IONA BREAKWATER PROJECT

Environmental Scoping Report

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1 INTRODUCTION

1.1 Context

This Environmental Impact Assessment (EIA) Scoping Report has been prepared by RPS on behalf of Argyll and Bute Council for the Iona Breakwater Project for which development consent is sought.

An EIA Screening Opinion on the Iona Breakwater Project was issued from Marine Scotland Licensing Operations Team (MSLOT) in February 2021 (Appendix A). The Opinion determined that the Iona Breakwater Project falls under paragraph 10(m) of Schedule 2 of The Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended) ("the 2017 MW Regulations"), and as such an Environmental Impact Assessment must be carried out in support of the Marine Licence Application.

1.2 Objectives of this document

The specific objectives of this report are to:

- Define and describe the study area (i.e. physical, biological, human and built environment) and the proposed scheme;
- Identify potential significant effects on the environment for detailed examination in the Environmental Impact Assessment Report (EIAR) and those topics that can be scoped out; and
- Define other projects and plans that may need to be considered as part of an assessment of cumulative impacts.

1.3 Legislative and Regulatory Requirements

- The Town and Country Planning (Scotland) Act 1997, as amended by the Planning etc. (Scotland) Act 2006 – for works on land and to the mean low water mark. An application for Planning Permission will be determined by Argyll and Bute Council.
- The Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended) ("the 2017 MW Regulations"). Section 10(m) of Schedule 2 - Coastal work to combat erosion and maritime works capable of altering the coast through the construction, for example, of dykes, moles, jetties and other sea defence works, excluding the maintenance and reconstruction of such works.
- Marine Scotland stipulate that any associated dredging works taking place that involves disposal at sea, may also require a Marine Licence for Sea Disposal.

2 PROJECT DESCRIPTION

This chapter of the Scoping Report sets out a description of the proposed development and contains information on the project site, preliminary design, size and other relevant features in order to establish the characteristics of the project for the purposes of environmental assessment.

2.1 Background

2.1.1 Site Location

Iona Ferry Terminal consists of a slipway and pier jutting out into the Sound of Iona. There is a passenger queuing area along the slipway, but there is no shelter in wet weather. There is no car parking. The National Grid Reference for the site is NM275245.

Iona is a small island located west of the Isle of Mull, on the west coast of Scotland (Figure 2-1). There are multiple sand bars in the Sound of Iona, which are known to shift after storm events, resulting in the ferry route changing somewhat to follow deeper water. The prevailing wind and wave conditions are from the south west.

Figure 2-1 Iona Breakwater Project (Site Location)

2.1.2 Project Need

The current facilities consist of a pier for ferry operations, fishing and some commercial vessels. Berthing is also available for visiting craft. The following parties operate from the pier:

- The Iona ferry route is operated by Caledonian MacBrayne (CalMac) Ferries Ltd (CFL) with the Motor Vessel (MV) Loch Buie as the assigned vessel. The MV Loch Buie is 30.2m length overall, with a beam of 10m and a draught of 1.6m. The crossing time is typically 10 minutes with the lifeline ferry service providing for passengers and occasional vehicles transported between the islands of Mull and Iona;
- Crab/fishing vessel operators;
- Leisure boat operators; and
- Private boat owners.

The slipway is very vulnerable to waves from north, east and south; this impacts upon all slipway users. The ferry is particularly vulnerable to waves at the slipway, resulting in the ramp of the ferry rising and falling from the deck of the slipway – this affects crossings. The lack of a berthing structure also makes the holding of the ferry in place difficult; a risk to foot passengers and vehicles. The ferry holds its position at Iona using the weight of the ramp and the friction between the ramp and the slipway deck. The current berthing practice combined with recent repair works involving steel shuttering has resulted in making it difficult for the ferry to grip the pier and this has a negative impact on service provision.

The result of these problems for infrastructure in the Sound of Iona has a direct impact on the lives of the people who live there. A day without a ferry results in essential services to the island being affected – medical, educational, refuse collection, business delivery etc.

The solution to the situation in the Sound of Iona is a berthing structure and breakwater at Iona. The outcomes, as a result of this infrastructure, will be a much improved service, improved ability for lifeline services to travel to and from Iona and the facilitation of wider forms of economic development on both sides of the Sound.

2.1.3 Project Decisions to date

In 2015, Argyll and Bute Council appointed Arch Henderson to carry out a feasibility study for an overnight berth at either Iona or Fionnphort for the ferry. The Arch Henderson feasibility study presented separate options for the Iona development and comprised of cofferdam structures, sheet piled walls, suspended decks, and rock armour revetments/breakwaters. The options presented were as follows:

- Option 1 – double-wall cofferdam structure located adjacent to the existing slipway;
- Option 2 - rock armour breakwater with an anchored sheet piled wall located south of the existing slipway; and
- Option 3 - rock armour breakwater with an open suspended deck on piles located south of the existing slipway.

In 2017, Argyll and Bute Council appointed ByrneLooby to carry out a feasibility study of the proposed options. The ByrneLooby report concluded that the solutions proposed previously did not provide sufficient protection for the overnight berthing of the ferry as the proposed structures' length did not provide adequate protection from the prevailing south to south westerly waves, and the overnight berths were fully exposed to the north. To significantly reduced risks to passengers and operators, ByrneLooby presented five options for development at Iona comprising a breakwater and berthing piles. The options presented by ByrneLooby were as follows:

- Option 1A – a breakwater development approximately 70m south of the existing slipway in Iona. The overall length of the breakwater crest is 140m. The breakwater comprises a rock armour structure with a proposed slope of 1 in 1.5;
- Option 1B – a breakwater development approximately 70m south of the existing slipway in Iona. The overall length of the breakwater crest is 177m. The breakwater comprises a rock armour structure with a proposed slope of 1 in 1.5;
- Option 2A - breakwater with an approximate crest length of 140m located approximately 210m south of the slipway at Iona. The breakwater comprises a rock armour structure with a proposed slope of 1 in 1.5;
- Option 2b - breakwater with an approximate crest length of 140m located approximately 235m south of the slipway at Iona. The breakwater comprises a rock armour structure with a proposed slope of 1 in 1.5; and
- Option 3 - the Option 2B layout to the south with an additional breakwater to the north.

The preferred feasibility option taken forward by Argyll and Bute Council was Option 1B. In 2020, Argyll and Bute Council commissioned JBA Consulting to undertake a morphodynamic modelling assessment to investigate the impact of the proposed new berthing facilities on sedimentation at Iona and to assess how the new berthing facilities would impact the morphodynamics in the Sound of Iona and determine areas where significant sedimentation or erosion would occur.

In 2021, Argyll and Bute Council appointed RPS to undertake an expert review of all works undertaken to date and prepare a detailed Environmental Impact Assessment for the preferred scheme at Iona in support of a Marine Licence Application.

2.2 Proposed Iona Breakwater Project

The Iona Breakwater Project builds on Option 1A of the ByrneLooby Feasibility Study (2019). As detailed below, the project consists of a new rock armour breakwater, berthing piles and dredging (Figure 2-2). Detailed General Arrangement and Section drawings for the Iona Breakwater Project are included in Appendix B.

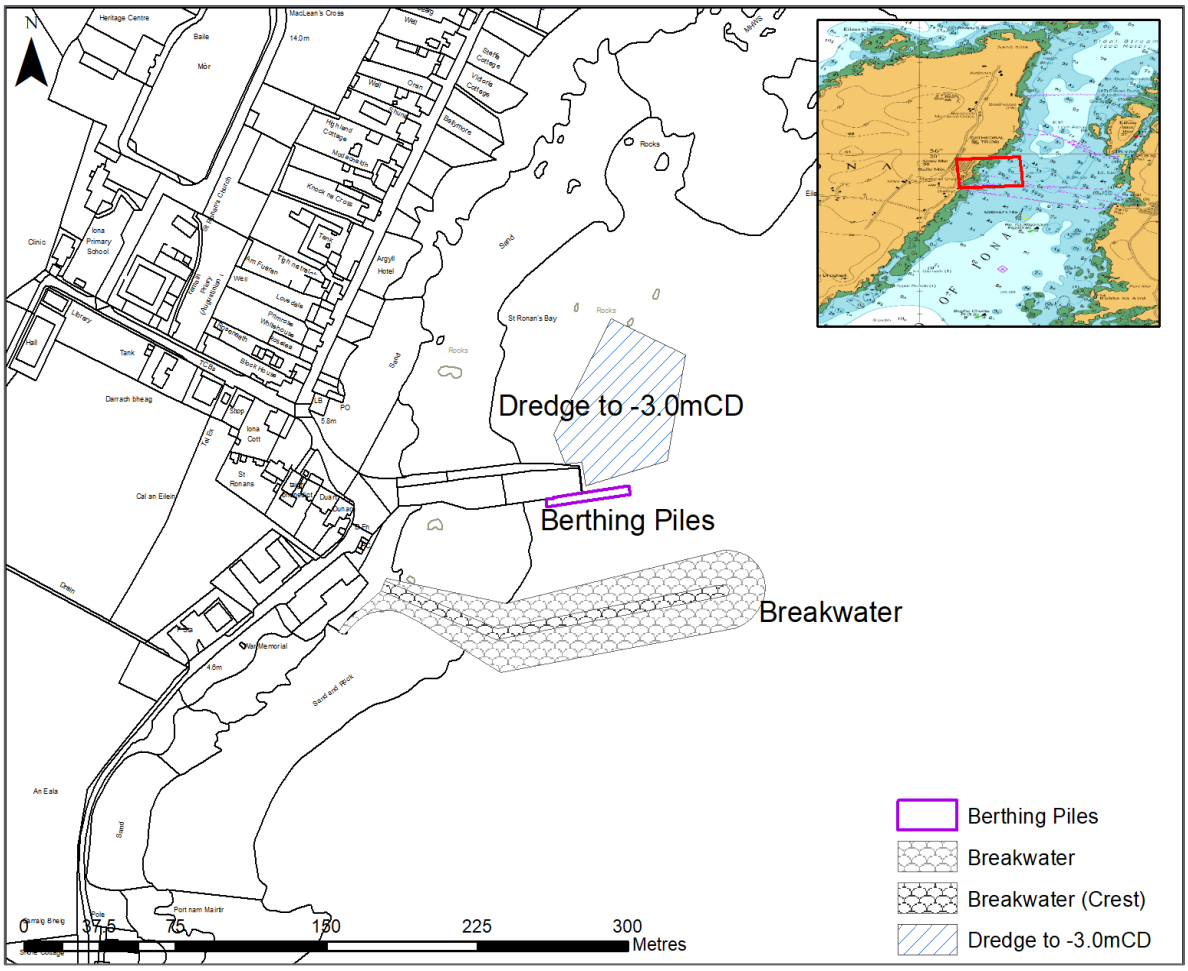

Figure 2-2: Iona Breakwater Project

Rock Armour Breakwater

The function of the structure is primarily to provide defence from waves propagating from a southerly direction and provide protection for future longer ferry vessels. The structure will not provide protection from the waves propagating from northerly or easterly directions. The breakwater will result in an overall reduction of wave heights at the structure. This will significantly reduce the risks to ferry operators and passengers and vehicles boarding and disembarking the ferry. The reduction in wave height provides a greater grip between the ferry ramp and the slipway deck.

The rock armour breakwater will have an overall crest length of circa 177m. The breakwater comprises a rock armour structure with a proposed slope of 1 in 1.5 and will be located approximately 70m south of the existing slipway in Iona. The proposed crest level will be 7.71m CD. Due to high flows through the crest during storm conditions, it is recommended to increase the crest width to the equivalent of 4 primary armour stone nominal diameters. The overall footprint of the breakwater is approximately 7000m^2.

The rock armour breakwater will be constructed of clean quarried rock. The estimated volume of rock armour required for the proposed breakwater is 43,000m^3; 33,000m^3 of which is below mean high water springs (MHWS). It is likely that local sources of rock armour will not be suitable however, Glensanda Quarry (Aggregate Industries) in Oban has been identified as a quarry which will be capable of producing rock armour material to a grading sufficient for the application at Iona. The quarry is equipped with marine loading facilities.

Berthing Piles

The ferry operator may secure the ferry to these piles by means of a mooring line or propelling the stern of the vessel towards the piles while using the vessel ramp on the slipway as a pivot point. In order to further secure the ferry to the slipway, it is proposed to install 12 no. berthing piles immediately south of the existing slipway. The total tonnage of piles including rock sockets required for the proposed berthing structure is 96t.

Dredging

In order to accommodate the new navigation channel requirements, some dredging works will be required, however these will be minor in nature and comprise overburden dredging only. The approximate dredge area is 3,400m^2. The approximate dredge volume to be removed is 3,298m^3. It is proposed that this is carried out by suction dredge, with the material deposited at the nearest licenced offshore disposal site at Port Ellen, Islay (MA030).

In November 2020, Argyll and Bute Council commissioned Structural Soil Limited to undertake a ground investigation at the Iona Breakwater Project Site. The ground investigation included 3 seabed sediment cores within the dredge area and 6 grab samples in the vicinity of the breakwater. The sediments were analysed for a suite of chemical parameters and screened against Marine Scotland Revised Action Levels (AL) 1 and 2 in order to identify any contamination which may be present. All samples within the dredge area were below the revised AL1 and AL2 Action Levels.

Other Technical Information relating to Iona Breakwater Project

- Design Life: The design life of the structure is 120 years in accordance with the UK National Annex to BS EN 1990:2002, Category 5.
- Transport of Material to site: Materials are expected to be transported to site by barge and installed from a barge fully equipped with crane, grab and piling rig. Transport by road will be minimal – there is no estimated impact on the road transport network.
- Duration of Works: The duration of the works at Iona is estimated to be 52 weeks.
- Services: Mains Electric is known to be present well to the north of the site and the proposed works will have no interference with these services.

2.3 Outline Method Statement

The outline method of construction is likely to be as follows:

- Site welfare facilities and site compound are expected to be established on a barge as the works will all be undertaken from a barge, however there will likely be a small compound on shore which could be established at the car park adjacent to the pier (occupying maximum 2 spaces);
- Mobilise dredging plant;
- Dredge pockets at site, (1 vessel envisaged for this activity which would be expected to undertake multiple movements from dredge site to disposal site). As part of the dredging along the ferry route, the dredging operations can be overnight or arranged with Calmac;

- Demobilising dredging plant;
- New piles delivered by barge to site, formation of rock sockets and piles lifted into position using a crane barge, top of piles cut to the required level and capped off and fender installation (1 vessel envisaged for this activity to both deliver piles to site and to install/drive piles. Piling activity will be from the south side of the proposed pile locations therefore piling operations will not encroach on the movement of ferries or other vessels);
- Sea level formation for rock armour installation (undertaken by a diving team who will be accommodated on a barge for the duration of this item);
- Rock armour for breakwaters delivered to site by barge and installation on the south face of the Breakwater by crane grab off the barge (there is no anticipation of rock storage – installed upon delivery to site). If a barge with a capacity of around 2,000t were used for delivering rock armour to site, it could be expected to involve in the region 60 movements. This will be unloaded from the south face. Whilst the installation of the breakwater must be maintained along the indicated site, the number of vessels may change in accordance with the successful contractor's proposals. This can be confirmed at the contract award. The proposed breakwater at Iona is approximately 40m from both ferries / tourism / fishing slipways, therefore rock armour activities will not encroach on the movement of ferries or other vessels.
- Installation of security gate;
- All works tested and commissioned in accordance with the specification, and
- Contractor demobilisation.

3 EXISTING ENVIRONMENT

This chapter considers the potential impacts of the Iona Breakwater Project on the surrounding environment under the following subheadings: Risk of Major Accidents (Navigation & Safety); Terrestrial Biodiversity; Marine Biodiversity; Land, Soils, Geology & Hydrogeology; Water Quality; Flood Risk; Air Quality & Climate Change; Terrestrial Noise & Vibration; Coastal Processes; Material Assets; Traffic and Transportation; Cultural Heritage; Landscape and Visual; Population & Human Health; Waste; and Cumulative Effects and Environmental Interactions.

Each subheading will provide a description of the existing baseline conditions based on available data, highlight the potential environmental effects of the Iona Breakwater Project on the environment (if any), make recommendations of the proposed approach to the EIAR and where appropriate recommend preliminary mitigation measures that could be applied during the construction and/or operational stage of the project.

The study also highlights the topics that have the potential to be scoped out from further assessment. Scoping out will justified on the basis of any of the following:

- A topic is irrelevant, due to the nature of the works on the receiving environment;
- The proposed development results in negligible impacts and is located in an area that is not environmentally sensitive to the anticipated effects;
- Effects on a particular receptor are considered to be below the significance threshold; or
- Any design or mitigation measures proposed will avoid the particular environmental effect.

The production of the EIAR has been co-ordinated and authored by a specialist team within RPS. ABPmer[1] have provided specialist Navigation and Safety input to Section 3.1.

3.1 Risk of Major Accidents (Navigation and Safety)

This chapter of the Scoping Report addresses the potential navigation and marine safety impacts of the Iona Breakwater project. The study area for the navigation assessment comprises the marine works within the Sound of Iona, plus the route the dredge and disposal craft will take between the dredge site at Iona and the disposal site at Port Ellen, Islay (MA030). The wider area is covered by UKHO Admiralty Chart 2617.

