.9	78.8
In Employment	121,600	76.7	75.2	75.8
Employees	106,600	68.5	67.2	66.3
Self Employed	13,700	7.7	7.7	9.2
Unemployed (Model-Based)	3,100	2.5	3.4	3.7

The Highlands has a lower rate of economic inactivity but of this there is a higher proportion of people who 'want a job' compared to the Scottish level. For further information on Economic Activity refer to Technical Appendix 9.1, Volume 3 of this EIAR.

Jobs

In terms of jobs, the region has a lower proportion of full-time jobs and more part-time jobs than the Scottish and GB levels. In terms of industry of employment, the construction sector is well represented at the Highlands level, suggesting the local area is well positioned to benefit from aspects of the proposed development (Refer to Table 9-9).

Table 9-9: Employee Jobs (2022)²⁷

	Highland (Numbers)	Highland (%)	Scotland (%)	Great Britain (%)
Total Employee Jobs	111,000	-	-	-
Full-Time	72,000	64.9	67.3	68.8
Part-Time	40,000	36.0	32.7	31.2
Employee Jobs By Industry				

⁸⁰ Office for National Statistics (ONS) Population Estimates

⁸¹ ONS Annual Population Survey

	Highland (Numbers)	Highland (%)	Scotland (%)	Great Britain (%)
Mining And Quarrying	400	0.4	1.0	0.2
Manufacturing	6,000	5.4	6.9	7.6
Electricity, Gas, Steam And Air Conditioning Supply	1,000	0.9	0.8	0.4
Water Supply; Sewerage, Waste Management And Remediation Activities	2,250	2.0	0.7	0.7
Construction	8,000	7.2	5.7	4.9
Wholesale And Retail Trade; Repair Of Motor Vehicles And Motorcycles	16,000	14.4	12.9	14.0
Transportation And Storage	4,500	4.1	4.1	5.0
Accommodation And Food Service Activities	15,000	13.5	8.4	8.0
Information And Communication	2,500	2.3	3.2	4.6
Financial And Insurance Activities	900	0.8	3.3	3.3
Real Estate Activities	1,500	1.4	1.3	1.9
Professional, Scientific And Technical Activities	6,000	5.4	7.4	9.1
Administrative And Support Service Activities	6,000	5.4	8.1	9.0
Public Administration And Defence; Compulsory Social Security	6,000	5.4	6.5	4.7
Education	9,000	8.1	8.8	8.6
Human Health And Social Work Activities	19,000	17.1	15.7	13.5
Arts, Entertainment And Recreation	4,000	3.6	3.0	2.4
Other Service Activities	1,500	1.4	1.6	2.0

Businesses

The highlands accommodate a slightly higher percentage of Micro enterprises and local units compared to national figures as shown in Table 9.10.

Table 9-10: Business Counts (2022)⁸²

	Highland (Numbers)	Highland (%)	Scotland (Numbers)	Scotland (%)
Enterprises				
Micro (0 To 9)	9,430	88	149,665	87.3
Small (10 To 49)	1,105	10.3	18,170	10.6
Medium (50 To 249)	150	1.4	2,820	1.6
Large (250+)	25	0.2	700	0.4
Total	10,710		171,350	
Local Units				
Micro (0 To 9)	11,175	82.4	174,205	80.8
Small (10 To 49)	2,035	15	33,710	15.6
Medium (50 To 249)	325	2.4	6,740	3.1

⁸² Inter Departmental Business Register

Large (250+)	25	0.2	1,055	0.5
Total	13,560		215,710	

Qualifications

Table 9-11 refers to education attainment levels of the residents in the area and shows that there are fewer highly qualified residents and a larger number of residents with no qualification than at the Scottish level.

Table 9-11: Qualifications (January 2022 – December 2022)²⁷

Individual Levels	Highland (Numbers)	Highland (%)	Scotland (%)	GB (%)
RQF4 And Above	62,300	47.5	54.2	45.7
RQF3 And Above	94,400	72.0	72.8	66.9
RQF2 And Above	114,100	87.1	86.0	85.8
RQF1 And Above	114,100	87.1	87.5	88.5
Other Qualifications	N/A	N/A	4.5	4.7
No Qualifications	11,000	8.4	8.0	6.8

Earnings

In terms of earnings, Table 9-12 shows that the region has higher rates of gross weekly wages than those achieved at the Scottish and GB levels. The hourly pay is generally below the Scottish and GB levels.

Table 9-12: Earnings by Place of Residence (2023)

	Highland (£)	Scotland (£)	GB (£)
Gross Weekly Pay			
Full-Time Workers	705.3	702.4	682.6
Male Full-Time Workers	713.9	725.7	728.3
Female Full-Time Workers	664.7	672.0	628.8
Hourly Pay - Excluding Overtime			
Full-Time Workers	18.02	18.09	17.49
Male Full-Time Workers	18.16	18.17	18.15
Female Full-Time Workers	17.80	18.00	16.64

Claimant Count Unemployed

The latest claimant count unemployment rate highlights that although the region has a lower rate than the Scottish rate, the unemployment rate is also below the GB average (Refer to Table 9-13).

Table 9-13: Claimant Count Unemployment²⁷

	Highland (Numbers)	Highland (%)	Scotland (%)	Great Britain (%)
All People	3,390	2.3	3.1	3.8

Although unemployment has recovered from the sharp increases as a result of the global pandemic, there are emerging signs that it is beginning to rise and is expected to rise as the UK experiences an economic slowdown as a result of the cost of living crisis. The number of people out of work and claiming benefit in the Highlands over the last six months has increase by 14%.

It is also worth noting that the unemployment rate does not cover 'under-employment', in addition to this there is now an increasing number of people claiming Universal Credit across the Highlands, which increased from around 18,000 in December 2022 to 18,535 in July 2023. This suggests that although the unemployment rate is low there is still a large and increasing number of people claiming Universal Credit.

It is worth noting that the local ward (Tain and Easter Ross) has an unemployment rate slightly higher than the regional average, at 2.5% in February 2024, equating to 145 people out of work and seeking employment. This is 16% higher than the figure reported in September 2023.

Scottish Index of Multiple Deprivation

According to The Scottish Index of Multiple Deprivation (SIMD, 2020), THC has 30 data zones (from a total of 312 Highland data zones) designated within the most deprived 20% in Scotland, this is an increase from SIMD 2012 when the local authority had 17 wards designated within the most deprived 20% in Scotland. Although the Highlands cannot be deemed to be an area of deprivation, there remain pockets of deprivation, largely in and around Inverness, and this position has worsened over the last five years.

Locally, there is one area of notably deprivation in nearby Balintore, where one of the data zones is in the most deprived 10% in Scotland, and this position has worsened since 2012 and 2016. This data zone abuts the Proposed Development. There are also data zones in nearby Kildary and Milton and also throughout Invergordon and Alness which have relatively high deprivation rates.

Inner Moray Firth

A review of Highlands and Islands Enterprise's Economic Profile for Inner Moray Firth (Highlands and Islands Enterprise, 2020) has been completed and the following summary of the local area is presented below:

- Total population was 157,934 in 2018, an increase of 2.7% from 2011;
- Population density (20 people per sq. km) is higher than that for the Highlands and Islands (12 people per sq. km) but lower than the Scottish average (70 people per sq. km);
- The Inner Moray Firth has a younger age profile than the Highlands and Islands but older than Scotland;
- An Economic Activity rate (80.8%) in line with the Highlands and Islands (80.9%) but higher than Scotland (77.9%);
- A percentage of self-employed (8.5%) in line with Scotland (8.7%) but lower than the Highlands and Islands (11.0%); and
- An employment rate (78.5%) in line with the Highlands and Islands (78.6%) and higher than Scotland (74.7%).