3.1.1 Baseline Conditions

The Sound of Iona separates the Islands of Mull and Iona, it is approximately 0.7 nautical miles (NM) or 1.3km wide at the ferry crossing point. The sound is approximately 4 nm long with the island of Erraid at the southern end and a number of smaller islands and skerries including Eilean nam Bàn, Eilean Dubh na Ciste and Eilean Ghòmhain. The sound provides sheltered waters but can be exposed to south-westerly winds and swell from the south; there are multiple sand bars in the sound which are known to shift after storm events. The tidal

[1] ABPmer

stream runs at a maximum of 2.5 knots (kts), which typically creates a choppy sea on the south running ebb tide when there is an opposing south-westerly wind.

Baile Mòr on the Isle of Iona is the location of Iona slipway and pier used by Iona Ferry. The port has a slipway providing passenger and vehicle access to the ferry, plus a pier which is used by local fishing vessels, recreational and privately-owned craft. The marine berthing facilities at Iona slipway and pier are owned by Argyll and Bute Council but the area does not form part of a Statutory Harbour Authority. This means that the competent authority for marine safety governing the sea space is the Maritime and Coastguard Agency (MCA), which is an executive agency of the Department for Transport (DfT).

Vessel traffic within the Sound of Iona can be characterised into two groups. The first is the ferry traffic which navigates between Fionnphort and Baile Mòr on the Isle of Iona (approximate east to west route, linking the Isles of Mull and Iona). The second, is traffic transiting through the sound (approximate north-east, south-west direction). This set of traffic is comprised of fishing vessels, recreational vessels and the Staffa Tour boats which operate from Fionnphort and the Isle of Iona.

The Iona ferry route is operated by CalMac Ferries Ltd (CFL) with the Motor Vessel (MV) Loch Buie as the assigned vessel. The MV Loch Buie is 30.2m length overall, with a beam of 10m and a draught of 1.6m. The crossing time is typically 10 minutes with the lifeline ferry service providing for passengers and occasional vehicles transported between the islands of Mull and Iona.

3.1.2 Potentially Significant Effects

This section identifies the potential impacts on navigation and marine safety from the Iona Breakwater project works.

3.1.2.1 Construction Phase

The following potential impact pathways have been identified as part of the construction phase:

Contact of construction or dredging craft with Iona pier or slipway: manoeuvring of construction or dredging craft in close proximity to marine structures has the potential for heavy contact (allision) with infrastructure during construction phase.

Collision of passing vessels with construction or dredging craft: as passing vessels (commercial, ferry, recreational or fishing) are manoeuvring in proximity to a moored, jacked-up or slow-moving construction or dredging craft there is a potential for collision.

Collision during navigation: vessel collision (commercial, ferry, recreational or fishing) with the construction or dredging craft whilst transiting to or from the site or during activities within the disposal site dispersal grounds.

Grounding of construction or dredging craft: vessels engaged in the works grounding on the foreshore, breakwater or other marine works during construction and dredge activity.

Commercial dive related incident: diving related incident as a result of an underwater hazard or marine craft activity whilst engaged in diving for construction or inspection activity.

Marine pollution incidents: pollutants entering the water from a marine incident (for example, a collision) or through an accidental spill from refuelling plant and equipment.

Payload related incident: through the unloading of cargo (for example, construction material or rock armour) it is possible that construction craft could suffer a loss of stability resulting in water ingress or capsize.

Fire/explosion: construction or dredging craft experiencing a fire and/or an explosion onboard leading to a marine emergency situation.

Heavy lift failure: construction craft experiencing a failure of lifting equipment or dropping a heavy item (for example, rock armour) onto a vessel causing a marine emergency situation.

Man-overboard during construction phase: the loss of personnel into the water during a crew transfer operation or directly from a construction or dredge craft during the construction phase.

Accident to the general public: the accessibility of the shoreline for the general public and those engaged in near-shore recreational pursuits (for example, swimming, small manual powered craft) presents a marine safety risk to the general public during the construction phase.

3.1.2.2 Operation Phase

The following potential impact pathways have been identified as part of the operational phase:

Contact of vessel with the breakwater: vessel Masters' unfamiliar with the area or those navigating with outdated information may make contact (allision) with the structure.

Grounding of ferry: changes to the seabed, including the breakwater and its construction material, may present an ongoing hazard of grounding through morphological seabed changes over time or ferry vessel activity (thrusters, vessel manoeuvring in confined area) affecting seabed sediment distribution.

3.1.3 Inclusion or Exclusion from EIAR

A Navigational Risk Assessment (NRA) will be required to support the marine licence application for the Iona Breakwater project and will be presented as an appendix to the EIAR. The NRA will detail and evaluate the pathways shown as potential significant effects. Table 3-1 shows the data that will be required to inform the NRA with relevant sections carried forward to the EIAR:

Table 3-1: Data to inform the NRA

Data Type	Data Source
Accident and Incident data	Marine Accident Investigation Branch (MAIB) Royal National Lifeboat Institute (RNLI)
Automatic Identification System (AIS) data	Marine Management Organisation (MMO)
Vessel movement statistics	CFL Local operators (if available)
Navigational features and charted information	United Kingdom Hydrographic Office (UKHO) Admiralty Chart 2617

As part of the NRA, a Hazard Identification (HAZID) exercise will be conducted to collect known and potential marine hazards. This consultation will be undertaken with port and marine stakeholders to understand the effects of the scheme through construction and operational phases. The project team intend to consult with the following organisations:

- The Maritime and Coastguard Agency;
- The Northern Lighthouse Board;
- CalMac Ferries Ltd;
- Argyll and Bute Council;
- Representatives of local fishing boat operators;
- The Staffa Tour boat operator; and
- The RNLI.

The effects will be assessed through expert opinion using a set of marine and navigational assessments. From the NRA, a set of mitigation measures will be identified, which will be implemented either directly into the scheme design, or via management practices. The overall objective is to maintain risk levels within a limit that is deemed 'as low as reasonably practicable' (ALARP) following the requirements of the Port Marine Safety Code (DfT, 2016).

All potential marine and navigational pathways will be considered in the NRA. The exclusions identified are:

Loss of hull integrity leading to **Flooding** or **Stranding** are not considered likely hazard scenarios in their own right and will instead be considered as part of a collision or contact scenarios.

3.1.4 EIAR Assessment Methodology

The following guidance will be considered within the methodology:

Primary guidance: The National Policy Statement for Ports (NPSfP) (DfT, 2012) provides the overarching policy against which the Iona Breakwater project will be determined. Paragraph 5.6.2 (DfT, 2012) recognises that there could be an increased risk of spills and leaks of pollutants as a result of infrastructure development. Sea ports and harbours provide the interface between the land, near shore and open sea. The UK Marine Policy Statement (2011) identifies in relation to port developments and marine safety that:

"*Marine plan authorities and decision makers should take into account and seek to minimise any negative impacts on shipping activity, freedom of navigation and navigational safety; and ensure that their decisions are in compliance with international maritime law*" (HM Government, 2011).

Secondary guidance: In the absence of specific government guidance relating to navigational risk for developments in port areas, the following documents will be considered in the preparation of the NRA for the Iona Breakwater project:

- International Maritime Organization (IMO) Revised Guidelines for Formal Safety Assessment (FSA) for use in the IMO rule making process (IMO, 2018);

- Maritime and Coastguard Agency (MCA), Marine Guidance Notice 654 (MGN 654 Merchant + Fishing) Offshore Renewable Energy Installations (OREIs) - Guidance on UK Navigational Practice, Safety and Emergency Response (MCA, 2021);
- DfT Port Marine Safety Code (DfT, 2016); and
- Marine safety guidance and advice from the MCA as the competent authority for marine safety, Argyll and Bute Council as the marine facility owner and CFL as the ferry route operator.

In order to assess the potential effects of the Iona Breakwater Project on navigation and marine safety, relative to the baseline, a combination of analytical methods and expert judgement will be used. This includes qualitative assessments of marine traffic data and consideration of the existing evidence base and empirical evaluation. The assessment methodology will follow the source-pathway-receptor model and the findings will be used to establish the potential magnitude of the predicted changes to the levels of marine risk and the overall significance of the likely effect of those changes. A receptor can only be exposed to a change if a pathway exists through which an effect can be transmitted between the source activity and the receptor. Likely impacts on shipping and navigation receptors, formulated during the NRA process, will be assessed during the EIA and presented in the EIAR using a scale of sensitivity and magnitude as described here:

Sensitivity: When a receptor is exposed to an impact, the overall sensitivity of the receptor needs to be determined. The sensitivity assessment for navigation and marine safety will consider the change to the baseline condition through construction and dredging vessel movements and the output of the NRA. For the purposes of assessing the impact on marine receptors, a sensitivity must be determined from a range of neutral to very high. The greater the safety impact and/or the lower the ability to adapt to the impact, the greater the sensitivity. A safety impact is classified as any impact that may influence the navigational or marine safety of the receptor.

Magnitude: Once the sensitivity is defined, an assessment of the magnitude will be made as defined by geographical extent, frequency of occurrence and duration. Determining the overall magnitude of navigational or marine safety also incorporates a degree of subjectivity as decisions are based on expert opinion in combination with baseline data and marine traffic information.

3.1.5 Preliminary Mitigation Measures

Where impacts on navigation or marine safety from the Iona Breakwater project works are identified, mitigation measures or mitigation controls will be identified through the NRA process for adoption/implementation as appropriate. Where possible, these controls will be embedded within the background navigational environment through the marine works. The preliminary mitigation measures are presented below.

3.1.5.1 Construction Phase

- A consultation plan to keep Argyll and Bute Council (Marine Operational Team) and CalMac Ferries Ltd (as the ferry operator) updated on scheme timings will be developed.
- The Contractor Risk Assessment and Method Statement (RAMS) will incorporate mitigation measures from the NRA (for example, pollution response capability, navigation equipment requirements, standard of personal, coding of vessels, etc).

- On completion of the marine works, a bathymetric survey will be undertaken that takes into account the standards laid out within MGN 654 Annex 4 '*Hydrography Guidelines for offshore renewable energy developers'*.
- The scheme will incorporate The International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) guidance on Aids to Navigation (AtoN) for marking the works.

3.1.5.2 Operation Phase

- Marine facility conservancy functions are considered to be operational mitigation, including bathymetric survey and maintenance of AtoN.

3.1.6 Summary of Scoping Exercise

The NRA will inform the EIAR and identify, through a sequence of navigational and marine safety risk assessments, the mitigation required for the construction and operational phases of the scheme. The NRA will include a HAZID workshop to consult with regulators (the MCA and NLB) and relevant organisations with an operational and port community interest in the project.

3.2 Terrestrial Biodiversity

This section describes the key terrestrial biodiversity and ornithological interests that are likely to utilise the Iona Breakwater Project area. This account is based on existing information available on the environment of Iona Ferry Terminal and the ecology of the Sound of Iona.

3.2.1 Baseline Conditions

Designated Sites

There are no statutory designations located within the Fionnphort Ferry Terminal area relating to terrestrial biodiversity or ornithology. Within the wider Sound of Iona and Mull area, designated sites relating to terrestrial biodiversity and ornithological interests are listed in Table 3-2:

Table 3-2: Designated Sites Relating to Terrestrial Biodiversity

Site	Designation	Notified natural features	Distance from site
Cnuic agus Cladach Mhuile	SPA	breeding golden eagle (*Aquila chrysaetos*).	11.2km east
Staffa	SSSI	breeding fulmar, (*Fulmarus glacialis*), puffin (*Fratercula arctica*) and shag (*Phalacrocorax aristotelis*).	11.5m north
Treshnish Isles	SPA and SSSI	breeding European storm petrel (*Hydrobates pelagicus*) and overwintering Greenland barnacle goose (*Branta leucopsis*).	14.3km north-east
Coll and Tiree	SPA	wintering populations of great northern diver (*Gavia immer*) and common eider (*Somateria mollissima*).	25.0km north-west
North Colonsay and Western Cliffs	SPA and SSSI	breeding and overwintering chough (*Pyrrhocorax pyrrhocorax*) and breeding populations of black-legged kittiwake (*Rissa tridactyla*) and common guillemot (*Uria aalge*).	25.1km south
West Colonsay Seabird Cliffs	SSSI	breeding common guillemot, black-legged kittiwake and razorbill (*Alca torda*).	26.8km south

Site	Designation	Notified natural features	Distance from site
Sleibhtean agus Cladach Thiriodh (Tiree Wetlands and Coast)	SPA	Breeding dunlin (*Calidris alpine schinzii*) and wintering Greenland barnacle goose.	30.0km northeast

Information on non-statutory designations will be sought from the local records centre to inform the EIA but have not been considered as part of this scoping exercise.

Species of Interest

The terrestrial part of the ferry terminal comprises hardstanding for parking, pavements, buildings and roadways. Otters (*Lutra lutra)*, a European Protected Species, may use the shoreline and ferry terminal area. No other protected terrestrial species are considered likely to use the habitats in the project area.

Foraging birds, including some seabird species, are likely to use the shoreline and intertidal habitats on the coastline adjacent to the ferry terminal, particularly during the breeding season (April to August) when bird numbers are likely to be highest. Due to the size and limited extent of the project (compared to the potential foraging area) it is not considered that these species would routinely occur in the immediate area in substantial numbers.

Foraging auks, in particular common guillemot (Amber listed by the latest versions of Birds of Conservation Concern (BoCC4; Eaton *et al*., 2015)), would be expected to occur in the vicinity of the project, but in relatively small numbers. Some of the more pelagic SPA-qualifying species (i.e. fulmar and kittiwake) would be expected to occur less in the vicinity of the ferry terminal because of the limited suitability for foraging.

There are various non-SPA seabird species that are also expected to occur in and around the waters of Fionnphort Ferry Terminal. Black guillemot (*Cepphus grille*) (Amber-listed) are known to feed in coastal areas more frequently than other auks. It is therefore anticipated that they will occur in and around the waters of the ferry terminal. It is expected that a range of foraging gull species will be present, including (but not limited to) herring gull (*Larus argentatus*), common gull (*Larus canus*) and black-headed gull (*Chroicocephalus ridibundus*). Of these species, herring gull are Red listed, with the other two species noted here found on the Amber list (Eaton *et al*., 2015).

Proposed Baseline Studies

A desk study will be undertaken for the project. Data requests will be made to the following resources:

- Argyll Biological Records Centre (ABRC) for all records of notable and protected species within 2km of the site within the last 10 years;
- The local bird recorder will be contacted for all records of notable and protected bird species within 2km of the site within the last 10 years;

- NatureScot (NS) SiteLink website[2] will be consulted to identify the presence of any protected areas within 30km of the site boundary designated for ornithological features (e.g. Special Protection Areas (SPAs)) and 2km designated for terrestrial biological features (e.g. Sites of Special Scientific Interest (SSSI) and Special Areas of Conservation (SACs)); and
- Scotland's environment web[3].

Aerial imagery will be studied prior to the surveys to inform any areas of high sensitivity which might require additional survey effort during the fieldwork.

The following surveys are underway and will be completed April - August 2021:

- A Preliminary Ecological Appraisal (PEA) comprising a Phase 1 Habitat survey to map all terrestrial habitats using the method given in the Joint Nature Conservation Committee's (JNCC) Handbook (JNCC, 2016) within 100 m of the project footprint. The survey will also aim to identify the presence of Invasive Non-Native Species (INNS) subject to legal control and identify habitat suitability for protected species within 100m of the project footprint;
- An otter survey of all suitable and accessible coastal habitats and inlands watercourse and waterbodies within the footprint of the development and a 200 m buffer; and
- Monthly Through the Tide Counts (TTTCs) of waterbird species present will be undertaken on all coastal habitats within 500 m of the project footprint. TTTC survey methodology will follow an adapted version of that used during the British Trust for Ornithology's (BTO) Wetland Bird Surveys (WeBS) core and low tide counts (as described in Bibby et al., 2000) and will run April to August 2021 (inclusive).

3.2.2 Potentially Significant Effects

3.2.2.1 Construction Phase

The following potential impacts have been identified for the works associated with the Iona Breakwater Project construction phase:

- Temporary disturbance/loss of habitat arising from dredging activity within the harbour;
- Temporary disturbance/loss of habitat due to airborne noise and visual disturbance from construction activities such as piling;
- Permanent loss of habitat arising from reclamation of seabed during the construction of a new rock armour breakwater to the south of the existing slipway; and
- Temporary effects on prey species due to underwater noise arising from construction activities (notably dredging, vessel noise and piling), increased suspended sediment concentrations and sediment deposition.

[2] https://sitelink.nature.scot/home

[3] https://map.environment.gov.scot/sewebmap/

3.2.2.2 Operation Phase

The following potential impacts have been identified during the operational phase of the Iona Breakwater Project:

- Long term increase in disturbance to habitat arising from increased levels of marine activity due to improved ferry services and provision off overnight berthing site;
- Long term increase in disturbance of habitat due to airborne noise and visual disturbance associated with the increase in terrestrial activity; and
- Long term effects on prey species due to noise arising from vessels and potential for pollution events linked with increased levels of marine activity.

3.2.3 Inclusion or Exclusion from EIAR

For terrestrial ecology receptors the scope of the assessment will be limited to those protected species likely to be present within the project site and up to a 200 m buffer. All other species will not be considered in the assessment of effects. Receptors to be included will likely be limited to habitats and otters.

Ornithology interests associated with SPA's to be included within the EIAR will be based on NatureScot guidance on assessing connectivity with SPA's (SNH 2016) and availability of suitable habitat. As such, golden eagle and wintering Greenland barnacle goose will not be assessed. Breeding non-SPA associated bird species of note (i.e. Red and Amber listed by the latest versions of Birds of Conservation Concern (BoCC4; Eaton *et al*., 2015) and species listed on the Scottish Biodiversity List (SBL)) will also be included in the assessment based on the finding of the TTTC surveys and the associated 500 m survey area.

3.2.4 EIAR Assessment Methodology

The assessment of ecological effects for the EIA Assessment chapter will be undertaken in accordance with the ecological impact assessment guidelines published by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018).

The ecological assessment will include evaluation of Important Ecological Features (IEFs) and Important Ornithological Features (IOFs) present at the site and surrounding area, which may include protected sites, protected species, Priority Habitats and Priority Species. The evaluation will identify features on a geographical scale, based on that provided in the CIEEM guidance, as follows: International > National > District > Local > Site > Negligible.

In accordance with the CIEEM guidance, the purpose of the ecological assessment is to focus on those features that are most likely to be affected and are either protected or are of sufficient value to merit consideration in the EIA process, rather than consider the effects upon every feature that may be present, many of which will be common, widespread and robust. Accordingly, those features taken forward for detailed assessment will be those that are likely to be affected and are statutorily protected or are considered to be of at the very least of nature conservation value or considered worthy of consideration be consultees.

The likely positive and negative impacts of the Project on present IEFs / IOF's will be identified. These impacts may include but are not limited to direct habitat loss, changes in habitat quality, or disturbance.

Once the potential impacts have been identified the likely magnitude of these will be assessed through both the construction and operational phases of the Project. These assessments will consider any measures that form part of the Project and to which the applicant is committed.

Embedded mitigation may be devised to avoid any significant impacts associated with the construction and operation of the Project on IEFs / IOF's. All mitigation proposed will follow the mitigation hierarchy: avoidance, mitigation, compensation, enhancement. Following any mitigation or enhancement measures considered appropriate, the impacts remaining once they are taken into account will be identified (the 'residual impact').

3.2.5 Preliminary Mitigation Measures

3.2.5.1 Construction Phase

An outline Construction Environmental Management Plan (oCEMP) will be developed which will include site specific pollution prevention measures and procedures to be adopted during construction. Similarly, where specific species are identified which might be adversely disturbed through construction related activities, specific Species Protection Plans (SPPs) would be developed. Toolbox talks would be provided during construction to provide the construction team with relevant information regarding the ecological sensitivities of the area and a full time Ecological Clerk of Works would be employed for the duration of the construction phase to oversee compliance with all relevant documents and wildlife legislation.

3.2.5.2 Operation Phase

Mitigation measures will be proposed during the operational phase if necessary once significance of effects has been established. Updated Pollution Incident Response Plans will be produced to take account of the increased vessel activity.

3.2.6 Summary of Scoping Exercise

The scoping exercise has concluded that a number of potential environmental effects at construction stage should be scoped into EIA, that is: effects on birds and otters and their prey species. The effects on otters, birds and their prey species as a result of increased ferry services at operational stage, shall also be scoped into the EIA.

3.3 Marine Biodiversity

3.3.1 Baseline Conditions

Introduction

This section describes the key biological aspects of the marine environment within Iona Breakwater Project area and its surrounding environs (Marine Biodiversity Study Area). The characterisation of the marine ecology of the area is based on existing information available on the environment in the vicinity of the Marine Biodiversity Study Area and the wider area of the western isles, Sea of the Hebrides and the Minch. Protected sites in the vicinity of the Iona Breakwater Project are shown in Figure 3-1.

Data Sources

The following data sources have been used to inform this Marine Biodiversity section of the scoping report:

- The European Marine Observation and Data Network (EMODnet) (2021);
- Marine Scotland (2021);
- National Biodiversity Network (NBN) Atlas Scotland (2021); and
- Seagrass Spotter (2021).

Benthic Ecology

Limited historical information is available that characterises the seabed and sediments present at Iona port. Sediments within the vicinity of the Iona port are expected to comprise sand, sandy gravel, gravelly sand and muddy sand, with areas of hard substrate based on predicted habitats by the EMODnet Seabed Habitats (EMODnet, 2021) predictive habitats model.

A review of available data has concluded that seagrass beds (a Priority Marine Feature (PMF)) are likely to be present in the vicinity of Iona and the wider area of the western isles, Sea of the Hebrides and the Minch (Marine Scotland, 2021; Seagrass Spotter, 2021). There is one recording of *Zostera marina* to the east (approx. 1km) of Iona from 2016. This was described as 'many large patches' located in subtidal sandy habitat at 4-6m depth. In addition, seagrass (*Zostera marina*) has also been recorded further north (approximately 18km) during the 'Biotope Mapping and Survey of the Treshnish Isles Candidate Special Area of Conservation (cSAC)', undertaken by ERT (Scotland) Ltd in 2004 (ERT, 2004). Seagrass species (*Zostera marina*, *Ruppia maritima*, and *Zostera noltii*) have been recorded in the wider area on Colonsay, Skye, the Outer Hebrides, and the west coast of mainland Scotland.

The data available has also highlighted that there are other benthic PMFs recorded in the wider area of the western isles, Sea of the Hebrides and the Minch, including maerl beds to the north around the Treshnish Isles (approximately 18km), burrowing sea anemone *Arachnanthus sarsi* to the north around Coll (approximately 32km) and on the west coast of Scotland (approximately 41km), fan mussel *Atrina fragilis* to the north around the Treshnish Isles and Coll, and records of northern feather star *Leptometra celtica*, kelp and seaweed communities on sublittoral sediment, and ocean quahog *Arctica islandica* surrounding many of the Hebrides islands and west coast of Scotland (Marine Scotland, 2021). In addition, burrowed mud habitats area also

located in the wider area with records of seapens and burrowing megafauna communities, tall sea pen *Funiculina quadrangularis* and fireworks anemone *Pachycerianthus multiplicatus* PMFs (Marine Scotland, 2021).

The closest protected area designated for habitats or benthic features is Firth of Lorn Special Area of Conservation (SAC), located approximately 31km to the south-east, which is designated for Annex I reefs.

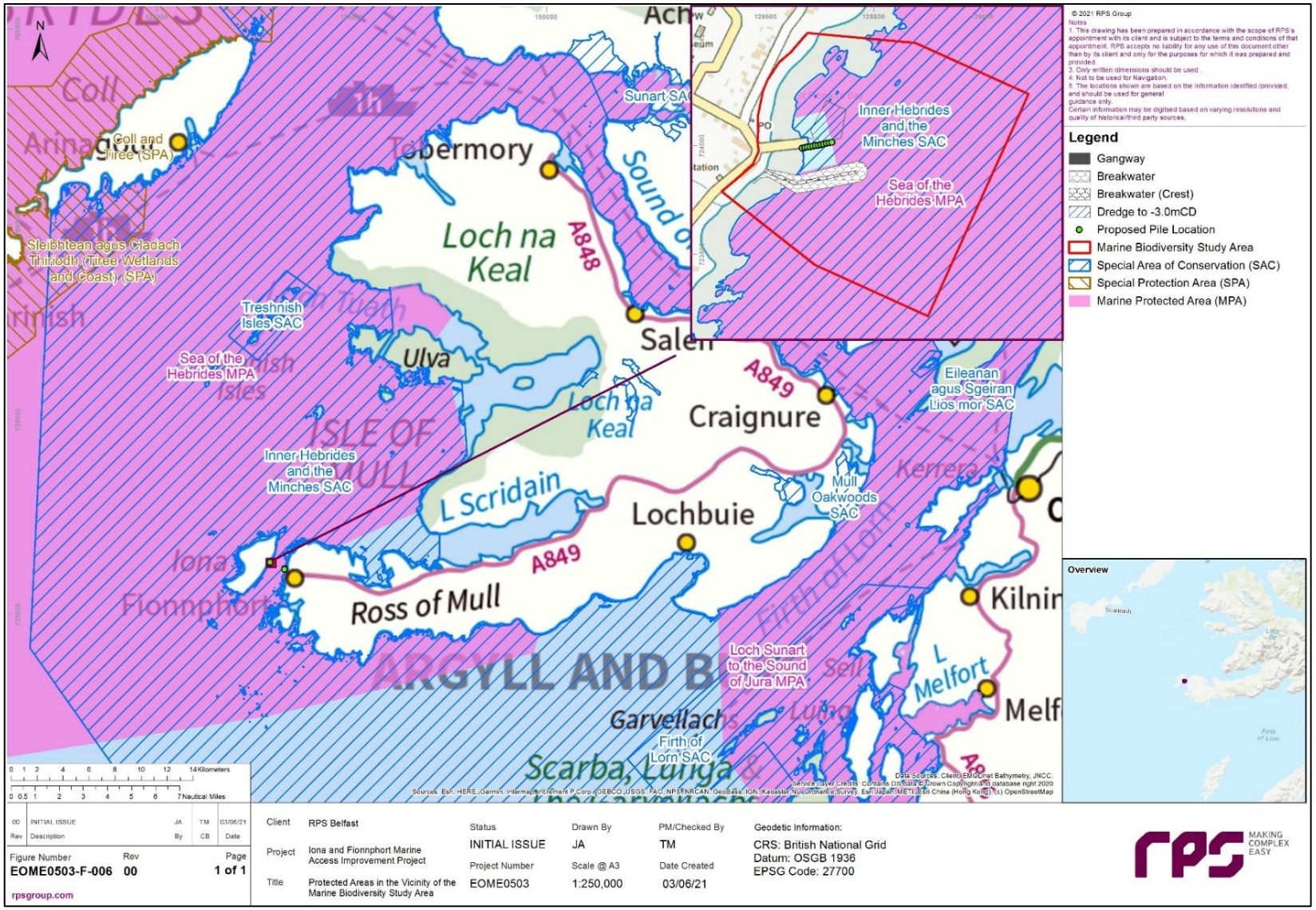

Figure 3-1 Protected Areas in the Vicinity of the Marine Biodiversity Study Area

Fish and Shellfish Ecology

The fish community in the vicinity of the Marine Biodiversity Study Area would be expected to reflect the species known to occur in the Minch, Sea of the Hebrides, and the firths along the west coast of Scotland. Fisheries sensitivity maps available from Marine Scotland Information (Marine Scotland, 2021) and spawning and nursery area data from Coull *et al*. (1998) and Ellis *et al*. (2010) indicate that several species have spawning and nursery areas that coincide with or are near the Marine Biodiversity Study Area. These include:

- Cod *Gadus morhua* (nursery area);
- Haddock *Melogrammus aeglefinus* (nursery area approximately 35km to the west of Iona);
- Herring *Clupea harengus* (nursery area; spawning area approximately 35km to the north west of Iona);
- Mackerel *Scomber scombrus* (nursery area approximately 39km to the west of Iona);
- Norway lobster *Nephrops norvegicus* (spawning and nursery area);
- Norway pout *Trisopterus esmarkii* (spawning and nursery area approximately 19km to the west of Iona);
- Plaice *Pleuronectes platessa* (spawning and nursery area);
- Saithe *Pollachius virens* (nursery area);
- Sandeel *Ammodytes* spp. (spawning and nursery area);
- Sprat *Sprattus sprattus* (spawning and nursery area); and
- Whiting *Merlangius merlangus* (nursery area).

Several shellfish species have been recorded in the vicinity of the Marine Biodiversity Study Area, including scallops, queen scallops, lobsters, brown crabs, cockles, razor clams, whelks, periwinkles, velvet crabs and crawfish, as well as *Nephrops* as listed above (DECC, 2016). Most fishing in the region is for shellfish, with crabs (edible and velvet), lobsters and whelk caught alongside major fisheries for scallop and *Nephrops*. Other commercially fished species within the Marine Biodiversity Study Area and wider area of the Minch and Sea of the Hebrides include sandeel, herring, mackerel, cod, haddock and saithe (DECC, 2016).

Elasmobranchs such as lesser spotted dogfish *Scyliorhinus canicula*, spurdog *Squalus acanthius*, common skate *Dipturus batis*, cuckoo ray *Leucoraja naevus*, nursehound *Scyliorhinus stellaris* and thornback ray *Raja clavata* have all been recorded in the wider area in the Minch and Sea of the Hebrides (DECC, 2016). In addition, basking shark *Cetorhinus maximus* has been recorded near the Marine Biodiversity Study Area and in the wider area, particularly in the summer months (DECC, 2016; NBN Atlas Scotland, 2021).

The Marine Biodiversity Study Area is located within the Sea of the Hebrides Nature Conservation Marine Protected Area (NCMPA) which is designated for basking shark as well as minke whale *Balaenoptera acutorostrata*. In addition, the Loch Sunart to the Sound of Jura NCMPA is located approximately 35 km south east and is designated for common skate *Dipturus*.

Sea trout *Salmo trutta* and salmon *Salmo salar* are abundant in the rivers and lochs of the western isles, including Loch Ewe, Loch Morar, Loch Shiel and Loch Lochy. European eel *Anguilla anguilla* may also be

present in the wider area of the western isles, Sea of the Hebrides and the Minch (DECC, 2016; NBN Atlas Scotland, 2021).

Marine Mammals

Over the last 25 years a total of 23 cetacean species have been recorded in Scottish waters, of which 11 are regularly sighted. The remaining 12 are considered to be vagrants or rare visitors which do not occur regularly in Scottish waters. Cetaceans have the potential to range widely with some undertaking large-scale seasonal migrations to other parts of Europe or rest of the world. Some species are more localised in their distribution and resident populations of some species are present in Scottish waters. Data available indicates that the most likely species to be present in the Marine Biodiversity Study Area and wider area of the Minch, and the Sea of the Hebrides, include bottlenose dolphin *Tursiops truncatus*, common dolphin *Delphinus delphis*, harbour porpoise *Phocoena phocoena*, killer whale *Orcinus orca*, minke whale, and white beaked dolphin *Lagenorhynchus albirostris* (Marine Scotland, 2021; Hammond et al., 2017; NBN Atlas Scotland, 2021). The Marine Biodiversity Study Area is located within the Inner Hebrides and the Minches Special Area of Conservation (SAC) which is designated for harbour porpoise, as well as the Sea of the Hebrides Nature Conservation Marine Protected Area (NCMPA) which is designated for minke whale and basking shark (as discussed above).

Two species of seals (grey seal *Halichoerus grypus*, and harbour (common) seal *Phoca vitulina*) are found around Scotland's coast and inshore waters. Seal usage data presented by Russell *et al*., (2017) demonstrate that both grey seal and harbour seal are present in the vicinity of the Marine Biodiversity Study Area and wider area of the Minch, Sea of the Hebrides, and the Hebrides. The closest SAC designated for grey seals is the Treshnish Isles SAC (south west Scotland), approximately 16 km to the north of Iona and for harbour seals Eileanan agus Sgeiran Lios mor SAC (south west Scotland) which is approximately 52 km to the north-east.

3.3.2 Potentially Significant Effects

3.3.2.1 Construction Phase

- Temporary disturbance/loss of habitat arising from dredging activity at Iona port (Benthic Ecology and Fish and Shellfish Ecology);
- Temporary disturbance/loss of habitat arising from displacement/compaction of the seabed in the vicinity of piling activities and placement of material on the seabed (Benthic Ecology and Fish and Shellfish Ecology);
- Permanent habitat loss arising from the placement of material on the seabed for the breakwater (footprint: 7,000 m^2) (Benthic Ecology and Fish and Shellfish Ecology);
- Effects of increased suspended sediment concentrations and sediment deposition within Iona port on marine ecology receptors (Benthic Ecology and Fish and Shellfish Ecology);
- Potential for resuspension of contaminated sediments with effects on marine ecology receptors (Benthic Ecology and Fish and Shellfish Ecology);

- Effects of underwater noise arising from construction activities (e.g. dredging, vessel noise and piling) on fish including migratory fish species and marine mammals (Fish Ecology and Marine Mammal Ecology); and
- Disturbance and collision risk to marine mammals from increased vessel traffic during construction (Marine Mammal Ecology).

3.3.2.2 Operation Phase

- Permanent habitat loss arising from the placement of material on the seabed for the breakwater (footprint: 7,000m^2) (Benthic Ecology and Fish and Shellfish Ecology); and
- Disturbance and collision risk to marine mammals from increased vessel traffic during operation (Marine Mammal Ecology).

3.3.3 Inclusion or Exclusion from EIAR

The existing available data is not sufficient to fully characterise the marine environment and benthic communities within the Marine Biodiversity Study Area. Further surveys have been designed in order to gain a better understanding of both the baseline characteristics and potential impacts that the project may have on the marine environment (see Section 3.3.4). On this basis Marine Biodiversity will be scoped in for further assessment and inclusion in the EIAR.

3.3.4 EIAR Assessment Methodology

The assessment of effects for marine ecology will follow the EIA methodology set out below:

- Scoping / consultation exercise;
- Baseline surveys;
- Identification of potential significant effects;
- Mitigation;
- Monitoring;
- Residual and cumulative effects; and
- Reporting.

Specific to this topic, the following guidance documents will also be considered:

- Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater and Coastal, 2nd edition (CIEEM, 2016); and
- Guidelines for Ecological Impact Assessment in Britain and Ireland. Marine and Coastal published by the Chartered Institute of Ecology and Environmental Management (IEEM, 2010).

3.3.4.1 Benthic Survey Methodology

A full marine ecology desk-based assessment will be undertaken which will include a review of readily available information from desktop sources. Given the limited available data on the benthic environment in the vicinity of Iona port, a benthic environment survey is proposed to collect seabed samples, to identify key benthic organisms and to undertake analysis of the sediment composition to inform the EIA.