The Inner Moray Firth experienced population growth between 2011 and 2019. While the population is projected to decline by 2043, there is variation across the area. It has a younger age profile than the average regionally, although still a higher dependency ratio than nationally at 62.6%.

The Inner Moray Firth area will need to respond to the requirements of young people who have been disproportionately affected economically given its younger age profile than the rest of the region.

Inner Moray Firth is likely to be harder hit than the Scotland average, but fare better than more remote parts of the region given:

- Expected GVA decrease of £756m across Highland in 2020, a decline of 11.7%, in line with the regional average (11.7%) but higher than the national level (10.7%);

- While the area has a higher share of employment in the five sectors (manufacturing, construction, retail, accommodation and food services and arts/recreation) most exposed to COVID-19 overall compared to regionally and nationally (43%, compared to 41% and 38% respectively), Inner Moray Firth has a more diverse sector employment base than other parts of the region increasing its relative resilience; and
- Its existing vulnerability to Brexit (Highland is ranked 5 of 32 Scotland local authorities), although Inner Moray Firth is likely to be more resilient than more rural parts of Highland. Brexit vulnerability identifies areas of Scotland that are expected to be most vulnerable to Brexit based on access to services, share of working age population, income deprivation, population change, workers in Brexit sensitive industries, EC Payments (CAP and ESF/ERDF) and EU worker migration.

9.6.4 Potential Impacts

Construction Phase

The total capital investment in the region is ~£30million out of which ~£5.0 million (17%) will benefit businesses at the Highland level.

There will be a range of construction opportunities to local and national companies. This will include groundworks, steelworks, laydowns, port works, landscaping, civil engineering and construction contracts.

The Scottish Annual Business Statistics assumes that the turnover per employee figure is £143,525 in the construction sector in the Highlands, or that one construction job is generated for every £143,525 of spend. This results in an estimated 35 local construction jobs, over the construction period. The average Gross Value Added (GVA) for a construction job in the Highlands is assumed to be £60,044, which suggests the GVA effect of the construction phase is expected to be around £2.1 million.

Construction is expected to begin in October 2024, and conclude in June 2026, a period of 20 months. It is also worth adding that £300k has been spent on pre-development fees to date, of which £150k has benefited Highland based businesses.

Taking into account the further economic activities due to direct, indirect and induced effect associated with the proposed development, the total effect of local construction activity is likely to be nearer £7.3 million, with the creation of 50 construction jobs over two years, with a GVA effect of £3.0 million.

Operational Phase

At present PON employs 22 permanent staff, although around 350 people work through the port on a daily basis. The development will generate 14 new staff members who will be employed by Global Port Services Scotland Ltd based at the South Quay offices. The GVA per head of Transport and Storage jobs is £57,901, suggesting a GVA effect of the new jobs of £810k. It is expected that the majority of these opportunities to be taken up by locals or people relocating to the area as it is difficult to commute, considering the location of the Proposed Development.

In addition to the 14 new logistics and maintenance jobs, there will be further jobs in the Water Transport supply chain, and it is expected to be around 18 FTEs and in salary terms £1.1 million.

Based on the figures for turnover gains as a result of the new quay, GVA effects due to the employment will be £1.3 million per annum and taking account of additional employments these amount to £1.7 million per annum.

Wider Economic Impacts

The estimated socio-economic effect assessment indicates that the Proposed Development can bring substantial additional benefits to the IMF/Highland areas, and to Scotland and the UK as a whole. It represents a significant investment that embodies the latest advancement in port operations and as a consequence the GVA per worker is high.

The investment in new port infrastructure directly linked to the new factory will act as a catalyst for PON to invest in its asset base. Not only will it directly service the port requirements of the new Sumitomo Electrics cable factory, but it will also enhance the wider operations of PON. It will make the port more flexible and efficient and generate new revenues whilst safeguarding existing jobs and generating new jobs, and supply chain opportunities. The job opportunities created by the Proposed Development are expected to be relatively well-paid, in turn supporting wider talent attraction objectives which will be key to the growth of the cluster.

In addition to the stated economic opportunities during the construction and operational phases, there are also a variety of wider economic impacts which should be noted as having positive effects on the regional and national economies. These include:

- **Supporting policy objectives;** The proposed development has the potential to contribute significantly towards regional and national policy objectives. Importantly, the Proposed development can support the ambitions set out in the national and regional economic strategies as highlighted in the Socio-economic Benefit Statement, Technical Appendix 8.1, Volume 3 of this EIAR. Notably the project represents a new and significant capital investment which aligns well with the area's green credentials. The Proposed Development will support local business through the generation of supply chain opportunities and the creation of jobs, with the addition of skills development opportunities. This squarely fits the ambitions of the new Inverness and Cromarty Firth Green Freeport, the Applicant can work with Opportunity Cromarty Firth to maximise collaboration opportunities with other green businesses in this location to achieve the vision of creating 25,000 new jobs for the area
- **Local supply chain opportunities;** it is worth noting the wide range and scale of potential 'ripple effects' notably around the expenditure of workers who visit the PON who will benefit the accommodation and food service sector. The wider 'knock-on' effects can in turn support the supply chain of other activities, such as the spending habits of retail operations, food service and food retail outlets, and accommodation providers. In addition, there will be project staff requiring other local serviced and non-serviced accommodation on a regular basis. Worker expenditure will support the local and regional economies throughout the 20 month core construction period and over the duration of the project lifetime. There are a range of upstream beneficiaries in the form of contractors, construction firms, utilities providers, hauliers, mechanical and electrical businesses and IT providers for example.
- **Pre-development effects;** it is relevant to note that considerable pre-development costs have been borne by the Applicant and these have benefitted local and national firms. Pre-development activities include; technical consultancy, environmental consultancy, legal and accounting activities and project management support services. Additional impacts related to accommodation of technical staff and their local spending habits can also be described as a predevelopment effect. At present these total £300k, of which £150k has benefited local companies.
- **Perception benefits;** the employment, economic and financial impacts are enhanced through wider strategic impacts associated with strengthening the perception of the area as a place to live, work, visit and invest. The Applicant's contribution to overall perception of the region will

work in tandem with the plans created by Inverness and Cromarty Firth Green Freeport to boost public perception.

- **Supporting community investments and property assets;** There are no direct community benefit obligations specified for this development, but the PON make charitable donations on a regular basis for charities and local organisations in Cromarty and Nigg.
- **Training and employability benefits:** Although training and apprenticeship opportunities are not expected to arise directly from the quayside build, significant prospects will emerge at the Sumitomo Electrics Cable Manufacturing Facility, for which the quayside development serves as a catalyst.

9.6.5 Conclusion

The Proposed Development is to primarily facilitate the export of HV cable manufactured at the adjacent Sumitomo Electrics cable factory directly onto cable installation vessels. It will also serve as an additional facility to support the existing operations at the site comprising the import, assembly and export of components necessary for energy production in the marine environment.

There is strong policy support for the Proposed Development at the national, regional and sectoral levels. It is within this hierarchy of policy and strategy support, from the new NPF4 and NSET to HIE's Strategy and in particular the Inverness and Cromarty Firth Green Freeport vision which provides the strategic rationale for supporting the establishment of the Proposed Development. The policy support, and strategic fit, of the Proposed Development is strong across all spatial levels and in particular the drive towards achieving net zero.