Sediment and macrobenthic samples will be collected from a number of sampling locations using a mini-Hamon grab, deployed from a survey vessel. In addition, seabed imagery will be collected using a seabed camera system, capturing still images and video from the sampling stations and targeted transects. A survey of the intertidal area will also be conducted, using unmanned aerial vehicle (UAV) mapping and undertaking a Phase I walkover.

Post survey, macrobenthic samples will be analysed, with all fauna present identified to species level, where possible, and enumerated by trained benthic taxonomists using the most up to date taxonomic literature and checks against existing reference collections. Faunal biomass will also be analysed and reported. The sediment samples will be analysed for Total Organic Carbon (TOC) and Particle Size Distribution (PSD). Seabed imagery will be assessed to determine whether habitats meet the definitions of Annex I reef habitats as described by Irving (2009) and Gubbay (2007).

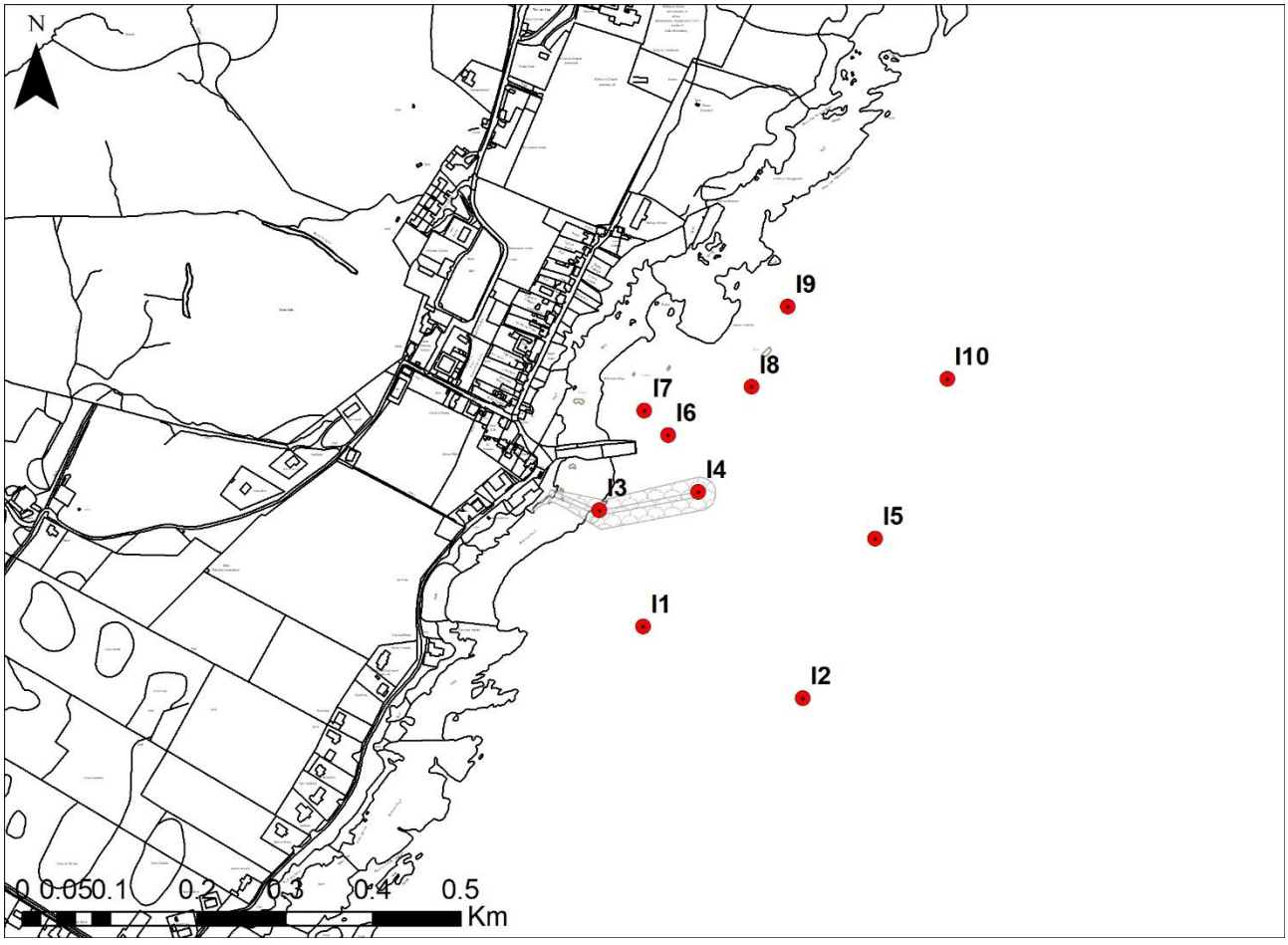

Figure 3-2 Iona Seabed Survey Locations

3.3.5 Preliminary Mitigation Measures

3.3.5.1 Construction Phase

Embedded mitigation measures include the following:

- An Environmental Management Plan (EMP) which will include pollution prevention measures during construction; and
- Navigation safety management processes during construction to manage vessel movements.

3.3.5.2 Operation Phase

Embedded mitigation measures include the following:

- Navigation safety management processes during operation to manage vessel movements.

3.3.6 Summary of Scoping Exercise

This scoping exercise has identified marine biodiversity (benthic ecology, fish ecology and marine mammals) within the proposed Iona Breakwater Project area (Marine Biodiversity Study Area) and the wider area of the western isles, Sea of the Hebrides and the Minch. Key features of the Marine Biodiversity Study Area and wider area include presence of seagrass beds, basking shark, minke whale and harbour porpoise. The proposed development is located within the Inner Hebrides and the Minches SAC and the Sea of the Hebrides NCMPA.

Potentially significant effects include temporary and permanent loss of habitat, effects associated with suspended sediment and resuspension of contaminants, underwater noise during construction, and disturbance and collision risk to marine mammals.

Marine Biodiversity will be taken forward for inclusion in the EIAR. This scoping exercise has identified the requirement for a better understanding of the benthic ecology within the Proposed Development area and the potential impacts associated with the Proposed Development. Therefore, a survey of the benthic environment will be undertaken to characterise the benthic environment and to inform the EIAR.

3.4 Land, Soils, Geology and Hydrogeology

3.4.1 Baseline Conditions

3.4.1.1 Land

Iona Ferry Terminal consists of a slipway and pier jutting out into the Sound of Iona. There is a passenger queuing area along the slipway, but there is no shelter in wet weather. There is no car parking.

3.4.1.2 Soils

In November 2020, Argyll and Bute Council commissioned Structural Soil Limited to undertake a ground investigation at the Fionnphort Breakwater and Overnight Berthing Project and Iona Breakwater site. At the Iona Breakwater and Project site, the ground investigation included 3 seabed sediment cores within the dredge area (Figure 3-3). The seabed sediment cores were sent to SOCOTEC Limited, a MCERTS and UKAS accredited testing laboratory and analysed for a suite of chemical parameters and screened against Marine Scotland Revised Action Levels (AL1 and AL2) in order to identify any contamination which may be present (Appendix C).

The following observations can be made from the sediment analysis results:

- The sediments in the vicinity of Iona are shown to have marine beach deposits of sand (63-2000µm);
- All heavy metals were below the Marine Scotland Revised Action Levels (AL1 and AL2);
- There were no tributyltin (TBT) / dibutyltin (DBT) results recorded above the lower guideline limit; and
- All polycyclic aromatic hydrocarbons (PAHs) were below the Marine Scotland Revised Action Levels (AL1).

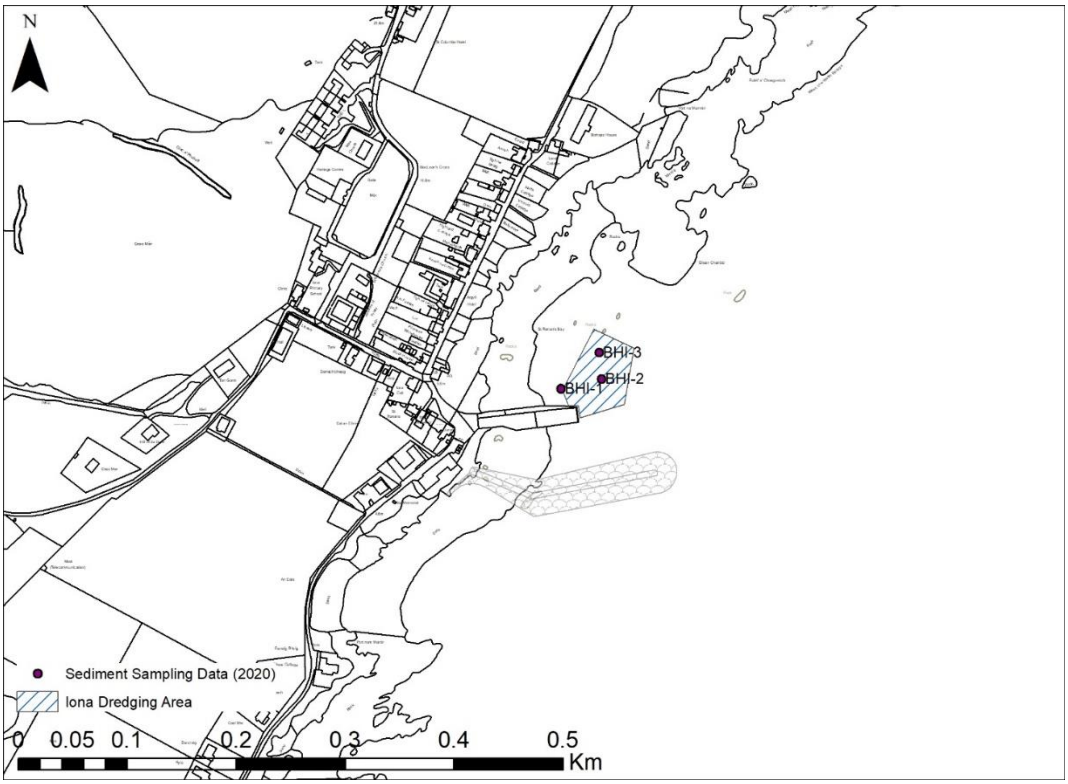

Figure 3-3 Sediment Sampling and Analysis (2020)

3.4.1.3 Geology

Some of the oldest and most interesting rock formations in Britain are found on the Isles of Mull and Iona. Bedrock on Mull to the east of the Ross of Mull fault consists of mainly Palaeogene rocks, notably felsic rock, pyroclastic rock, and mafic igneous rock from the Mull volcano in the centre of the island as well as mafic lava and mafic tuff, from earlier lava flows.

Bedrock to the west of the Ross of Mull fault is made up of Neoproterozoic rock, most notably Glenfinnan Group psammite and pelite and Morar Group psammite. There are also formations of late Silurian to early Devonian rock, notably comprising of igneous felsic intrusions.

Bedrock on Iona is mainly made up of Proterozoic rock comprised of complex gneiss. There are also areas of Neoproterozoic metasedimentary rock comprising of mudstones, sandstones and conglomerate along the east coast. There is also a small Palaeoproterozoic igneous intrusion near the centre of Iona comprising of anorthosite formations. The Bedded Series on the Ross of Mull and Iona includes a variety of rock types as illustrated in Figure 3-4.

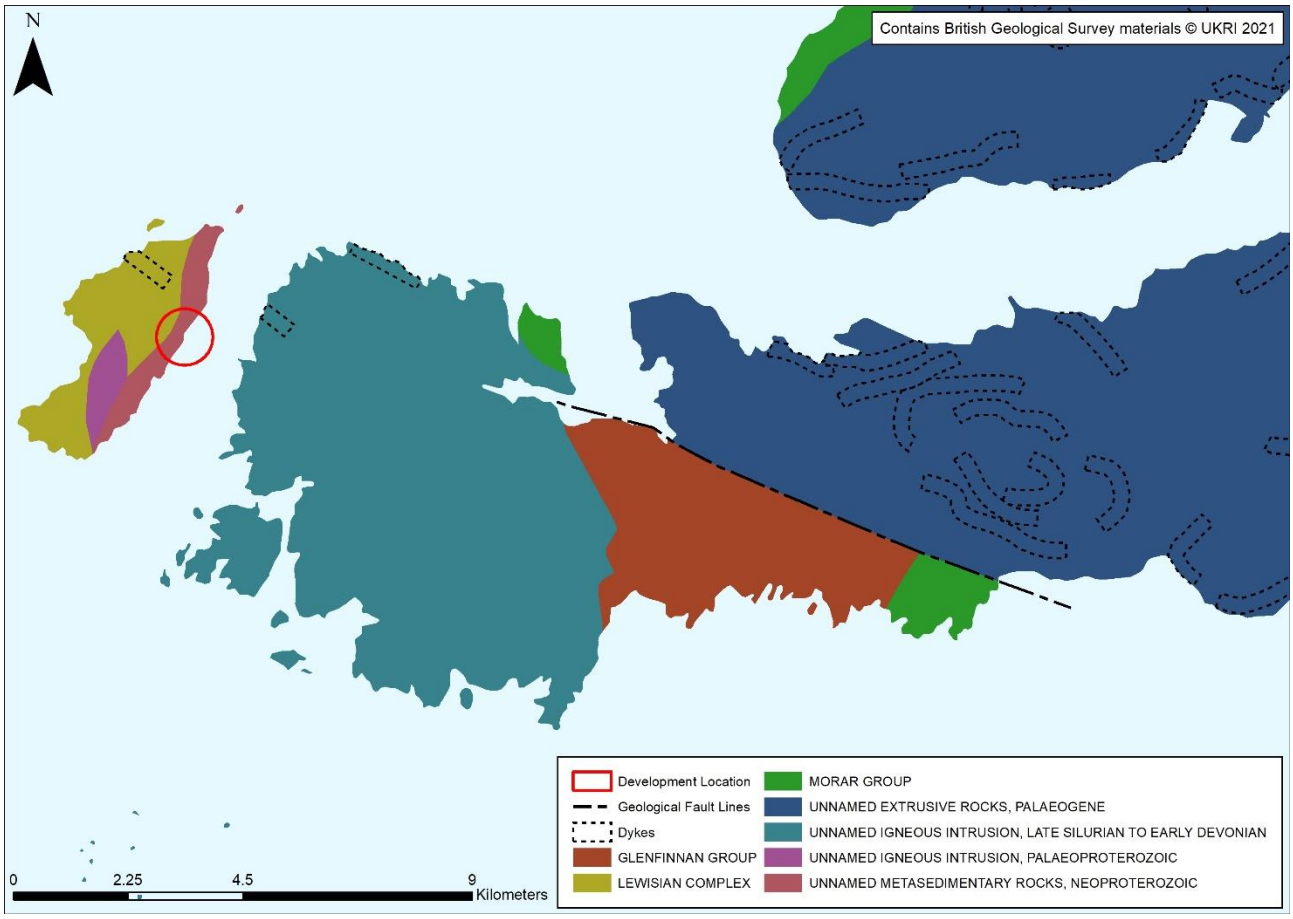

Figure 3-4 Geological Formations

Sites of Geological Importance

The importance of Mull's geology has long been appreciated and has been recognised through in the designation of a number a sites due to their geological features (Figure 3-5). Sites of geological importance include: Ardalanish Bay SSSI, Ardtun Leaf Beds SSSI, Ardmeanach SSSI and South Mull Coast SSSI. A summary of each is given below:

Ardalanish Bay SSSI: Ardalanish Bay SSSI is of special interest for its geological features, which include structural and metamorphic geology, with the most westerly known outcrop of the Neoproterzoic-age Moine Supergroup in Scotland. The site is of national importance as it provides an example of the effect of a late orogenic pluton, the Silurian / Devonian-age Ross of Mull Granite.

The site also shows the Ross of Mull Granite pluton, displaying one of the best examples of passive emplacement with assimilation of county rock within any of the Caledonian plutonic sites. All stages of the coastal outcrops on the west side of Ardalanish Bay are preserved.

The Ardalanish Bay SSSI is approximately 8km south east of the Fionnphort Breakwater and Overnight Berth Project area. There are no features of geological interest within the footprint of the Proposed Development.

Ardtun Leaf Beds SSSI: Ardtun Leaf Beds SSSI is of special interest for its geological features, which include igneous petrology and Palaeontology. Situated on the norther coastline of the Ardtun Peninsula, the area contains coastal cliffs and gullies, displaying exposures of internationally famous sediments some of which erupted from the Mull volcano. The relationships between sediments and volcanic rocks provides valuable

information allowing for reconstruction of the geography of Mull 60 million years ago. Ardtun is also an important site for Tertiary paleobotany in the UK, with a wide variety of fossil plants being found in the area. In fact, at least 20 species of plants are found here, including ferns and conifers. It is the only area in Britain to contain such flora, contrasting with English assemblages of this age which are tropical or subtropical in comparison. Ardtun is also a key site for insect fauna. In fact, the most diverse known record from early Tertiary strata in Scotland was recorded here. The Ardtun Leaf Beds SSSI is approximately 7km east of the Fionnphort Breakwater and Overnight Berth Project area. There are no features of geological interest within the footprint of the Proposed Development.

Ardmeanach SSSI: Ardmeanach SSSI is of special interest for its geology, specifically stratigraphy, igneous petrology and Quaternary geology and geomorphology. On the western shores of Aird na h-Iolaire there are exposures of rare and important sedimentary formations from the Jurassic period (200 million years ago). This area is a key site in building understanding of the palaeoenvironment ns palaeogeography of Scotland during the Jurassic period. In the north of the site there is a deep infilled basin which lies behind a moraine formed by a Loch Lomond readvance glacier which is one of the lowest glaciers to have existed in Scotland. Sediments in the basin provide a detailed record of environmental changes during the Holocene period. In the south west of the site there is an area which shows a continuous and representative section of the early Mull lava sequence (~60 million years ago). This includes areas of the Staffa Lava formation which is columnar basalt which flowed into bodies of standing water in places. In the north east of the site, in the Allt na Teangaidh there is a nationally important section of Cretaceous sediments dating from the Cenomanian to Campanian periods. The Ardalanish Bay SSSI is approximately 10.5km north east of the Fionnphort Breakwater and Overnight Berth Project area. There are no features of geological interest within the footprint of the Proposed Development.

South Mull Coast SSSI: The South Mull Coast SSSI is of special interest for its geology, specifically its mineralogy and igneous petrology. The Carsaig Bay area has multiple geological features of interest. Sediments occur as a thin sequence under lava flows and the significant volcanic rocks occur as thin sheets or sills which cut through pre-existing rock. The igneous and sedimentary rocks in this area are of international importance, outlining Mull's volcanic history. There are two volcanic sills of major importance that cut through pre-existing rocks on the site. The first of these forms the island of Gamhnach Mhor which is made up of alkaline syenite, an extremely rare rock of the Tertiary age in western Scotland. The second occurs at Nun's Pass and it contains unusual minerals such as sapphire. This means this location is of major mineralogical significance. The Ardalanish Bay SSSI is approximately 15km south east of the Iona Breakwater Project area. There are no features of geological interest within the footprint of the Proposed Development.

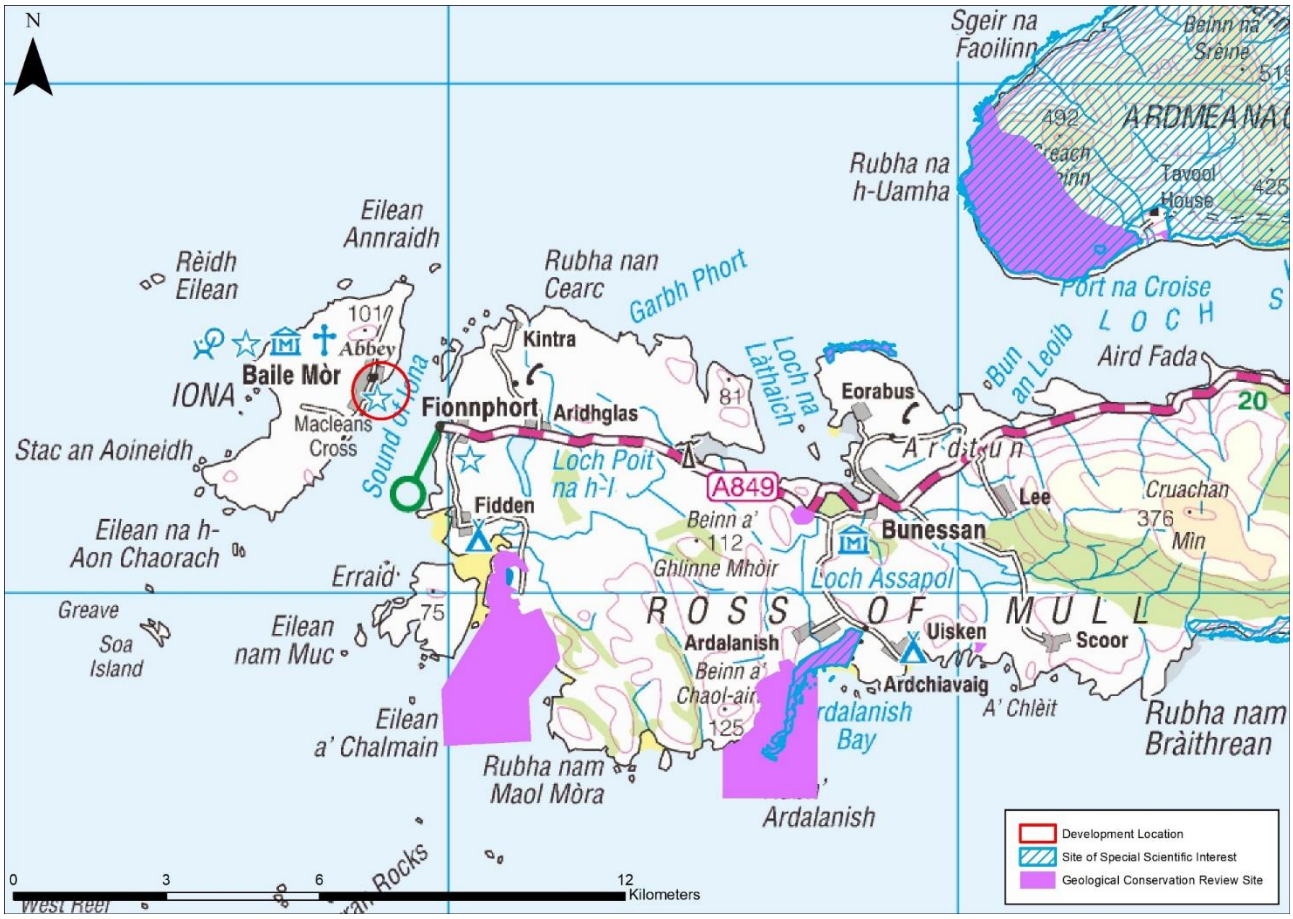

Figure 3-5 Designated Sites of Geological Importance

Geological Conservation Review Sites

Geological Conservation Review (GCR) sites are nationally and internationally important geological sites that are protected by law (JNCC, 2016a). The GCR began in 1977 and has evaluated documented and designated over 3,000 sites across Britain (JNCC, 2016a). On the Isle of Mull, there are 28 designated GCR sites, with the closest to the development site being Knockvologan to Eilean a'Chalmain, Cnoc Mor to Rubh' Ardalanish, Loch an t-Suidhe (2.5km south) and Ardalanish Bay (7.5km south east). As shown in Figure 3-5, there are no features of geological interest within the footprint of the Proposed Development.

3.4.1.4 Hydrogeology

The Iona groundwater catchment (ID: 150686) underlies the isle of Mull and has a 'Good' overall status (2012-2018) according to the SEPA Water Framework Directive (WFD) classification.

3.4.2 Potentially Significant Effects

3.4.2.1 Construction Phase

Land: The Iona Breakwater Project will not result in land take during construction. Site welfare facilities and site compound are expected to be established on a barge, as the works will all be undertaken from a barge, however there will likely be a small compound on shore which could be established at the car park adjacent to

the pier (occupying maximum 2 spaces). The potential impact on land during construction is considered to be negligible.

Soils: Marine sediments are not, in themselves polluting substances. However, they can be a sink for contaminants that end up in our harbours and port, mainly from anthropogenic sources such as sewage discharges, marine traffic, industrial wastewater and historically poor environmental management. Contaminants in sediments can act as a source of long-term environmental pollution. Certain substances can bio accumulate in benthic organisms resulting in bio magnification at higher levels in the food chain. Some widespread pollutants such as polychlorinated biphenyls (PCB's) are no longer in use but due to their persistence they can still be detected in marine sediments. As shown in the results of the sediment analysis, the sediment chemistry results show very low levels of contamination. The sediments in the vicinity of Iona dredge area were below the Marine Scotland Revised Action Levels (AL1 and AL2). The potential impact from the mobilisation of any contaminated suspended sediment during dredging operations is considered to be negligible.

Geology: The Iona Breakwater Project involves a limited scale of geotechnical activities through piling. The project is not located within any sites of geological significance, there are no faults or outcrops mapped in the vicinity of the site therefore it is unlikely that the project will have any significant effects on geology. The potential impact on Geology during construction is considered to be negligible.

Hydrogeology: Piling will be required during the construction of the Iona Breakwater Project, so the potential exists to creating preferential pathways for contamination to migrate to deeper groundwater. However, as no significant sources of contamination were identified during previous ground investigations, the potential impact on Hydrogeology during construction is considered to be negligible.

3.4.2.2 Operation Phase

Land: The Iona Breakwater Project will not result in land take during operation. The overall footprint of the breakwater is approximately 7,000m^2. The Iona Breakwater is designed to provide defence from waves propagating from a southerly direction and provide protection for future longer ferry vessels. The structure will not provide protection from the waves propagating from northerly or easterly directions. The breakwater will result in an overall reduction of wave heights at the structure. This will significantly reduce the risks to ferry operators and passengers and vehicles boarding and disembarking the ferry. The reduction in wave height provides a greater grip between the ferry ramp and the slipway deck. The future land uses within the footprint of the Iona Breakwater Project will not significantly change. The potential impact on land during operation is considered to be minimal.

Soils: As detailed in Chapter 2, the Iona Breakwater and Project consists of the construction of breakwater and/or changes in the configuration of the seabed bathymetry through localised capital dredging works. These elements have the potential to impact the on the mobility of the sand waves within the Sound of Iona during the operational phase of the project. The potential impacts of the Iona Breakwater Project will be assessed in the heading Coastal Processes section of the EIAR.

Geology: The potential impact on geology during operation is considered to be negligible.

Hydrogeology: The potential impact on hydrogeology during operation is considered to be negligible.

3.4.3 Inclusion or Exclusion from EIAR

It is proposed to screen out the land, soils, geology and hydrogeology assessment. It is considered highly unlikely that the development and operational phases of the Proposed Development will have any impacts on soils and geology in the study area as there are no SSSI or GCR sites located within the footprint of the development site.

While there are potential effects of the development on surface and groundwater during both the construction and operation phases, this is unlikely that this will occur and become a significant issue. Therefore, land, soils, geology and hydrogeology are scoped out of further assessment in the EIA. However, it remains important to examine the potential sources of contamination and pollution during the construction and operation phases.

3.4.4 EIAR Assessment Methodology

As set out above, it is considered highly unlikely that the construction and operation of the Iona Breakwater Project will result in impacts to Land, Soils, Geology and Hydrogeology. Therefore, it is proposed that Land, Soils, Geology and Hydrogeology are scoped out of further assessment in the EIA.

The potential impacts of the Iona Breakwater Project on the mobility of the sand waves within the Sound of Iona during the operational phase of the project will be assessed in the Coastal Processes section of the EIAR.

3.4.5 Preliminary Mitigation Measures

3.4.5.1 Construction Phase

The findings of the Preliminary Risk Assessment will be used to develop relevant mitigation measures as appropriate for the construction phase of the development to mitigate any significant adverse impacts.

3.4.5.2 Operation Phase

The findings of the Preliminary Risk Assessment will be used to develop relevant mitigation measures as appropriate for the operation phase of the development to mitigate any significant adverse impacts.

3.4.6 Summary of Scoping Exercise

It is unlikely that the Iona Breakwater Project will result in significant impacts to soils & geology. It is recommended that soils and geology are scoped out of the EIAR.

The scoping exercise has concluded that, while unlikely, the Iona Breakwater Project has the potential to impact upon surface and groundwater during the construction phase of the project. It is recommended that these elements are assessed under the water quality chapter of the EIAR. It is also recommended that a preliminary risk assessment (desk study) is prepared as part of the EIAR. The Desk Study will examine the potential for sources of contamination and pollutant linkages to be present and recommend potential mitigation measure to address any potential impacts.

3.5 Water Quality

3.5.1 Baseline Conditions

The Marine Scotland Licensing Operations Team (MS-LOT) consider that any impact from a development that compromises the achievement of WFD objectives or causes deterioration in status of waters to be a significant environmental impact in terms under paragraph 10(m) of schedule 2 of the Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended).

The following relevant legislation and guidance relating to water quality will be considered during the preparation of the Water Quality chapter of the EIAR;

- SEPA standing advice for The Department of Energy and Climate Change and Marine Scotland on marine consultations;
- the WFD is a European framework which was developed to establish systems to assess, manage, protect and improve Europe's water environment - rivers, lochs, estuaries, coastal waters and groundwater;
- The Water Environment and Water Services (Scotland) Act 2003; this Act transposes the requirement of the WFD into Scottish law; The Environment (EU Exit) (Scotland) (Amendment etc.) Regulations 2019 ensure that the requirements of the WFD will continue to be applied in Scotland;
- The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended); these regulations were introduced under the 2003 Act to specify the control regimes for discharges to, abstractions from and impoundments and engineering activities affecting the water environment (i.e. rivers, lochs, transitional waters (estuaries), coastal waters groundwater, and groundwater dependant wetlands);
- The Water Environment (Oil Storage) (Scotland) Regulations 2006; these regulations set out standards for the design and installation of oil storage containers, including those used on construction sites;
- SEPA Land Use Planning System Guidance Note 7: Guidance on the Water Framework Directive including river basin planning; provides guidance on implementing the requirement of WFD within development planning;
- Planning Advice Note (PAN) 51 Planning, Environmental Protection and Regulation; provides guidance regarding the integration of environmental protection within planning policy;
- PAN 79 Water and Drainage; this specifically sets out the requirements for developers in delivering appropriate drainage infrastructure which meets planning policy;
- Pollution Prevention Guidelines (PPG) 1: General Guide to the Prevention of Pollution, Guidance for Pollution Prevention (GPP) 2: Above Ground Oil Storage Tanks, GPP 5: Works and maintenance in or near water, and PPG6 Working at Construction and Demolition Sites, in addition to all other relevant PPGs and GPPs relating to general site activities such as plant refuelling and incident response;
- Additional SEPA guidance including 'Special Requirements for Civil Engineering Contracts for the Prevention of Pollution v2' and 'Guidance on the Special Requirements for Civil Engineering Contracts v2';

- Marine Licensing in Scotland's Seas Under the Marine (Scotland) Act 2010 and the Marine and Coastal Access Act 2009, 2013;
- Marine Scotland - Guidance for Marine Licence Applicants, V2, June 2015;
- Marine Scotland Consenting and Licensing Guidance for Offshore Wind, Wave and Tidal Energy Applications, 2018;
- CIRIA Guide C584 – 'Coastal and Marine Environmental Site Guide'; and
- CIRIA C532 'Control of Water Pollution from Construction Sites - Guidance for Consultants.

A fundamental requirement of the WFD is to attain good ecological and chemical status and ensure that any deterioration in the status of waters is prevented. Any new development must ensure that these two fundamental objectives of the Directive are not compromised, nor are there any detrimental impacts to nearby EU designated Natura 2000 sites or other protected areas listed under Article 3 of the Directive, i.e. drinking waters, nutrient sensitive waters, shellfish waters, and bathing waters.

The baseline conditions at the proposed works will be thoroughly reviewed to identify all potential impacts relating to water quality and the ecological and chemical status of the water bodies affected.

Baseline data will be gathered from existing sources such as water quality monitoring stations included in the Scottish Environment Protection Agency (SEPA) WFD monitoring programme, as part of their River Basin Management Plan (RBMP) reporting.

A relevant data request may be submitted to SEPA and the relevant Local Authority if the available data is insufficient.

This will be supplemented by additional localised monitoring programmes with methodologies detailed below.

The impact on marine water quality will be based on the development's potential to hinder the achievement of the WFD objectives.

Iona ferry terminal is located along the western edge the Sound of Iona, a coastal water body (ID: 200063), in the Scotland River Basin District (RBD). It is 12.1km^2 in area and the most recent available WFD reporting data (2018) is outlined in Table 3-3 and in Figure 3-6 below.

Table 3-3: WFD Data for the Sound of Iona

Parameter	2018
1: Overall status	High
1-1: Pre-HMWB status	High
1-3: Overall ecology	High
1-3-1: Physico-Chem	High
1-3-1-4: Dissolved Oxygen	High
1-3-1-8: Dissolved inorganic nitrogen	High
1-3-2: Biological elements	High
1-3-2-3: Invertebrate animals	High
1-3-2-3-4: Benthic invertebrates (IQI)	High
1-3-2-9-1: Phytoplankton	High
1-3-3: Specific pollutants	Pass
1-3-3-15: Unionised ammonia	Pass
1-3-4: Hydromorphology	High
1-3-4-1: Morphology	High

Figure 3-6: Coastal Waterbodies

3.5.2 Potentially Significant Effects

A review of the baseline data suggests that the Sound of Iona is currently meeting its WFD Objectives by achieving High ecological status, as outlined in the RBMP for the Scotland RBD. The WFD objectives require that this must not be compromised and as such the proposed works must not cause deterioration in status.

As part of the impact assessment it will be necessary to identify the key contributing elements of the WFD Status that could be affected and to ensure that the development is not likely to cause a significant impact on these elements and therefore the environmental objectives of the water bodies affected. Appropriate mitigation will be recommended where potential risk of impact is identified.

Similarly, any pollution events or recorded increases in concentrations of contaminants will be considered in terms of their potential impact on the nearby designated protected areas. Consultation with NatureScot identifies these areas as;

- Inner Hebrides and the Minches Special Area of Conservation (SAC) (NatureScot site code 10508, EU site code UK0030393). Classified for harbour porpoise (*Phocoena phocoena*);
- Nature Conservation Marine Protected Areas (MPA) Sea of the Hebrides (NatureScot site code 10474, EU site code 555703754), which protects basking sharks (*Cetorhinus maximus*) and minke whale (*Balaenoptera acutorostrata*) species; and
- Geological conservation review sites Knockvologan to Eilean a'Chalmain.