At the national and local level, the renewables sector is a key sector, and growing the value and reputation of the sector can be aided by encouraging investment, and inward investment, in businesses associated with the sector. In summary, the socio-economic baseline assessment confirms a number of worrying trends, and these threaten the long term economic sustainability of the Highlands and Tain and Easter Ross.

The Highlands and Easter Ross continue to face a wide range of economic challenges. Both have witnessed a slower rate of population growth in recent times, and are expected to witness a decline in population, which is set against growth recorded at the national level. Although Inverness is expected to see an increase of around 11% and Mid-Ross an increase of 12% in the period to 2041, the population of Easter Ross is expected to decline by 14% over the same time period. This threatens the future economic sustainability of the local area and suggests investment is required to attract working age people to the area. There is scope for new sectors such as renewables to slow the population decline.

The area was adversely affected by the onset of the Covid-19 pandemic, and there are emerging signs at the regional and local levels that unemployment is increasing again, which may be a result of the cost of living crisis. Although it is recognised that there is a clear willingness for people to find work, the local economy is not generating these opportunities. The Proposed Development, in conjunction with the wider expansion of the local renewables industry, is well positioned to generate new employment opportunities and stimulate local economic growth. Similarly, relative deprivation is noticeably higher locally compared to other spatial areas, with a neighbouring data zone amongst one of the most deprived areas in the Highlands and one in the most deprived 10% in Scotland. Easter Ross deprivation position has worsened over the period from 2012, and this position is concerning in relation to promoting economic and community development in this location. There are also pockets of high deprivation in nearby Kildary, Milton, Invergordon and Alness.

New investment in key economic sectors, such as renewables and the marine economy, can help to boost the local economy which continues to be adversely affected from historical industrial decline, and resultant deprivation.

Overall, it is clear that the Highlands, and in particular Easter Ross is facing a number of economic challenges, and its future economic prosperity cannot be guaranteed. In the absence of new investment there is a likelihood that the area will continue to be excluded and suffer in economic terms. There is scope for new investments to attract economic activity, investment and employment opportunities for existing and prospective residents to the area. The Proposed Development can aid economic development encouraging new investment, jobs, skills development and income.

In summary, the Proposed Development is expected to benefit the local and national economy in the following respects:

- PON has already invested almost a significant amount of time and resource on the Proposed Development, committing £300k to the pre-development stage, of which £150k has benefitted Highland based companies.
- Total expected quay investment of £31 million, of which it is estimated £5 million will accrue at the local level. With opportunities for local businesses to support in terms of groundwork, landscaping, civil engineering, and construction contracts, resulting in wider supply chain benefits in the region of £2.3million. A total local construction effect of £7.3 million. This is in addition to the wider £240 million investment in the subsea cabling manufacturing plant;
- In the region of 35 full time construction jobs at the local level over the 20 month construction phase, when taking multiplier effects into account this equates to 50 construction jobs over two years, with a GVA effect of £3.0 million. This too is in addition to the 225 new jobs at the subsea manufacturing plant;
- 14 new full time local jobs once the new quay is fully operational, sustaining a further four jobs in the wider area, and having total GVA effect of £1.1 million. It is worth noting that the entire development, of which the PON is a catalyst, will have a GVA effects of £63 million. The operations at the PON will be enhanced and turnover and GVA effects will be bolstered by 25% on current levels;
- GVA benefit for the Inner Moray Firth economy of £1.7 million in GVA terms per annum as a direct result of the new quay;
- A wide range of harder to measure benefits in the form of supporting policy objectives, local supply chain benefits, pre-development effects, income effect, exchequer effects, perception benefits, community benefits, supporting community and property assets and training and employability benefits;
- The future of PON will be safeguarded, port activities will be enhanced and the future long term prosperity of the local area and the wider Cromarty Firth will be aided greatly by these new investment, jobs and economic activity.

It is clear from this independent socio-economic benefit assessment that the Proposed Development can play a significant economic role in supporting the economic ambitions of the local, regional and national economies. Importantly it services the requirements of the export of HV cable manufactured at the adjacent Sumitomo Electrics factory. However, it also serves as an additional facility to support the existing operations at the PON comprising the import, assembly and export of components necessary for energy production in the marine environment.

9.7 Seascape, Landscape and Visual

9.7.1 Introduction

The council's Pre-application Advice for Major Developments note (Refer to Technical Appendix 3.1, Volume 2 of this EIA) identifies that as the Eastern Inner Dock Quay is located within an existing large scale industrial facility including quays it is unlikely to have a significant visual or landscape impact.

Concerns have subsequently been raised regarding the use of the Eastern Inner Dock Quay for the purposes of wind turbine integration and testing and wet storage within the Firth and the potential for visual impacts as a result of these activities. As stated in Section 2.6.1, the quay is unlikely to be used for turbine assembly and testing due to its restricted water depth being unsuitable for these activities. In relation to wet storage, this has also been discounted from further assessment within the SLVIA. The primary function of the quay is to export HV cable from the Sumitomo Electrics cable factory. There are currently no manufacturing proposals which link wet storage and the use of the quay. Should this be a requirement of future capital projects the visual impact of wet storage on sensitive receptors would be subject to further work under specific development proposals and supporting licence applications.

A detailed review of the potential impacts of the proposed development on Seascape, Landscape and Visual interests within the study area was undertaken at the scoping stage of the EIA. The review considered the potential for SLVIA impacts because of construction and operation of the quay on surrounding sensitive receptors. For the reasons identified above the operational visual assessment does not include wet storage, wind turbine integration or testing at quay-side activities.

During the review, all the long-term effects on the relevant landscape and visual receptors in the study area were not identified to be significant due to its location within PON. During the construction phase, it was assumed that any potential significant adverse effects predicted would be limited to passengers on the Nigg Ferry and based on this SLVIA was scoped out of forming a full Chapter within the EIA.

The following section provides the SLVIA information as presented in the Eastern Inner Dock Quay Scoping Report⁸³

9.7.2 Assessment Scope and Methodology

Methodology

The overall method of assessment is based on the principles established in best practice guidance Guidelines for Landscape and Visual Impact Assessment⁸⁴ (GLVIA3). GLVIA3 states that any assessment of effects and the assessment criteria used should be tailored to the specific nature and likely potential effects of the development proposed.

Preliminary identification, description and evaluation of the existing seascape, landscape and visual context of the study area has involved a desk-based review of Scottish Natural Heritage (SNH – now renamed NatureScot) national landscape character assessments – identification of landscape character types and designated landscapes within the study area.

⁸³ EnviroCentre (2023), *Engineering Works to Form New Eastern Inner Dock Quay; Environmental Impact Assessment (EIA) Scoping Report*, Report No 13869

⁸⁴ Landscape Institute and Institute of Environmental Assessment (2013). *Guidelines for Landscape and Visual Impact Assessment*. Third edition.

Although any potential significant effects are very unlikely to be experienced beyond 5 km from the site, the assessment of the following landscape and visual receptors has been identified within an indicative study area of 15 km.

9.7.3 Baseline Conditions

The purpose of this baseline assessment is to identify the existing landscape and visual resource of the site and surrounding landscape, against which any potential significant effects of the proposed development are predicted.