The status of the sites described mean that the requirements of the Conservation (Natural Habitats, &c.) Regulations 1994 as amended (the "Habitats Regulations") apply. Consequently, Marine Scotland is required to consider the effect of the proposal on these sites before it can be consented (commonly known as Habitats Regulations Appraisal (HRA)).

The proposal has the potential to affect these sites by noise (and vibration), sedimentation and/or pollution risk. Aquatic species within the SAC and MPA could be at risk of disturbance from the proposed works.

3.5.2.1 Construction Phase

Potential impacts to water quality during the construction phase of the proposed scheme include:

- Potential effects of the proposed works on water quality from an increase in suspended sediment during dredging works and the construction of the breakwater and piling;
- Potential for piling and drilling works to produce significant underwater noise which could disturb protected marine life in the vicinity of the project;
- Potential effects of the proposed works on hydrology & hydromorphology from the construction of the breakwater and piling; and/ or
- Potential water quality impacts associated with works machinery, infrastructure and on-land operations (for example leakages / spillages of fuels, oils, other chemicals and wastewater, controlled discharges under licence).

3.5.2.2 Operation Phase

Potential impacts to water quality during the operation phase of the proposed scheme include:

- Potential effects of the proposed works on hydrology & hydromorphology from the operation of the breakwater and piling.

- Potential impacts from any surface water run-off from the new structures and any discharges required.

3.5.3 Inclusion or Exclusion from EIAR

Given the nature of the proposed works it is recommended that water quality is included in the EIAR process as potential significant effects are possible in both the construction and operational phases.

3.5.4 EIAR Assessment Methodology

To determine the impact of the development upon water quality and the WFD environmental objectives of the water bodies affected, the WFD monitoring programme undertaken by SEPA will be used to determine the baseline and allow the potential impact of the proposed development to be determined. This will be supplemented by the surface sediment sampling that has already been undertaken, section 3.4, which has demonstrated that the sediments have very low levels of contamination.

The Transitional and Coastal waters Morphological Impact Assessment System (TraC-MImAS) is a risk based decision support tool which helps regulators identify projects that may result in a deterioration of water body status as a result of hydromorphological changes.

TraC-MImAS will be used to help assess the impact of a new project on the system capacity of the waterbody into which the proposed project will be built. This assessment is currently carried out by MSLOT (Marine Scotland, 2018)

The assessment requires details of a proposed project's built footprint, including morphological changes such as dredging. The application should include the spatial layout of any planned construction or morphological changes, for example, individual footprints, any protection work or dredging activity. The detailed coastal process modelling will also be used to inform this assessment and will inform the assessment of morphological changes due to the dredging and breakwater structure particularly on sediment dynamics and coastal processes.

The outputs from surveys undertaken within the Marine Biodiversity chapter (Section 3.3) will further inform the assessment of the impact on water quality, ecological status and water dependent protected areas from the development proposal.

A WFD Assessment will be undertaken to demonstrate that those components of the development which have the potential to impact on the WFD environmental objectives will not result in a significant impact to the achievement of the objectives. Where this cannot be demonstrated a derogation for the project may be required under Article 4(7) of the WFD.

3.5.5 Preliminary Mitigation Measures

Initial mitigation will be included by consideration of the design in line with best practice. Where the impact assessment identifies potential impacts upon water quality and a risk to the environmental objectives of the water bodies affected, suitable mitigation measures will be proposed. This may include changes to development design, should this be deemed necessary, or recommendations for a particular construction methodology or construction material.

3.5.5.1 Construction Phase

An outline Construction Environmental Management Plan (oCEMP) will be prepared as part of the planning submission. The oCEMP will be prepared to assist the main contractor in preventing, managing and/or minimizing significant environmental impacts during the construction phase. The oCEMP will set out the minimum requirements which will be adhered to by the contractor during the construction phase of the Iona Breakwater Project. In order to achieve this, the oCEMP shall comprehensively incorporate all environmental commitments and provide a method of compliance with these.

Mitigation and control measures will be implemented to address the potential impacts from the construction, such as elevated suspended solids, concrete, oils and chemicals. This will be supplemented by contingency planning for any accidental spillages which may arise from working with fuels and chemicals.

Where necessary, monitoring programmes may also be proposed; to confirm compliance with any environmental requirements and to minimise the impact of future works.

Following the incorporation of any mitigation measures, the potential impacts will be re-examined and a description of impact and significance of the residual impacts, with mitigation in place, will be provided.

3.5.5.2 Operation Phase

Initial mitigation will be included by consideration of the design process in line with best practice.

Where the impact assessment identifies potential impacts upon water quality and WFD objectives which can be reduced or eliminated through mitigation, suitable mitigation measures will be suggested. This may include changes to proposed works, should this be deemed necessary, or recommendations for a particular methodology e.g. dredging type or method.

3.5.6 Summary of Scoping Exercise

The key issue in relation to water quality and WFD compliance is associated with the physical disturbance in the marine environment throughout the construction phase, particularly dredging activities and the construction of new structures in the coastal water body and the potential impact this may have on the WFD environmental objectives. The consideration of the WFD objectives will also include the protected area objectives of the neighbouring SAC and MPA to ensure the avoidance of negative effects during and after construction. The potential impact of the breakwater structure on hydromorphology has also been scoped into the EIAR.

During the operational stage any potential changes to the hydromorphology of the water body from the inclusion of the new breakwater and piling will need to be assessed and the impact of any predicted increased vessel traffic will be assessed.

Initial mitigation protocols can be put in place but amendments to these should be expected once the construction work planning has been finalised and modifications to the harbour have begun.

3.6 Flood Risk

This section of the EIA Scoping Report considers the potential impact of the proposed development on flood risk within the study area. This section defines the baseline flood risk from a desk-based assessment, and then provides a description of the methodology to determine the potential effects of the proposed development on local flood risk. The assessment will be carried out in accordance with Scottish Planning Policy (SPP) and SEPA guidance.

3.6.1 Baseline Conditions

The baseline conditions at the proposed development site will be thoroughly reviewed to identify all potential impacts relating to flood risk. To achieve this, a data request will be submitted to SEPA and Argyll & Bute Council; and publicly available information such as that provided by the SEPA flood maps will be reviewed. The baseline report will document the desk-based assessment and describe the baseline conditions in terms of flood risk.

An initial review of strategic flood mapping developed by SEPA identifies a risk of coastal flooding within the study area. An extract from the SEPA coastal flood extent map (medium probability) is shown in Figure 3-7.

Figure 3-7: Extract from SEPA coastal flood extent map (medium probability)

3.6.2 Potentially Significant Effects

3.6.2.1 Construction Phase

During construction, there is a risk of flooding to the works from extreme tidal events that will need to be managed.

3.6.2.2 Operation Phase

The proposed new rock armour breakwater, berthing piles and dredging will not increase the risk from coastal flooding. Infilling of the coastal floodplain will have a negligible effect on the extent of the coastal floodplain, now or in the future, taking into account the anticipated climate change. The breakwater and berthing piles will not be adversely affected during extreme tidal events. The proposed works can be classified as 'Water Compatible Uses', which are generally suitable for development in all flood risk areas (SEPA Flood Risk & Land Use Vulnerability Classification). The proposed works will not create any surface water runoff that could cause a flood risk.

3.6.3 Inclusion or Exclusion from EIAR

SEPA require a Flood Risk Assessment (FRA) to be undertaken where available information indicates that there may be a risk of flooding of the site, or where development of the site may increase the risk elsewhere (SEPA Technical Flood Risk Guidance for Stakeholders). As the site has been identified as at risk of coastal flooding then flood risk should be included in the EIAR.

3.6.4 EIAR Assessment Methodology

To determine the impact of the development upon flood risk, an assessment of flood risk will be made in line with SEPA's requirements for flood risk assessment for new development.

The following tasks will be implemented to complete the assessment:

- Consideration of the SEPA flood maps to determine the existing flood risk to the site;
- Appraisal of the proposed development with respect to the main sources of flooding;
- Consideration of the impact of the proposed development on flooding;
- Identification of any mitigation measures required;
- Assessment of any residual impacts; and
- Evidence of compliance with SEPA guidance and the Scottish Planning Policy.

3.6.5 Preliminary Mitigation Measures

3.6.5.1 Construction Phase

SEPA is Scotland's national flood forecasting and flood warning authority, providing a Floodline Warning Service. This can be used during construction to manage the risk of flooding to the works from extreme tidal events.

3.6.5.2 Operation Phase

The proposed rock armour breakwater and berthing piles do not need to be protected from extreme tidal events and therefore no mitigation measures are proposed.

3.6.6 Summary of Scoping Exercise

The scoping exercise has concluded that a Flood Risk Assessment should be completed for the proposed development to show compliance with SEPA guidance and Scottish Planning Policy.

3.7 Air Quality and Climate

Atmospheric pollution in the vicinity of the proposed development is largely dominated by road traffic exhaust fumes, harbour activity including boat/vessel movements and, to a lesser extent, residential emissions. This chapter of the EIA Scoping Report will be comprised of two sub-topics:

- Air Quality - which relates to pollutants with potential to affect human health and ecosystems at a local level; and,
- Climate change - which is related to emissions of greenhouse gases (GHGs). Climate change will continue to cause impacts on the environment. In this regard, it is appropriate to assess the impact of projects on climate (for example greenhouse gas emissions) and their vulnerability to climate change.

The section then concludes with a recommendation of scoping in or scoping out air quality and climate as part of the EIA.

3.7.1 Baseline Conditions

3.7.1.1 Introduction

The Air Quality Strategy establishes a framework for the improvement of air quality and focusses on measures agreed at a national and international level. However, it was recognised that despite such strategic measures, areas of poor air quality would likely remain, and that these will best be dealt with using local measures implemented through the Local Air Quality Management (LAQM) regime. Part IV of The Environment Act 1995 sets provisions for protecting air quality in the UK and for local air quality management.

The system of LAQM has been in place in the UK since 1997. The role of the LAQM review and assessment process is to review local air quality, identify all relevant locations where the air quality objectives are being or are likely to be exceeded. Where an area of exceedance is identified, the local authority is required to declare an Air Quality Management Area (AQMA) and implement an Air Quality Action Plan (AQAP) to improve air quality within the areas.

A set of air quality standards and objectives has been developed for several pollutants of concern for human health. Standards are concentrations of pollutants that are considered safe for humans and the environment. Objectives are derived from the standards and are a compromise between what is desirable purely on health grounds and what is practical in terms of feasibility and costs. Each objective has a date by when it must be achieved.

The objectives adopted in Scotland for the purpose of LAQM are set out in the Air Quality (Scotland) Regulations 2000, the Air Quality (Scotland) Amendment Regulations 2002 and the Air Quality (Scotland) Amendment Regulations 2016. Similar targets are set at EU level, where there are called limit or target values. These are set out in the European 2008 Ambient Air Quality Directive (2008/50/EC) and transposed into Scottish legislation by the Air Quality Standards (Scotland) Regulations 2010.

The UK AQS objective for particulate matter (PM) smaller than 10µm aerodynamic diameter (PM_{10}) annual mean is 40µg m^{-3}. However, Scotland has adopted a more stringent annual mean objective of 18µg m^{-3}. The UK AQS objective for the 24-hour mean PM_{10} concentration is 50µg m^{-3}, not to be exceeded on more than 35

days per calendar year. The more stringent Scottish objective requires that daily mean PM_{10} concentrations do not exceed 50µg m^{-3} on more than seven days per year.

Table 3-4 summarises the air quality objectives in Scotland. The 2011 Regulations specify limit values in ambient air for sulphur dioxide (SO_2), lead, benzene, particulate matter (PM_{10} and $PM_{2.5}$), carbon monoxide (CO), nitrogen dioxide (NO_2) and oxides of nitrogen (NO_x). These limits are mainly for the protection of human health and are largely based on review of epidemiological studies on the health impacts of these pollutants. In addition, there are limits that apply to the protection of the wider environment (ecosystems and vegetation).

Table 3-4: Summary of Air Quality Objectives in Scotland

Pollutant	Criteria	Value
Nitrogen Dioxide	Hourly limit for protection of human health - not to be exceeded more than 18 times/year	200 µg/m^3 NO_2
	Annual limit for protection of human health	40 µg/m^3 NO_2
	Annual limit for protection of vegetation	30 µg/m^3 NO + NO_2
Benzene	Running Annual Mean for protection of human health	3.25µg/m^3
Carbon Monoxide	Maximum daily 8-hour running mean	10 mg/m^3
Lead	Annual limit for protection of human health	0.25 µg/m^3
Sulphur Dioxide	Hourly limit for protection of human health - not to be exceeded more than 24 times/year	350 µg/m^3
	Daily limit for protection of human health - not to be exceeded more than 3 times/year	125 µg/m^3
	Not to be exceeded more than 35 times a year	266 µg/m^3
Particulate Matter PM_{10}	24-hour limit for protection of human health - not to be exceeded more than 7 times/year	50 µg/m^3 PM_{10}
	Annual limit for protection of human health	18 µg/m^3 PM_{10}
Particulate Matter $PM_{2.5}$	Annual target value for the protection of human health	10 µg/m^3 $PM_{2.5}$

3.7.1.2 Air Quality Annual Progress Report (APR) for Argyll and Bute Council, June 2020

Air quality in Argyll and Bute is considered to be generally very good and complies with all the air quality objectives. The Council has not identified any areas where air quality objectives may be under threat and where specific action is required to improve air quality. There is therefore no requirement to undertake a Detailed Assessment for any pollutant. Additionally, Argyll and Bute Council currently does not have any AQMAs and this current June 2020 APR and past annual assessments suggest that it will be very unlikely to be necessary to declare any AQMAs in the future based on current air quality objectives.

Summary of Monitoring Undertaken:

Automatic Monitoring Sites

Argyll and Bute Council did not undertake any automatic (continuous) monitoring during 2019 as previous report identified that this was unnecessary.

Non-Automatic Monitoring Sites

Argyll and Bute Council undertook non- automatic (passive) monitoring of nitrogen dioxide at 10 sites during 2019. Figure 3-8 shows the location of the monitoring sites.

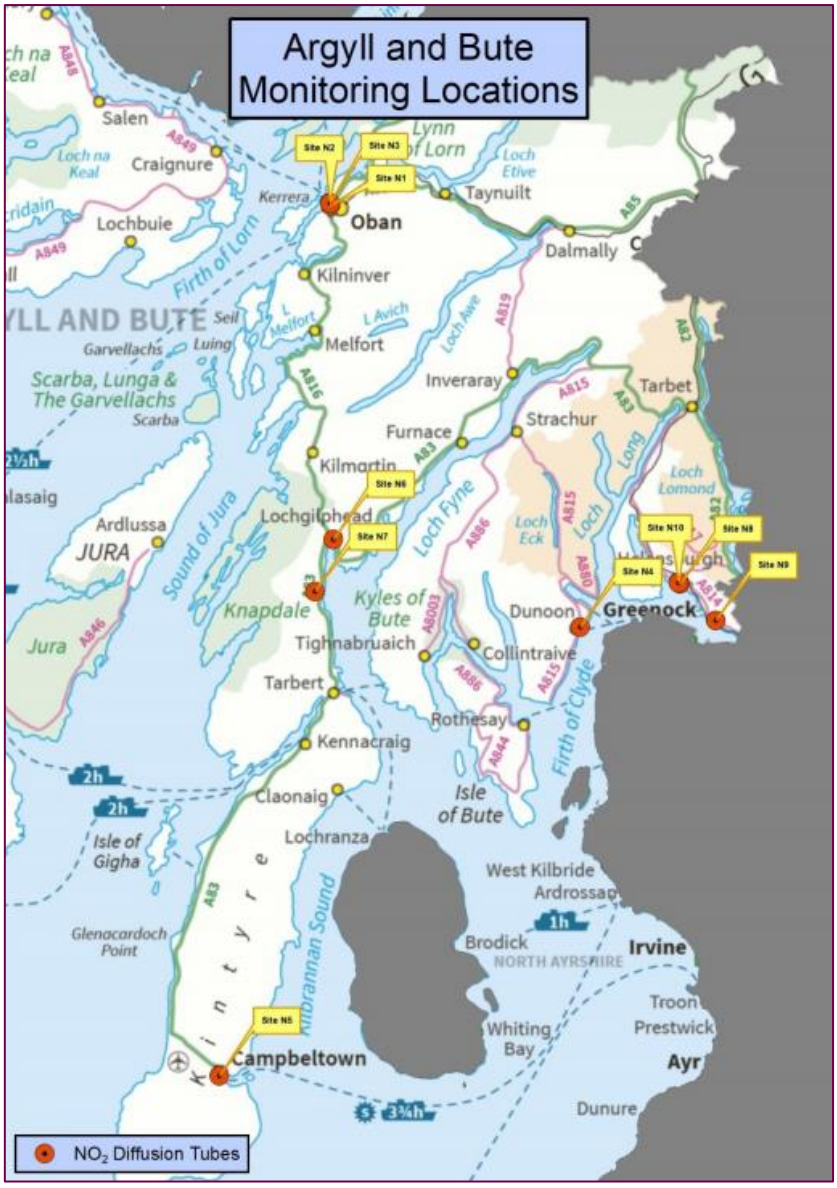

Figure 3-8: Argyll and Bute Monitoring Locations (Source: Page 32, Air Quality Annual Progress Report (APR) for Argyll and Bute Council, June 2020)

Individual Pollutants

Argyll and Bute Council's monitoring programme reflects the previous outcomes of assessment reports which identified nitrogen dioxide (NO_2) as a pollutant to monitor.

Particulate Matter (PM_{10}) and Particulate Matter ($PM_{2.5}$)

Argyll and Bute Council does not monitor Particulate Matter (PM_{10}) or Particulate Matter ($PM_{2.5}$).

Sulphur Dioxide (SO_2)

Argyll and Bute Council does not monitor SO_2.

Carbon Monoxide, Lead and 1,3-Butadiene

Argyll and Bute Council does not monitor carbon monoxide, lead or 1,3- butadiene.

Sources of Pollution

Road Traffic Sources

Argyll and Bute Council confirms that there are no roads or features in the following list that are new or newly identified that would require further assessment:

- Narrow congested streets with residential properties close to the kerb;
- Busy streets where people may spend one hour or more close to traffic;
- Roads with a high flow of buses and/or heavy good vehicles (HGVs);
- Junctions;
- New roads constructed or proposed;
- Roads with significantly changed traffic flows; or
- Bus or coach stations.

Other Transport Sources

Argyll and Bute Council confirms that there none of the following that are new or newly identified that would warrant further assessment:

- Airports;
- Locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m;
- Locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m; or
- Ports for shipping.

Industrial Sources

Argyll and Bute Council confirms that there none of the following that are new or newly identified that would warrant further assessment:

- Industrial installations: new or proposed installations for which an air quality assessment has been carried out;
- Industrial installations: existing installations where emissions have increased substantially, or new relevant exposure has been introduced;
- Industrial installations: new or significantly changed installations with no previous air quality assessment;
- Major fuel storage depots storing petrol;
- Petrol stations; or

- Poultry farms.

Commercial and Domestic Sources

Biomass boilers for projects in the Council area were the subject of an assessment at the planning stage to determine the potential impact on sensitive receptors. The planning applications were approved. Using the guidance provided in LAQM.TG16 it has been concluded that there are no areas considered to be at risk of objectives being exceeded due to cumulative impacts of multiple biomass/domestic combustion installations.

Conclusions and Proposed Actions

Conclusions from New Monitoring Data

Figure 3-9 show a long-term steady or falling trend in those areas monitored by nitrogen dioxide diffusion tubes and all sites are well below the annual mean objective. There is therefore no requirement to undertake a Detailed Assessment.

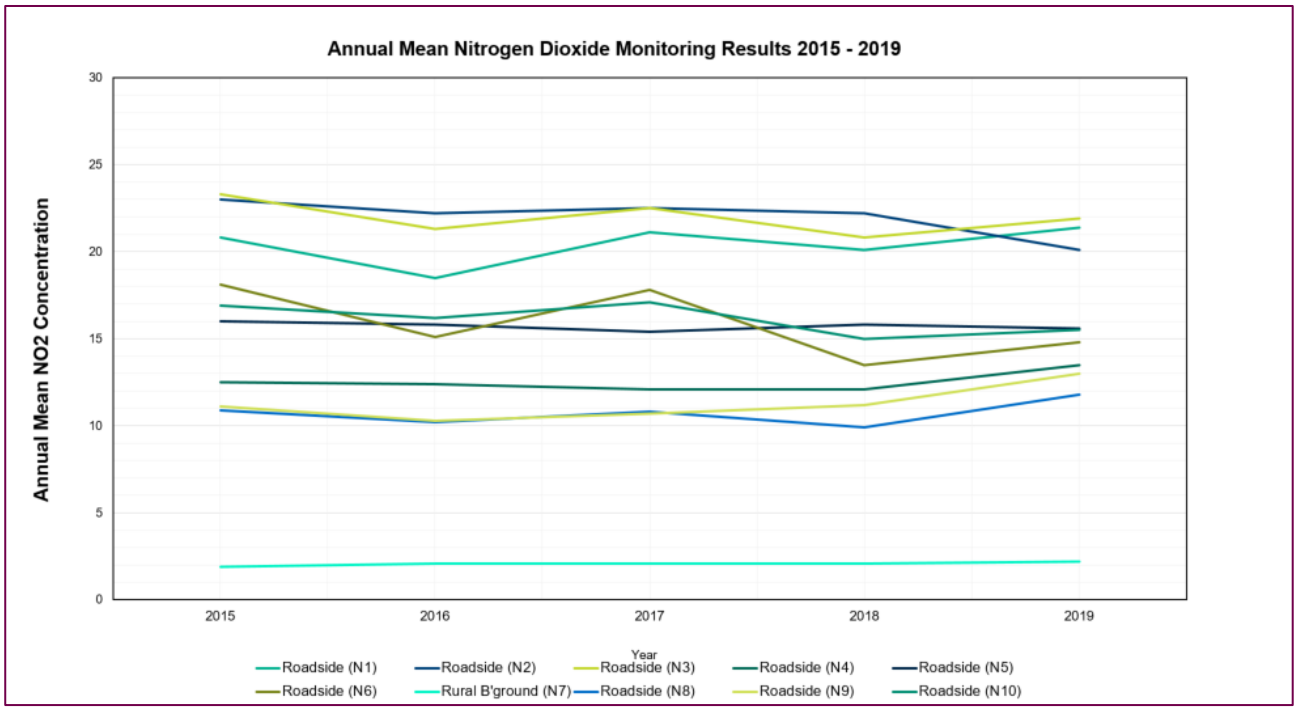

Figure 3-9: Annual Mean Nitrogen Dioxide Monitoring Results 2015 - 2019

Conclusions relating to New Local Developments

Local developments warranting consideration for air quality impacts have included the installation of biomass boilers at four sites in rural areas and large capacity boilers associated with distilleries. The developments were screened for potential adverse air quality impact and it was concluded that air quality objectives would not be threatened, and further assessments were not required.

3.7.2 Potential Significant Effects

3.7.2.1 Construction Phase

Effects during construction can often be more significant than those that arise during the operational life of a project. For the construction phase it is important to define the physical characteristics of the whole project, including, where relevant, demolition works, the land-use requirements during construction and operation as well as other works that are integral to the project. Dust emissions can lead to elevated PM_{10} and $PM_{2.5}$ concentrations and may also cause dust soiling. The significance of impacts due to vehicle emissions during the construction phase will be dependent on the number of additional vehicle movements, the proportion of HGVs and the proximity of sensitive receptors to site access routes. It is not likely that construction traffic would lead to a significant change (> 10%) in Average Annual Daily Traffic (AADT) flows near to sensitive receptors, then concentrations of nitrogen dioxide, PM_{10} and $PM_{2.5}$ will be predicted.

The potential impacts associated with the construction phase of the Proposed Development are the effects of:

- Potential for dust impacts during dredging and material handling; and
- Emissions to atmosphere from construction plant and marine vessels during dredging and material handling.

With regards to potential for dust impacts during dredging and material handling - It is important to note at the outset that one of the principal factors affecting dust generation and dust deposition relates to moisture content. Moisture increases the mass of a dust particle meaning particles are less friable and hence, less prone to dust dispersion. In most construction projects, the principal means of dust suppression is through maintaining a high moisture level on dust particles. In the case of the proposed works at Iona, all dredged material will inherently have high moisture content and hence a lower risk of dust impact. The dredging operations are considered very low risk for dust impacts given that this material will have very high moisture content (circa 50% by weight). This is also the case for the transport of this material. As such, these operations are considered to have negligible dust impacts.

With regards to potential impacts from emissions to the atmosphere from construction plant and marine vessels during dredging and material handling, all dredging and construction material handling will be undertaken within the marine environment vessels with limited requirement for road traffic. All construction material will be brought to site via barge. Road traffic will be restricted to occasional service vehicles to the site compound and private car use will be limited to circa 2 contractor staff. As such, there will be no perceptible traffic impact on the national road network and hence the potential for impacts from emissions to atmosphere from road transport are considered negligible.

3.7.2.2 Operation Phase

There are no significant changes to the existing operations, processes and activities on Iona proposed by the proposed development and hence there are no predicted significant adverse impacts to air quality and climate from this phase.

3.7.2.3 Climate

At the national / international level, emissions of nitrogen oxides (NO_x) are of concern with respect to nitrogen deposition and the formation of ozone, while emissions of carbon dioxide (CO_2) are associated with climate change. It is important to determine the impact of the Proposed Development on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the Proposed Development to climate change and this follows the publication by the Commission of 'Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment'. It aligns the Directive with the United Nations Convention on Biological Diversity and with 'Our life insurance, our natural capital: an EU biodiversity strategy to 2020'.

CO_2 emissions have a climate warming effect which is global. This is regardless of their rate of release, location or the weather when they are released into the atmosphere. This is unlike pollutants that affect local air quality where the rate of release, location and prevailing weather, as well as the amount of pollutant, determines the local concentrations and the impact.

Local ambient concentrations of CO_2 are not relevant and there are no limits or thresholds that can be applied to particular sources of carbon emissions – any amount of CO_2 released into the atmosphere will contribute to climate warming, the extent of which is determined by the magnitude of the release. Although CO_2 emissions are typically expressed as kilogrammes or tonnes per year, there is a cumulative effect of these emissions because CO_2 emissions have a warming effect which lasts for 100 years or more.

Design Manual for Roads and Bridges (DMRB) guidance on climate change was published on 31 October 2019 under the heading; *LA 114 – Climate*. This guidance aligns the DMRB assessment process more closely with the 2017 EIA Regulations. Although specifically related to highway schemes it can be referenced in this assessment with regard to emissions and also is aligned with guidance as presented in the *Institute of Environmental Management and Assessment (IEMA) Environmental Impact Assessment Guide to Assessing Greenhouse Gas (GHG) Emissions and Evaluating their Significance.*

The LA 114 document was created to set out the requirements for assessing and reporting the effects of climate on highways (climate change resilience and adaptation), and the effect on climate of greenhouse gas from construction, operation and maintenance of road/highway[4] projects.

LA 114 advises to report on the likely additional and avoided GHG emissions at each life cycle stage of the project, in comparison with current and future baseline GHG emissions. The nature and scale of GHG emissions (positive, neutral or negative) and the likelihood of significant effects should be reported in accordance with the LA 114 guidance document. Two main questions are posed in order to gain an understanding of the need to undertake further assessment, those are:

- are construction GHG emissions (or GHG-emitting activity), compared to the baseline scenario (i.e. when compared to GHG emissions and energy use associated with existing maintenance activities), increasing by >1%; and,

[4] Although specific to road schemes, the criteria for assessment is a useful gauge in determining whether an assessment is required for construction and operational phases of this Proposed Developments.

- during operation, will roads meet or exceed any of the following criteria:

  a) a change of more than 10% in AADT;

  b) a change of more than 10% to the number of heavy duty vehicles; and,

  c) a change in daily average speed of more than 20 km/hr?

If the answer is 'yes' to either of these questions, then further assessment is recommended. In terms of the Proposed Development the answer is 'no' to the construction GHG emissions increases and 'no' to the operational criteria. Therefore, the construction and operational phase DMRB road assessment can be screened out as impacts are not deemed to be significant.

Impacts can arise on air quality and contribution to climate change from developments due primarily to generation of emissions from plant, construction traffic and construction activities. However, as construction works would be temporary and short term and given the relatively small amount of emissions generating plant or vehicles required, the effects would be localised, short term and intermittent, and not considered to be significant. Potential effects would further be minimised through the implementation of construction best practice mitigation measures which would be set out in the oCEMP.

3.7.3 Inclusion or Exclusion from EIAR

It is considered highly unlikely that the construction and operational phase of the Proposed Development will result in any impacts on air quality and climate. Therefore, it is proposed that Air Quality and Climate Change are scoped out of further assessment in the EIA.

3.7.4 EIAR Assessment Methodology

Not Applicable

3.7.5 Preliminary Mitigation Measures

3.7.5.1 Construction Phase

A dust and emissions management plan[5] will be included in the oCEMP that will set out management and mitigation measures to be employed by the construction contractor. The series of mitigation and control measures will help prevent significant air quality and dust impacts during the construction phase. The following are general good practice measures that will be implemented onsite to control dust and vehicle emissions.

The IAQM[6] guidance outlines a number of mitigation measures for reducing impacts of fugitive dust from construction sites. Adoption of a number of these measures at the project site will reduce dust impacts to both

[5] Dust and emissions management plan will reference Holman et al (2014). IAQM Guidance on the assessment of dust from demolition and construction, Institute of Air Quality Management, London.

[6] Dust and emissions management plan will reference Holman et al (2014). IAQM Guidance on the assessment of dust from demolition and construction, Institute of Air Quality Management, London.

personnel working at the site and off-site receptors. The mitigation measures are broken down in the following sections.

Communications

With respect to communications, the following will be implemented:

- Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the HSSE Manger or the Site Manager; and
- Appropriate training will be provided to all staff to ensure that they are aware of and understand the dust control and other environmental control measures.

Site Management

With respect to site management, the following will be implemented:

- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken;
- Make the complaints record available to the relevant regulatory authorities when asked;
- Record any exceptional incidents that cause dust and/or air emissions, either on or offsite, and the action taken to resolve the situation in an environmental log book;
- Avoid site runoff of water or mud;
- Use covered skips; and
- No bonfires and burning of waste materials on site.

To be implemented during works as required by the appointed contractor.

Demolition

There is no demolition associated with this proposed development.

Earthworks

With respect to earthworks, the following will be implemented:

- Minimise drop heights from loading or handling equipment/materials and use fine water sprays on such equipment wherever appropriate; and
- Methods and equipment will be in place for immediate clean-up of spillages of dusty or potentially dusty materials.

To be implemented during works as required by the appointed contractor.

Construction

With respect to construction, the following will be implemented:

- Ensure bulk cement and other fine powder materials are delivered in enclosed;

- For smaller supplies of fine power materials will be ensured that bags are sealed after use and stored appropriately to prevent dust; and
- Cleaning of hard stand areas by personnel only or if required mechanical road sweepers (with water suppressant fitted) to clean any site hard stand area.

To be implemented during works as required by the appointed contractor.

Vehicle Movement and Vehicle Emissions

As with any construction site, there are associated vehicle movement, emissions and plant use. With respect to vehicle movement and vehicle emissions, the following will be implemented:

- Transportation of aggregates and fine materials will be conducted in enclosed or sheeted vehicles;
- Ensure all vehicles switch off engines when stationary and not in immediate use - no idling vehicles (emissions to air controlled);
- All plant utilised should be inspected weekly (emissions to air controlled);
- Visual monitoring of plant will include: Ensuring no black smoke is emitted other than during ignition (emissions to air controlled);
- Ensuring exhaust emissions are maintained to comply with the appropriate manufacturers limits (emissions to air controlled); and
- Vehicle exhausts will be directed away from the ground and other surfaces and preferably upwards to avoid road dust being re-suspended to the air.

To be implemented during works as required by the appointed contractor.

3.7.5.2 Operation Phase

None required as the operational phase is scoped out of the assessment. No likely significant effects are predicted as a result of the Proposed Development and therefore an assessment on air quality and climate change is proposed to be scoped out of the EIA Report in its entirety.

3.7.6 Summary of Scoping Exercise

The scoping exercise has concluded that a number of potential environmental effects at construction stage should be scoped into EIA, that is: emissions from plant and vehicles and dust levels from construction activities. The effect of air pollutants emissions at operational stage should be scoped out of the EIA, whilst a climate assessment is scoped out for both construction and operational stages.

3.8 Terrestrial Noise and Vibration

The key aspects of the noise and vibration assessment will be:

- The potential noise and vibration impacts associated with construction phase activities from the proposed development; and
- Noise and vibration mitigation measures, if applicable, necessary to comply with the current noise standards and guidance during both construction and operation phases.

3.8.1 Baseline Conditions

The current baseline noise is likely to include operational ferry/pier noise and occasional passing traffic.

A baseline noise survey will be undertaken to establish the current noise climate at sensitive receptors in the vicinity of the site. The noise monitoring will include both daytime and night-time periods and comprised a combination of short term attended and longer-term unattended measurements.

Baseline measurements will be made at a height of 1.2-1.5m above ground level. The weather conditions will be in accordance with the requirements *of BS7445: Description and Measurement of Environmental Noise and ISO 1996: Acoustics – Description, Measurement and Assessment of Environmental Noise.*

The following parameters recorded during each monitoring period:

- **L_{Aeq}** The continuous equivalent A-weighted sound pressure level. This is an “average” of the sound pressure level;
- **L_{Amax}** This is the maximum A-weighted sound level measured during the sample period;
- **L_{Amin}** This is the minimum A-weighted sound level measured during the sample period;
- **L_{A10}** This is the A-weighted sound level that is exceeded for noise for 10% of the sample period;
- **L_{A90}** This is the A-weighted sound level that is exceeded for 90% of the sample period; and

There are currently no operational sources of vibration therefore baseline vibration monitoring is not proposed.

3.8.2 Potentially Significant Effects

The nearest sensitive receptors will be identified, and noise and vibration effects will be assessed from proposed construction and operation phases.

3.8.2.1 Construction Phase

Dredging will be required to accommodate the new navigation channel requirements, which will be minor and comprise of overburden dredging only. Piling will be required for the proposed overnight berthing structure. There is no demolition associated with this proposed development.

The likely significant effects of construction noise and vibration from on-site activities and from construction traffic will be assessed on the nearest sensitive receptors. Construction noise predictions will be undertaken from the proposed construction activities and assessed with applicable construction noise limit in accordance with BS 5228.

3.8.2.2 Operation Phase

There are no increased or intensification use of the Iona Ferry Terminal. However, operational noise impact from the proposed development will be assessed.