The Site and its Setting

As detailed in Section 2 of this Report, the Site is located on the south-western shore of the Fearn Peninsula that in association with the Cromarty peninsula to the south, separate the inner and outer waters of the Cromarty Firth. The inner firth stretches 25 km from Conon Bridge to Cromarty and Nigg where the Cromarty Ferry crosses the entrance to the firth during the summer season.

The PON occupies a substantial area of reclaimed land which accommodates several large industrial fabrication buildings, open lay-down areas, the graving dock (dry dock) and an extended berth fronting onto the Cromarty Firth at the south quay. Historically, many of the largest North Sea oil and gas production platforms were constructed at Nigg and at present, large oil and gas exploration rigs are berthed at Nigg for inspection, repair, and maintenance (IRM) services. The industrial setting at Nigg is reflected a little further to the west at Invergordon service yard, where IRM services are also carried out on oil and gas exploration rigs, and rig supply vessels. Often, these oil and gas exploration rigs, and rig supply vessels anchor within the Cromarty Firth awaiting access into Nigg or Invergordon.

The site is the graving dock within PON with agricultural improved grasslands comprising of 'Hill of Nigg' to the east. Hinterland consists of extensive coniferous woodlands of the Balnagowan Estates north-west of the enclosed estuary. Access can be gained from Inverness via the A9 and the Cromarty Bridge and subsequent B9175 route around the northern Fearn Peninsula.

The hamlets of Balnabraich and Balnapaling lie in quite close proximity to the north. Cromarty Lighthouse lies adjacent to the south, on the opposing northern tip of the headland that accommodates the village of Cromarty.

Landscape Character

As detailed in the Landscape Character Assessment⁸⁵ (LCA), the site of the proposed development is located within the Enclosed Firth landscape character type (LCT) and as noted in the LCA, the LCT extends from where the firth is narrowed by sand bars or rocky headlands, inland to where the intertidal zone dramatically narrows in response to a more prominent slope at the mouth of the Cromarty Firth.

In close proximity to the east of the site, the character of the Fearn Peninsula is represented by the Open Framed Slopes LCT and separated by Nigg Bay to the west; the Enclosed Farmed Landscapes LCT is viewed against a backdrop of extensive coniferous forest on higher ground. Beyond the Hard Coastal Shore LCT that extends the mouth of the inner firth, the opposing peninsula is also characterised by the Open Framed Slopes LCT.

⁸⁵ Scottish Natural Heritage (1998). *Inner Moray Firth Landscape Character Assessment*.

Although information on landscape character provides a useful framework in which to describe the landscape and predict potential effects, the information provided in the landscape character assessment is relatively broad brush and, in some instances, it does not always provide an understanding of variations at the local level. In understanding the sensitivity of the landscape to the proposed development therefore, it is important to consider the following factors:

- PON occupies a substantial area of reclaimed land from the adjacent Nigg Bay and currently accommodates several large industrial fabrication buildings and lower rise office blocks;
- large areas of open hard standing are present along the graving dock, east quay and south quayside for temporary storage during loading and off-loading operations to and from vessels and barges;
- the open pastoral farmed slopes of the Hill of Nigg are influenced by several disused quarries and gravel pits on its slopes; and
- the settlements on the south-west slopes of the Hill of Nigg (Nigg and the tightly grouped Pitcalzean House and Pitcalzean Mains found midway down the lower slopes) are partially enclosed by mature deciduous woodland.

Seascape Character

Considering the coastal location of the site, the character of the seascape is also an important factor to consider. Seascape character is made up of physical characteristics of hinterland, coast and sea plus a range of perceptual responses to the seascape, as well as visual aspects. Although no explicit detailed seascape character assessment has been undertaken for the study area, the Inner Moray Firth Landscape Character Assessment extends across areas of open water, as characterised by the Inner Firth and Hard Coastal Shore LCTs.

A regional/national coastal character assessment was undertaken in support of a study on the sensitivity and capacity of the Scottish seascape in relation to windfarms⁸⁶. As detailed within this study, the site of the proposed development is located within the Moray Firth seascape character area (SCT) and in assessing the sensitivity to wind farms, the following factors, as detailed in the report, are relevant to the proposed development:

- generally a modified seascape with a well settled coastal edge in places, including the village of Cromarty at the mouth of the inner firth;
- some isolated but large scale industry e.g. oil platforms and former Nigg oil terminal within the Cromarty Firth;
- illumination of settlements around coastal fringes but generally sparse lighting in the Outer Firth. Oil platforms lit at night in Cromarty Firth; and
- it is common to see oil platforms being towed fairly close to Moray coast to and from Cromarty Firth.

In taking into account the factors outlined in this section, particularly concerning the industrial character of the site's locality, the sensitivity of landscape/seascape character to the proposed development is assessed as medium.

Nationally Important Landscape Designations

There are no National Parks within the study area and the closest National Scenic Area is located at the Dornoch Firth, some 15km to the north of Nigg. As detailed in The Inventory of Gardens and Designed Landscapes (GDLs), there are 3 GDLs within the study area and considering their national importance, these are assessed as having a high sensitivity to change (Refer to Drawing 677964-GIS010, Volume 2 of this EIAR). These are:

⁸⁶ Scottish Natural Heritage (2005). *An assessment of the sensitivity and capacity of the Scottish seascape in relation to windfarms*.

- Cromarty House;
- Balnagown Castle; and
- Tarbat House.

Locally Important Landscape Designations

As detailed in Highland Council's citation⁸⁷, the Sutors of Cromarty, Rosemarkie and Fort George Special Landscape Area (SLA) is located in quite close proximity to the east and south-east of the site (Refer to Drawing 677964-GIS010, Volume 2 of this EIAR). It is a coastal area of intersecting firths and pointed headlands stretches from Port An Righ (just south of Shandwick) across the Sutors at the mouth of the Cromarty Firth, along the north-eastern edge of the Black Isle to take in Chanonry Point, then across the inner Moray Firth to take in Fort George, and Whiteness Head.

This SLA encompasses some of the key landscape features of the Inner Moray Firth. It is an area of contrasts which forms the gateway between the open coast and expansive waters of the Moray Firth and the intimate landscapes of the Cromarty and Inverness Firths. The twin headlands at North and South Sutor which stand guard over the entrance to the Cromarty Firth are another key feature, visible from a considerable distance.

As a locally important landscape designation, its sensitivity to change is assessed as medium-high.

Key views and visual receptors

Although no detailed analysis of the zone of theoretical visibility has been undertaken at this stage, it is evident that views from the site are focused on surrounding coastal areas of the inner firth. Looking south, there are views over open water towards the relatively nearby Cromarty peninsula and its associated village and lighthouse. Looking west, there are medium-range views over Nigg Bay towards the settlement of Invergordon, beyond which the inner firth narrows. Views to the east are short range, curtailed by rising ground.

Key visual receptors to be considered include:

- road users travelling along the B9175 and A9 – medium sensitivity;
- passengers on the Nigg Ferry – high sensitivity;
- residents in close proximity to the site including Dunskeath House, Balnabruaich, Balnapaling and Pitcalzean Mains – high sensitivity;
- residents in the larger settlements of Cromarty and Invergordon – high or medium sensitivity respectively; and
- recreational users at Cromarty viewpoint – high sensitivity.

9.7.4 Potential Impacts

As the operational effects of the proposed development would result in a smaller magnitude of effect than those predicted during the construction phase, it is likely that all long-term effects on the relevant landscape and visual receptors in the study area would be not significant. To avoid unnecessary duplication of the factors in support of this (as set out in the construction effects discussions below), no detailed justification is provided although in general, it is clearly evident that the existing industrial land uses and activity taking place in and around the quay would significantly limit the magnitude of all landscape and visual effects.

Taking into account the existing industrial use of the site and its immediate setting, and the associated prominent land and sea based activity taking place such as loading and off-loading operations to and

⁸⁷ Highland Council (1998). *Assessment of Highland Special Landscape Areas*.

from vessels and barges, including oil platforms being towed, any construction activity would generally be experienced within this context. Although any activity associated with the construction of the proposed development would be very noticeable from some nearby areas, this would be characteristic to its immediate setting. Consequently, the magnitude of landscape and seascape effect would be relatively limited and considering the medium sensitivity of the Enclosed Firth LCT, effects are very likely to be not significant on its integrity (Refer to Drawing 677964-GIS015 and 677964-GIS016, Volume 2 of this EIAR).

Tarbat House

As noted in the GDL inventory, Tarbat House is located on high ground on the north shore of the Cromarty Firth at Nigg Bay and there are views south over the Cromarty Firth and the Sutors of Cromarty. Although some construction activity could be visible amongst intervening built development at the quay, as the designation is located approximately 5 km from the site, effects are very likely to be not significant at this distance.

Cromarty House GDL

As noted in the GDL inventory, the parkland is enclosed by woodlands, which screen the town and the Firth from view. As such, it is unlikely that any construction activity would be visible, resulting in not significant effects.

Balnagown Castle

As noted in the GDL inventory, the designation commands fine views to the south-west and east over the coastal flats and therefore, it is possible that some construction activity could be visible although intervening built development at the quay is likely to provide some screening. Nonetheless, as the designation is located approximately 7 km from the site, effects are very likely to be not significant at this distance.

Sutors of Cromarty, Rosemarkie and Fort George SLA

Although the western boundary of the designation lies in quite close proximity to the site, the large majority of the SLA would not experience any views of construction activity due to the screening effects of intervening landform. From those parts near to Cromarty where activity would be visible, it would be experienced in context of other activity taking place in and around the industrial setting of the quay and as such, the effect on the special qualities of the designation would be very limited. Consequently, effects are predicted to be not significant.

Road users travelling along the B9175 and A9

Considering the screening effect of intervening trees and built development along these routes, particularly some large buildings and other infrastructure at the quay, effects on those travelling the B9175 and A9 are very likely to be not significant.

Passengers on the Nigg Ferry

When travelling north, passengers would experience some very noticeable views of constructions activity and although this would be in the context of other surrounding industrial land use and activity, short-term effects could be significant.

Settlement

From those relatively nearby settlements of Balnabraich, Balnapaling and Pitcalzean Mains, it is very unlikely that due to the screening effect of intervening trees and built development, including the large buildings and other infrastructure at the quay, residents would not experience any open views of the site. Consequently, effects are very likely to be not significant.

From the settlements of Invergordon and Cromarty, including those undertaking recreational activity at Cromarty viewpoint, some construction activity is very likely to be visible although considering this

would be experienced in a context of other activity taking place in and around the industrial setting of the quay, effects are very likely to be not significant at this distance.

9.7.5 Mitigation Measures

As the existing industrial land uses and activity taking place in and around the quay significantly limits the magnitude of all landscape and visual effects, no landscape or visual mitigation has been incorporated into the proposed development.

10 SCHEDULE OF MITIGATION

10.1 Introduction

This Chapter presents a summary of the mitigation and enhancement measures identified by the specialist environmental studies throughout the EIA process. It indicates how these mitigation measures have or would be implemented. In addition to summarising mitigation, enhancement measures identified in the topic specific Chapters of this EIAR are also highlighted.

The mitigation and enhancement measures included in this EIAR would be implemented during one or more of the following two broad phases of the proposed development:

- Measures incorporated during the design process; and
- Measures required through the construction phase;

Table 10-1 below provides a summary of the mitigation measures proposed for each issue identified by the EIA process. The measures are divided into the categories outlined above. It should be noted that the table presents a summary only; further details on the mitigation and enhancement measures are included within each Chapter of this EIAR.

The Schedule is designed to provide a comprehensive summary of all construction or physical mitigation measures that would require to be carried through into the construction and operation of the proposed development, to ensure that the environmental assessment outcomes discussed throughout this EIAR are reached, e.g. to ensure that significant adverse effects are avoided where applicable and possible.

10.2 Mitigation Measures

Mitigation detailed in each technical chapter has been summarised below.

Table 10-1: Schedule of Mitigation

Feature / Topic	Mitigation	Timing
General		
Construction Environmental Management Plan	Once approved by the Regulatory Authorities, the CEM Document shall be used by the principal contractor to develop a detailed CEM Plan which will provide focused mitigation and control measures in order to ensure the environment is protected during the construction works. The CEM Plan shall incorporate, but not be limited to, the identified mitigation measures detailed within the Schedule of Mitigation. The CEM Plan will be submit to the statutory authorities for approval prior to any Works commencing on site. An independent Environmental Clerk of Works (ECoW) will monitor the construction works to ensure that the CEM Plan and associated mitigation measures are being implemented effectively. This may take the form of site visits, inspections and audit of the Principal Contractors records.	Pre-Construction and Construction
Best Practice	Best practice will be adopted throughout all phases of development, following current guidance as listed in the EIAR. The programme of works, including timings and methods, will be planned, monitored and managed to minimise the potential negative environmental impacts.	Construction
Operational Environmental Management	The quay once operational is to be incorporated into the existing site wide operational integrated management systems and Operational Environmental Management Plan.	Operation
Pollution Incident Response Plan	A Pollution Incident Response Plan will be set out in the CEM Plan 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.	Construction
Vessel Movements and Navigation	Any marine traffic accessing the port will adhere to the POCF Marine Safety Management Plan which is enforced by POCF as the Statutory Harbour Authority.	Construction and Operation
Chapter 5: Airborne Noise		
General Noise Management	<ul style="list-style-type: none"> The Principal Contractor to develop a site specific Construction Noise Management Plan as part of the CEM Plan to be submitted to the council for approval prior to work commencing; 	Pre-construction and Construction
Mobile Plant	<ul style="list-style-type: none"> Review and update of the existing Operational Noise Management Plan taking into account any recommendations from the shore to ship power feasibility study which GEN has committed to undertaking in support of the Sumitomo Electrics cable factory planning application; and Consideration of utilising electric powered mobile and fixed plant on site. 	Operation
Chapter 6: Biodiversity		
Construction Environmental Management Plan	Standard best practice mitigation measures as mentioned in the CEM Plan and Site Waste Management Plan (SWMP). The following good practice guidelines shall be adhered to and incorporated into the CEMP: <ul style="list-style-type: none"> GPP 5: Works and maintenance in or near water; GPP 6: Working at construction and demolition sites; PPG 7: Safe Storage – The safe operation of refuelling facilities; GPP 21: Pollution incident response planning; and GPP 22: Dealing with spills. 	Construction
	An independent Ecological/Environmental Clerk of Works (ECoW) will be employed to audit and report on adherence to the CEMP as well as any other relevant planning consents, environmental permits, legislation and mitigation. All personnel on the site should be made aware of the environmental sensitivities of the site (proximity to designated sites) via the site induction and additional task specific toolbox talks as required.	Construction
Biosecurity Plan	The principal contractor will produce and implement a biosecurity plan throughout the duration of works. This will include the cleaning of equipment and plant machinery prior to deployment to reduce risk of transmitting non-native and invasive species. The plan shall form part of the CEM Plan and as such will be submitted to the planning authority and other relevant consultees for approval prior to works commencing and implementation would be audited by the ECoW.	Construction
Speed Limit	A strict speed limit for onshore traffic of 15 mph will be implemented on site to reduce risk of collision with protected species.	Construction
Ballast Water	Industry standard ballast water management practices to be adhered to. Note: Out with the control of Port of Nigg.	Construction and Operation
Biodiversity Net Gain	An area of greenspace within the wider Nigg Port landownership will be improved. This is currently assessed as being other neutral grassland in moderate condition. Actions detailed within the Biodiversity Enhancement and Management Plan (BEHMP) should increase the condition to good.	Operation
	The installation of invertebrate shelters or bug hotels within the area of neutral grassland to increase foraging provision for species such as bats and birds present within the wider locale.	Operation
Monitoring	Monitoring of the habitat will be undertaken, to determine if the aims of the BEMP are being met. This includes repeating the condition assessment, including collection of quadrat data and fixed photography to assess changes over time.	Operation

Feature / Topic	Mitigation	Timing
	Following the implementation of management, monitoring should be undertaken annually for the first three years to determine successful establishment. Management and need for further monitoring will be reviewed after each monitoring period.	Operation
	To assess the impact of the habitat enhancement on the invertebrate assemblage it is also recommended that insect surveys are conducted. Flower-Insect Timed Count (FIT) methodology ⁸⁸ employed within the UK Pollinator monitoring scheme is easy and repeatable and could be used to monitor changes in pollinator presence within the habitat.	Operation
Chapter 7: Traffic Assessment		
Construction Traffic Management Plan (CTMP)	A Framework CTMP (refer to Technical Appendix 6.1, Volume 3 of the EIAR) has been developed to support the planning application for the proposed Development. It is expected this document will be updated by the appointed contractor. The updated CTMP would be submitted to THC prior to any construction commencing on-site. The CTMP would detail any mitigation measures deemed necessary to remove, reduce or offset any temporary adverse effects of construction vehicles and operations and would detail information on construction times and haulage routes.	Construction
Considerate Constructors Scheme	The construction Site would be registered with the Considerate Constructors Scheme which requires constructors to comply with a Code of Considerate Practice, and seeks to: <ul style="list-style-type: none"> Minimise any disturbance or negative impact (in terms of noise, dirt and inconvenience) sometimes caused by construction Sites to the immediate neighbourhood; Eradicate offensive behaviour and language from construction sites; and Recognise and reward the constructor's commitment to raise standards of Site management, safety and environmental awareness beyond statutory duties. 	Construction
Fencing and Gates	The existing galvanised palisade gate at the entrance to the site would be maintained for safety purposes and to control vehicles entering and exiting the Site. Existing security fencing would also be maintained around the perimeter of the Site to protect the equipment store on the Site and control access given the type of use.	Construction
Routing	An internal route system will be established to ensure vehicle turnover is optimised. The existing gates are a suitable distance from the public road to ensure vehicles can be accommodated off the adopted road network. A banksman would be responsible for ensuring the safe manoeuvring of HGVs into, out of and within the Site.	Construction
	If deemed necessary, the construction vehicles could also be installed with GPS tracker systems to ensure the defined haulage route is maintained. However, given the short direct journeys, particularly associated with the crushed rock deliveries from Castlecraig Quarry, it would be difficult for the vehicles to take alternative paths.	Construction
Dust nuisance	Covering HGVs to / from the Site.	Construction
	On-site dust suppression measures, such as, spraying or hosing of material prior to excavation and loading.	Construction
Vehicle Breakdown	The Principal Contractor to consider measures to assist with delivery vehicle break-downs to minimise network disruption	Construction
Signage	Signage will be placed to advise all network users that an increased number of HGV's will be present in the area.	Construction
Chapter 8: Water Environment and Coastal Process		
Construction Environmental Management Plan (CEMP)	The CEM Plan to include surface water management and pollution prevention measures (e.g. Pollution Prevention Plan) and will be in place during construction and operation. The CEMP will remain a live document and will be continually updated as the work progresses.	Construction
Licencing / Authorisations	All 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). The level of authorisation required is dependent on the anticipated environmental risk posed by the activity to be carried out. These activities could include construction drainage. Construction activities below MHWS with potential to affect the water environment require to be authorised under a Marine Licence.	Construction
Surface Water Management	The surface water drainage will be designed to ensure that there are no untreated surface water discharges directly to surrounding coastal waters. It is proposed to replicate natural drainage around construction areas and to use source control to deal with rainwater in proximity to where it hits the ground in line with current Sustainable Drainage Systems (SuDS) guidance. Suitable prevention measures will be in place at all times to prevent the release of pollutants to the water environment, including adjacent coastal waters. These will be regularly inspected and maintained to ensure optimal performance.	Construction
Site Compounds	Run-off from compounds will be captured and passed through construction drainage features prior to discharge. Foul drainage will either be contained in a closed system and disposed of at a suitable off-site facility with private treatment and discharge or, where possible, directed via a connection to the PON foul drainage treatment system.	Construction
Concrete	In the case that concrete batching was 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 GPP6: <ul style="list-style-type: none"> 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. <p>The following mitigation is proposed for concrete handling and placement:</p> <ul style="list-style-type: none"> Pouring of concrete will take place within well shuttered pours to prevent egress of concrete from the pour area. 	Construction

⁸⁸ <https://ukpoms.org.uk/fit-counts>

Feature / Topic	Mitigation	Timing
	<ul style="list-style-type: none"> The CEM Plan 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. 	
Oil, Fuel, Site Vehicle Use and Storage	<p>The risk of oil contamination will be minimised by good site working practice (further described below) but should a higher risk of oil contamination be identified then installation of an oil separator will be considered.</p> <p>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:</p> <p>Storage:</p> <ul style="list-style-type: none"> Storage for oil and fuels on site will be designed to be compliant with GPP2 and GPP8. The storage and use of loose drums of fuel on site will not be permitted. Bunded tanks will provide storage of at least 110% of the tank's maximum capacity. <p>Refuelling and maintenance:</p> <ul style="list-style-type: none"> Fuelling and maintenance of vehicles and machinery, and cleaning of tools, will be carried out in a designated area where possible in line with PPG7. Multiple spill kits will be kept on site. Drip trays will be used while refuelling. Regular inspection and maintenance of vehicles, tanks and bunds will be undertaken. <p>Emergency procedure: The Pollution Incident Response Plan will include measures to deal with accidental spillages.</p>	Construction
Groundwater Contamination	<p>In the unlikely event that potential groundwater release of hydrocarbons is detected during piling operations, sampling and laboratory analysis will be undertaken. Should chemical analysis indicate presence of hydrocarbon release, or any associated deterioration in groundwater quality, discussions will be held with the appropriate regulatory authorities i.e. THC and SEPA in order to design and implement measures to prevent impacts on coastal waters.</p>	Construction
Monitoring and Enhancement	<p>Specific auditing and monitoring plans will be developed by the contractor and will cover the following:</p> <ul style="list-style-type: none"> The contractor's own Environmental Management System; The CEM Plan, schedule of mitigation register, relevant legislation and industry good practice; All project 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). 	Construction/
Operational Environmental Management Document (OEMD)	<p>An Operational Environmental Management Document (OEMD) will be in place throughout the operational phase. Best practice will be followed throughout the operational phase, with reference to the SEPA Guidance for Pollution Prevention (GPPs), and best practice guidance.</p>	Operational
Surface Water Management	<p>It is proposed that drainage of surface water will adopt SuDS principles and be by means of surface mounted drainage channels which will include catch pits at changes in direction and the outflow will pass through suitable oil separators with sampling chambers included as detailed in Technical Appendix 7.2.</p> <p>Details of the operational surface water management proposals and methodology will be included within the OEMD and will be submitted to SEPA's operations team for agreement consent. Plans of the surface water management system will be located within the Site office, with foul water systems clearly marked.</p> <p>Where a site use or development proposal is such that it will require a Pollution Prevention and Control (PPC) authorisation from SEPA, then specific processes, techniques and technologies will be included within the surface water management system in that location in order to meet the requirements of the PPC authorisation. Such measures would be in line with best practice guidance.</p>	Operational
Chapter 9: Air Quality		
Construction Dust Management	<p>The Principal Contractor to incorporate standard industrial practises to reduce construction dust emissions within the CEM Plan.</p>	Construction

Feature / Topic	Mitigation	Timing
Chapter 9: Archaeology and Cultural Heritage		
Protocol for Archaeological Discoveries	A Protocol for Archaeological Discoveries (PAD) has been developed and included in the CEM Document. The PAD provides a framework to facilitate the reporting of unexpected or chance archaeological finds should any be encountered during the works.	Construction
Chapter 9: Carbon Assessment		
Construction Material	<ul style="list-style-type: none"> Using materials with low embodied carbon impacts: Materials such as recycled steel for reinforcements and timber from sustainably managed forests, would help to minimize the carbon footprint of the proposed development. Sourcing construction materials locally: It would result in reduction of transportation distances, which in turn cuts down on carbon emissions associated with transportation. 	Construction
	<ul style="list-style-type: none"> Implementing efficient construction processes: Construction techniques resulting in minimizing the energy consumption and waste generation would reduce the overall environmental impact. 	Construction
Construction Process	<ul style="list-style-type: none"> Reducing wastage during the construction process: It is crucial for minimizing environmental impact and maximizing resource efficiency. Strategies such as careful material planning, recycling and reusing construction waste, and implementing lean construction practices can significantly decrease the amount of waste generated on-site, leading to a more sustainable construction process. 	Construction
Chapter 9: Material Assets and Waste		
Waste Hierarchy	The waste hierarchy will be employed throughout the construction works and will aim to avoid, or minimise waste production where possible, re-use material where possible, segregate waste which cannot be reused for recycling where available and implement the correct methods of disposal should none of the aforementioned methods be feasible.	Construction

11 SUMMARY OF EFFECTS

11.1 Introduction

The predicted environmental effects related to the construction and operation of the new Eastern Inner Dock Quay have been considered throughout the design and subsequent assessment of the proposed development. The views of statutory consultees have been taken into account as presented in Chapter 3: EIA Methodology and Consultation.

The final design of the proposed development has been subject to a detailed EIA and design iteration process which has sought to minimise the effects resulting from the proposed development whilst ensuring the maximum benefits to the environment, nearby communities, and future generations. Where appropriate, additional mitigation measures have been proposed as well as opportunities for enhancement. Both mitigation and enhancement measures are detailed within their respective specific chapters and summarised within Chapter 10: Schedule of Mitigation of this EIAR.

The conclusions of each chapter are provided below.

11.2 Airborne Noise

Chapter 5 details the Airborne Noise Assessment for the proposed development.

Following advice provided by THC in their Pre-application and Advice for Major Developments note construction noise was scoped out of the airborne noise assessment. The principal contractor will develop a construction noise management plan specific to the proposed activities. The plan will form part of the CEMP which will be submitted to the council for approval prior to work commencing.

The operational noise associated with the export of HV cable from the adjacent Sumitomo Electrics cable factory were considered in a report by Mabbett & Associates Ltd in November 2023. The report found that trans-spooling for HV cable within the PON is already conducted and that the operation of the new Sumitomo Electrics HV cable factory will not be introducing a new activity to the port. It was found that the introduction of the additional spooling operations is unlikely to increase the noise impact upon the closest noise-sensitive receptors and that the sound characteristics of the work should remain the same.

When not being used for the HV cable export activities, general site activities will utilise the Eastern Inner Dock Quay. As such no new noise-generating activities are anticipated with the potential to increase the day and night-time existing baseline noise levels at surrounding noise-sensitive receptors. However, the proposed Eastern Inner Dock Quay development will bring noise-generating sources into closer proximity to residential receptors in Balnapaling than current operations, therefore there is the potential for an adverse effect at this location. A potential increase in noise levels at receptors in Balnabraich and Cromarty is also possible.

Baseline noise monitoring was undertaken in 2024 and the noise data compared to previous noise monitoring levels. The 2024 noise dataset are generally considered to be lower or consistent in range with those measured in 2019. The survey from 2024 is therefore considered to represent worst-case background noise levels for the area, given that noise against a quieter background level will be more apparent to the listener.

While it is predicted that increases in operational noise levels are likely to be mostly imperceptible to slight it is recommended that site-wide (i.e. existing and proposed Eastern Inner Dock Quay operations) noise mitigation measures and best practices are followed throughout PON to minimise baseline noise level creep.

In addition to the above, PON have made a commitment to investigate the introduction of shore to ship power at PON with aims to reduce cumulative noise, reduce emissions, improve air quality and contribute to the overall sustainability of port operations as part of the Sumitomo Electrics cable factory planning application. They will also consider utilising electric powered mobile and fixed plant on site.

Overall, the effects on the noise environment as a result of the development are considered not significant.

11.3 Biodiversity

The potential for impacts from the proposed development on Biodiversity is considered in Chapter 6.

A number of Important Ecological Feature's (IEF's) considered in the Chapter were assessed as having a negligible, negligible to low or low magnitude prior to mitigation measures being implement apart from:-

- The overall impacts on the sandbank habitat of the Moray Firth SAC was considered to be of negligible to high magnitude with the IEF having a medium sensitivity to impacts relating to pollution and sedimentation of water and high sensitivity to impacts relating to mINNS;
- Impacts on the Cromarty Firth SPA relating to water quality and mINNS were deemed to have a low to moderate magnitude of impact with the IEF being of low sensitivity; and
- Impacts on the habitats within the Cromarty Firth SSSI were considered to be of negligible to moderate

In general, other similar ports and harbour developments within the wider Moray Firth area could result in cumulative impacts. If construction phases occur concurrently then additive cumulative effects may occur. If the construction phases are sequential then the period receptors are exposed to impacts may be prolonged. Any developments resulting in increased vessel movements would result in cumulative effects for marine mammals in particular.

With suitable mitigation measures identified and in place, the residual effects for the IEF's are subsequently reduced to negligible in their magnitude and therefore not significant.

Biodiversity enhancements are also identified which should provide benefits to the local biodiversity, creating habitats suitable for a variety of floral and faunal terrestrial. A monitoring programme to verify the effectiveness of the mitigation measures proposed is provided in the Chapter. Overall, the effects of the proposed development on Biodiversity are considered not significant.

11.4 Traffic

Chapter 7 details the Traffic Assessment. In terms of traffic impacts, the hierarchy of the route to the north of the site is considered sufficient to accommodate the additional demand with the potential increase likely to be non-material. Traffic volumes are also much greater on the strategic road network (A9), thereby the impact of construction traffic will become further diluted once on the wider proposed haulage route.

Although a significant increase in HGV's on the southern route from the quarry is identified it is likely that this is attributed to double counting as the quarry currently uses this route to service other clients and as such are part of the baseline. In addition it is only a short section of the road i.e. ~300m which will be affected with no key receptors between the site and the quarry entrance on the B9175.

With the implementation of mitigation measures it is considered the impact of construction traffic would have:

- A temporary, negligible significance on the surrounding road network;
- A negligible effect on accidents and safety;
- A negligible effect to disruption and driver delay from vehicle breakdowns or dirt and debris on the roads;

- A negligible effect in terms of fear, intimidation and pedestrian/cyclist amenity;
- A negligible effect in terms of severance of pedestrian, cycle or vehicular routes; and
- A negligible effect to public transport.

11.5 Water Environment and Coastal Processes

Assessment of the impacts of the proposed development on the Water Environment and Coastal Processes in the study area was undertaken and detailed within Chapter 8 of the EIAR. The assessment considered the potential for significant impacts on hydrology, hydrogeology, water quality and coastal processes comprising tides, waves and sediment transport. The assessment concluded that the magnitude of effects of the proposed development were deemed to be either negligible or low (and therefore not significant) prior to mitigation apart from:-

- Pollution incidences during the construction and operational phases were assessed as having a low to high magnitude of impact depending on the scale and nature of the incident.

With suitable mitigation measures identified and in place, the residual effects are subsequently reduced to negligible in their magnitude and therefore not significant for both the construction and operational phases. A monitoring programme to verify the effectiveness of the mitigation measures proposed is provided in the Chapter.

Overall, the effects of the proposed development on the Water Environment & Coastal Processes are considered not significant.

11.6 Supporting Assessments

Chapter 9: Supporting Assessments, covers topics including Air Quality, Archaeology & Cultural Heritage, Carbon, Material Assets and Waste, Seascape, Landscape and Visual and Socio-economics. None of these aspects are considered significant in terms of the EIA Regulations

12 GLOSSARY

AADT	Annual Average Daily Traffic	ICE	Inventory of Carbon and Energy
AEP	Annual Exceedance Probability	ICFGF	Inverness and Cromarty Firth Green Freeport
A&ND	Accidents and Natural Disasters	IEF	Important Ecological Features
AOD	Above Ordnance Datum	IEMA	Institute of Environmental Management and Assessment
AQMA	Air Quality Management Area	IES	Institute of Environmental Science
ATC	Automatic Traffic Counts	IHT	Institution of Highways and Transportation
BEMP	Biodiversity Enhancement Management Plan	IMFLDP	Inner Moray Firth Local Development Plan
BGS	British Geological Survey	IMO	International Maritime Organisation
CAFS	Clean Air For Scotland	INNS	Invasive Non-Native Species
CCUS	Carbon Capture Utilisation and Storage	IRM	Inspection, repair and maintenance
CD	Chart Datum	IUCN	International Union for the Conservation of Nature
CDMP	Construction Dust Management Plan	JNCC	Joint Nature Conservation Committee
CDM Regs	Construction (Design and Management Regulations) 2015	kgCO ₂ e	Kilograms of Carbon Dioxide Equivalent
CEM	Construction Environmental Management	LAQM.PG	Local Air Quality Policy Guidance
CIEEM	Chartered Institute of Ecology and Environmental Management	LAQM.TG	Local Air Quality Technical Guidance
CNMP	Construction Noise Management Plan	LBAP	Local Biodiversity Action Plan
COMAH	Control of Major Accident Hazards Regulations 2015	LCT	Landscape Character Types
COPA	Control of Pollution Act 1974	LCA	Life Cycle Assessment
CTMP	Construction Traffic Management Plan	mAOD	Metres Above Ordnance Datum
dB	Decibel	Marine EIA Regulations	Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017
DEFRA	Department of Environment, Farming and Rural Affairs	mCD	Metres Chart Datum
DTH	Down The Hole	MCIEEM	Member of the Chartered Institute of Ecology and Environmental Management
EclA	Ecological Impact Assessment	MD-LOT	Marine Directorate Licensing Operations Team
ECoW	Ecological Clerk of Works	MHWN	Mean High Water Neap
EIA	Environmental Impact Assessment	MHWS	Mean High Water Springs
EIAR	Environmental Impact Assessment Report	MLWN	Mean Low Water Neap
EIA Regulations	Town & Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017	MLWS	Mean Low Water Springs
ECoW	Environmental Clerk of Works	mNNIS	Marine Non Native Invasive Species
FIT	Flower-Insect Timed	mOD	Metres Ordnance Datum
FPSO	Floating Production and Storage Offshore	NAQS	National Air Quality Strategy
GDL	Gardens and designed Landscapes	NIA	Noise Impact Assessment
GEN	Global Energy Nigg Ltd	NML	Noise Monitoring Locations
GEG	Global Energy Group	NMP	National Marine Plan
GHG	Greenhouse Gas	NNSS	Non-Native Species Secretariat
GLVIA	Guidelines for Landscape and Visual Impact Assessment	NPF	National Planning Framework
GPP	Guidance for Pollution Prevention	NRR	National Risk Register
GVA	Gross Value Added	NRMM	Non-road Mobile Machinery
Ha	Hectares	NS	NatureScot
HAT	Highest Astronomical Tide	NSA	National Scenic Area
HBRG	Highland Biological Recording Group	NTS	Non-Technical Summary
HES	Historic Environment Scotland	OEMP	Operational Environmental Management Plan
HGV	Heavy Goods Vehicles	ORC	Oxygen Release Compounds
HIE	Highland and Islands Enterprise	PAC	pre-Application Consultation Report
HRA	Habitats Regulations Assessment	PAD	Protocol for Archaeological Discoveries
HV	High Voltage	PAM	Passive Acoustic Monitoring
HwLDP	Highland wide Local Development Plan	PAN	Planning Advice Note
		PCC	Pollution Prevention Control
		PEA	Preliminary Ecological Appraisal
		PMF	Priority Marine Features
		PPV	Peak Particle Velocity
		PoFC	Port of Cromarty Firth
		PON	Port of Nigg

PPG	Pollution Prevention Guidance
RBMP	River Basin Management Plan
RCP	Representative Concentration Pathways
SAC	Special Area of Conservation
SBL	Scottish Biodiversity List
SCT	Seascape Character Area
SIMD	Scottish Index of Multiple Deprivation
SEIA	Socio-Economic Impact Assessment
SEPA	Scottish Environmental Protection Agency
SLA	Special Landscape Area
SLVIA	Seascape, Landscape & Visual Impact Assessment
SMU	Seal Management Unit
SPA	Special Area of Protection
SPMT	Self-Propelled Modular Transporter
SPP	Scottish Planning Policy
SSSI	Sites of Special Scientific Interest
SUDS	Sustainable Drainage System
SWMP	Site Waste Management Plan
TA	Transport Assessment
TAN	Technical Advice Note
THC	The Highland Council
TPO	Tree Preservation Order
TS	Transport Statement
UKCP	UK Climate Projections
VDV	Vibration Dose Value
WCA	Wildlife and Countryside Act 1981
WFD	Water Framework Directive
WLCA	Whole Life Carbon Assessment
ZOI	Zone of Influence