3.8.3 Inclusion or Exclusion from EIAR

As a result of potential construction noise and vibration effects from the proposed development, it is considered that construction noise and vibration should be scoped into the EIA.

There are significant operational noise and vibration impacts associated with the proposed development. However, operational noise and vibration will be included in EIA.

3.8.4 EIAR Assessment Methodology

The noise and vibration assessment will be undertaken on the development plans and design drawings to assess the potential noise and vibration impact effects on the surrounding area.

The noise and vibration effects of the construction stages of the proposed development will be assessed at the nearest noise sensitive receptors.

The noise and vibration effects of all operations associated with the proposed development will be assessed at the nearest and proposed noise sensitive receptors.

Detailed guidance in relation to the prediction and assessment of noise and vibration is contained in the guidance documents listed below:

- Assessment of Noise: Technical Advice Note (TAN) Scottish Government (2011);
- Institute of Environmental Management and Assessment (IEMA) Guidance of Environmental Noise Impact Assessment;
- British Standard BS5228: 2009+A1:2014, Code of Practice of Noise and Vibration Control on Construction and Open Sites Part 1: Noise (2014);
- British Standard BS5228: 2009+A1:2014, Code of Practice of Noise and Vibration Control on Construction and Open Sites Part 2: Vibration (2014);
- British Standard 8233:2014 Sound Insulation and Noise Reduction for Buildings (2014);
- World Health Organisation (WHO) - Guidelines for Community Noise (1999, 2009, 2018);
- British Standard BS4142:2014+A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound (2019); and
- Design Manual for Roads and Bridges Volume 11, Section 3, Part 7, LA 111 Noise and Vibration (2020).

3.8.5 Preliminary Mitigation Measures

3.8.5.1 Construction Phase

Construction phase noise and vibration mitigation measures will be detailed as required in accordance with mitigation and best practice measures detailed in BS 5228.

3.8.5.2 Operation Phase

Operation phase noise and vibration mitigation measures will be detailed as required in accordance to ensure compliance with WHO and BS 8233 within nearest noise sensitive properties.

3.8.6 Summary of Scoping Exercise

The scoping exercise has concluded that as a result of potential environmental effects of noise and vibration, from both operation and construction stage of the proposed development, will be included in the EIA.

3.9 Coastal Processes

This section of the Scoping Report considers the likely significant effects of the proposed development on the natural coastal processes within and around the study area and considers the proposed methodology for assessing this.

3.9.1 Baseline Conditions

Iona Sound is relatively shallow with sand banks present in the vicinity of the ferry crossing which are known to shift as a result of storm events. The morphology of the Sound is thereby very complex. The prevailing wind and wave conditions are from the south-west.

The tidal currents are similar on both sides of the sound, however more sediment action (both erosion and deposition) is present to west of the sound at Iona compared to that on the east at Iona.

The geometry of the Sound means that relatively large tidal currents (0.5 m/s) are experienced at the centre as a result of the water level gradient to exist at the entrances to the sound at the north and south.

The predominant direction of high energy waves is from the southwest, however smaller storms from the north and east may influence sediment transport in the Sound in different ways, potentially causing different sediment regimes within the proposed berthing facilities.

3.9.2 Potentially Significant Effects

3.9.2.1 Construction Phase

In context of coastal process, the elements of the Iona Breakwater Project that have the potential to result in construction phase impacts are the capital dredging works.

Temporary impacts on water quality have the potential to occur during the construction phase of the works. Mobilised suspended sediment release through capital dredging are the principal potential sources of environmental impact. The potential impacts from the increase in background suspended sedimentation concentrations and deposition levels as a result of the capital dredging and disposal operations during the construction phase.

3.9.2.2 Operation Phase

As detailed in Chapter 2, the Iona Breakwater Project consists of the construction of breakwater and/or changes in the configuration of the seabed bathymetry through localised capital dredging works. In particular, these elements of work have the potential to impact the following coastal processes during the operational phase of the project:

- Tidal current patterns within the Sound of Iona;
- Sedimentation and erosion patterns within the Sound of Iona; and/ or
- The inshore wave climate.

3.9.3 Inclusion or Exclusion from EIAR

As a result of potential impacts of the proposed project at Iona on coastal processes during construction and operation, it is considered that coastal processes should be scoped into the EIA.

3.9.4 EIAR Assessment Methodology

The assessment of the coastal processes around the Sound of Iona and the potential impact of the proposed development on these processes will be undertaken using advanced computational hydraulic modelling techniques. These models will include coupled wave tide and sediment transport modules, to ensure all aspects of the coastal processes are included in the simulations. Model simulations of the coastal processes will be undertaken for both the existing scenario and for the proposed scenario, with the preferred scheme in place. Many of the issues outlined above will be assessed in the context of extreme storm conditions from relevant direction, as well as typical winter and summer periods.

3.9.5 Preliminary Mitigation Measures

The findings of the coastal process impact assessment will be used to develop relevant mitigation measures as appropriate. With regards to coastal processes, the scheme will be designed to take full cognisance of environmental constraints and provide mitigation through engineering design and by way of prescribed mitigation measures.

3.9.6 Summary of Scoping Exercise

The scoping exercise has concluded that due to the potential impacts to the coastal processes at operation stage, Coastal Processes should be scoped in to the EIAR.

3.10 Material Assets

This chapter of the EIA Scoping Report considers the impact of the project upon material assets. The requirement to consider the direct and indirect significant effects of a development on material assets is outlined within the Marine Works (EIA) (Scotland) Regulations 2017 and the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017.

There is no clear-cut definition of what constitutes a 'material asset', however for the purposes of the initial scoping assessment, a material asset can generally be categorised under the following:

- Built Assets: including transport, energy and services infrastructure, settlement and commercial land, port/harbour infrastructure, community resources and the historical environment; and/ or
- Natural Assets: including forestry, open space minerals, water resources, watercourses.

3.10.1 Baseline Conditions

The Isle of Iona is located west of the Isle of Mull. Whilst the Isle of Mull has a population of 2800 (*UK Census, 2011*), the Isle of Iona has a population of approximately 120 people (*www.welcometoiona.com*).

The village of Baile Mòr comprises of residential properties with some commercial and hospitality services. There are also a number of historic / heritage features in close proximity to the village and throughout the Isle. Most notably Iona Abbey, founded in 563AD, the Augustinian nunnery and the marble quarry.

The wider land use context of the area is primarily undeveloped; the landscape varies according to the underlying geology, but is typically undulating lowland, which becomes increasingly steep, uneven and rocky on the slopes leading to the upland moors.

The Iona ferry terminal is located in St. Ronan's Bay on the eastern side of the island in the village of Baile Mòr. There is no designated car parking area and passenger queuing is along the slipway. The existing facilities facilitate ferry operations, fishing and some commercial vessels and leisure craft. Caledonian MacBrayne ferries operate *MV Loch Buie* between Iona and Fionnphort providing daily, regular crossings (with seasonal variations) between Fionnphort and Iona for passenger and vehicular travel.

In addition to providing connectivity between the islands, the ferry operations are an important element of the tourism offer of the Isles of Iona. The commercial and hospitality services within Ioan, benefit from the tourism trade visiting the islands. Caledonian MacBrayne operate a wide range of services throughout the Scottish Islands including between Fionnphort and Iona, facilitating tourist visits. Spending by tourists in Scotland generates around £12 billion of economic activity for the wider Scottish supply chain and contributes around £6 billion to Scottish GDP, representing about 5% of total Scottish GDP (*Scottish Government*). The number of domestic day visitors to Scotland's *coastal* destinations is around 16 million visitors annually accounting for 11% of all domestic day trips taken in Scotland in 2019 (*Visit Scotland*). The island's tourism bureau (*Visit Mull and Iona)* estimated that roughly 130,000 visitors arrived each year.

The existing slipway is vulnerable to wave patterns which impact users of the slipway with no formal berthing structure in place. The current ferry berthing operations have resulted in a negative impact on service

provision. Disruption of the ferry service can result in direct impacts of the local population and services including medical, educational, refuse collection, tourism and business delivery.

The proposed development works at the Iona ferry terminal would result in an improved service, improved ability for lifeline services and the facilitation of wider forms of economic development on both Isles of Iona and Mull.

3.10.2 Potentially Significant Effects

3.10.2.1 Construction Phase

Potential effects on material assets during the construction phase of the project are predicted to be limited. Construction related traffic can often be the cause of a significant impacts due to an increase in the volume and the type of traffic (e.g. HGVs, heavy plant and machinery). However, materials are anticipated to be transported to site and installed via a barge with project related traffic volumes, using the local network, anticipated to be minimal.

Existing utilities infrastructure are anticipated to be unaffected by the proposed development. Good consultation with the utilities companies is recommended to identify exact locations of services in order that these can be considered as necessary at the detailed design stage.

Construction works have the potential to impact upon land uses through noise, vibration and air quality (dust); these are to be fully considered within the relevant chapters of the EIAR.

3.10.2.2 Operation Phase

The project will be an improvement of the existing Iona facilities which will facilitate ongoing use of the port by ferry, fishing, commercial and leisure craft. Whilst the project will not result in a direct increase in port usage (through for example the introduction of new services i.e. a new ferry route), the continuation of the existing services with greater reliability and safety, will result in a positive impact in terms of connectivity, port related services, tourism offer and ongoing provision of services to the local population.

3.10.3 Inclusion or Exclusion from EIAR

It is proposed to scope Material Assets out of the EIAR.

3.10.4 EIAR Assessment Methodology

Not Applicable

3.10.5 Preliminary Mitigation Measures

There are no mitigation measures required as part of this proposal.

3.10.6 Summary of Scoping Exercise

Based on the information presented above it is evident that the impact on Material Assets will be insignificant. It is therefore proposed that Material Assets is scoped out of the EIAR.

3.11 Material Assets – Traffic and Transportation

This chapter of the EIA Scoping Report will consider the traffic impacts of the proposed development. The material for the construction works will brought to the site via barge as road connections are not feasible and therefore the traffic and transport impacts will be insignificant. Therefore, it is unlikely that there will be any detailed transportation analysis required as part of this proposal.

3.11.1 Baseline Conditions

As mentioned above in Section 2 the construction materials will be brought the site by barge and therefore baseline traffic surveys are not required as part of this proposal.

3.11.2 Potentially Significant Effects

The traffic and transport impact of the proposed development is an insignificant impact due to the construction materials being brought to the site via barge.

3.11.2.1 Construction Phase

Insignificant traffic and transport impact during the construction phase as materials will be brought to the site via barge.

3.11.2.2 Operation Phase

Insignificant traffic and transport impact during the operational phase as once constructed the proposal will not generate any requirement for vehicular trips.

3.11.3 Inclusion or Exclusion from EIAR

Traffic and Transportation should be excluded from the EIAR as the construction materials are being brought by barge to the site and therefore the traffic and transport impact is insignificant.

3.11.4 EIAR Assessment Methodology

Not Applicable

3.11.5 Preliminary Mitigation Measures

There are no traffic and transportation mitigation measures required as part of the construction or operation of this proposal.

3.11.6 Summary of Scoping Exercise

Based on the information presented above it is clear that the traffic and transport impact of the proposal will be insignificant as the construction materials will be brought to the site via barge and therefore no impact upon the surrounding road network.

3.12 Cultural Heritage

3.12.1 Baseline Conditions

An initial study has been undertaken drawing upon data from HES and the National Record of the Historic Environment (NHRE), maps held by the National Library of Scotland and the results of a geotechnical study (Causeway Geotech 2018). Data from HES and the NHRE was considered for a study area extending 500m from the construction footprint of the Proposed Development.

The Development lies on the eastern boundary of the Iona Conservation Area (CA468). The greater part of the Proposed Development lies outside the Conservation Area, but the western end of the breakwater extends into it. Three Scheduled Monuments lie within the 500m study area: Iona Nunnery (SM90350), approximately 150m to the north-west, McLean's Cross (SM90173), approximately 220m to the north-west, and St Mary's Abbey (SM12968), approximately 180m to the north. There are four Listed Buildings within 500m of the Proposed Development: Iona Abbey (LB12310: Category A) and Replica of St John's Cross (LB52541: Category A), both approximately 420m to the north, and Iona Kirk (LB12318: Category B) and Iona Manse (LB12319: Category C), both approximately 270m to the north-west.

No non-designated assets are recorded within the construction footprint. The NRHE contains 82 entries relating to the 500m study area. These have no direct bearing upon the site of the Proposed Development but demonstrate that it lies in an area that has demonstrably seen relatively high levels of activity from the Prehistoric period onwards.

The available geotechnical data (Causeway Geotech 2018) indicates that, where present, the superficial deposits in the construction footprint are primarily gravel, with pockets of coarse sand and stiff clay. There is some slight potential for maritime archaeology to be present in the sandy deposits. No peat or other deposits likely to be of palaeo-environmental interest were recorded.

3.12.2 Potentially Significant Effects

3.12.2.1 Construction Phase

The offshore construction phase involves dredging, piling and the placing of rock armour (see Section 2.3 above). These and secondary activities, such as the anchoring of construction vessels, have some potential to affect hitherto unrecorded maritime archaeology. This potential is, however, considered low.

The construction phase of the project involves minimal onshore ground disturbance (see Section 2.3 above), namely the construction of part of the breakwater. This will occupy an area of historically bare rock in the intertidal zone. Consequently, there is no potential for previously unrecorded terrestrial archaeology to be affected.

Construction operations will be visible and, at some stages, audible within the Conservation Area. This will similarly be the case at the Scheduled St Mary's Abbey. Such impacts will be temporary, overall duration of the works is expected to be 52 weeks, and transitory, changing as works progress. They are, accordingly, unlikely to be significant.

It is concluded that significant effects are therefore unlikely to occur as a result of the construction phase.

3.12.2.2 Operation Phase

The proposed development will be visible from parts of the Iona Conservation Area and scheduled St Mary's Abbey and in some views of these assets. Depending on the final design and appearance of the breakwater there is some potential for this to result in significant effects.

3.12.3 Inclusion or Exclusion from EIAR

It is proposed that Cultural Heritage is included in the EIA.

The potential for physical effects upon hitherto unrecorded heritage assets within the construction footprint of the Proposed Development will be assessed in the EIA. This will be informed by a desk-based assessment, which will draw upon existing data, including bathymetry.

The potential for operational effects upon Iona Conservation Area and the scheduled St Mary's Abbey will be assessed in the EIA. It is expected that such effects will be visual, resulting from the appearance of the proposed breakwater and berthing piles in views from and of these assets. Effects upon other assets will be scoped out owing to there being minimal intervisibility. The assessment will be informed by a site visit and, where necessary, visualisations.

3.12.4 EIAR Assessment Methodology

Baseline data will be gathered from the following data sources:

- HES spatial downloads website;
- West of Scotland Archaeology Service;
- Maps held by the National Library of Scotland;
- UKHO data on wrecks and obstructions;
- Existing project bathymetry data; and
- Readily available published sources.

The assessment will be undertaken in line with current guidance, specifically:

- HES (2020) Managing Change in the Historic Environment: Setting
- HES & SNH (2018) EIA Handbook
- CIfA (2020) Standard and Guidance for Historic Environment Desk-Based Assessment

The assessment will be undertaken with reference to the following guideline criteria.

Table 3-5: Guideline sensitivity criteria

Sensitivity	Guideline Criteria
High	Assets valued at an international or national level, e.g. World Heritage Sites, Scheduled Monuments, Category A Listed Buildings, Inventory Gardens And Designed Landscapes, Inventory Battlefields, Historic Marine Protected Areas, some Conservation Areas and non-designated assets that meet the relevant criteria for designation in the opinion of the assessor. Category B or C-listed buildings where the existing designation does not adequately reflect their value, in the opinion of the assessor.
Medium	Assets valued at a regional level, e.g. Category B listed buildings, some conservation areas and non-designated assets of similar value in the opinion of the assessor. Category C-listed buildings where the existing designation does not adequately reflect their value, in the opinion of the assessor.
Low	Assets valued at a local level, e.g. Category C listed buildings, some conservation areas and non-designated assets of similar value in the opinion of the assessor.

Table 3-6: Guideline Criteria for the Assessment of Magnitude

Magnitude	Typical Descriptors
Substantial	Changes to the fabric or setting of a heritage asset resulting in the complete or near complete loss of its cultural significance, such that it may no longer be considered a heritage asset. (Adverse).
	Preservation of the asset in situ where it would be completely or almost completely lost in the do-nothing scenario or removal of elements of the setting that prevent the appreciation of the asset's cultural significance. (Beneficial).
Moderate	Changes to the elements of the fabric or setting of the heritage asset that contribute to its cultural significance such that this is substantially altered. (Adverse).
	Changes to key elements of the asset's fabric or setting that result in its cultural significance being preserved, where they would otherwise be lost, or restored. (Beneficial).
Slight	Changes to the elements of the fabric or setting of the heritage asset that contribute to its cultural significance such that this is slightly altered (Adverse).
	Changes that result in elements of the asset's fabric or setting that detract slightly from its cultural significance being removed (Beneficial).
Negligible	Changes to fabric or setting that leave significance unchanged.

Table 3-7: Assessment Matrix

Sensitivity	Magnitude of Impact			
	Negligible	Slight	Moderate	Substantial
Low	Negligible	Minor	Minor	Moderate
Medium	Negligible	Minor	Moderate	Moderate or Major
High	Negligible	Minor or Moderate	Major	Major

Where the matrix offers more than one significance option, professional judgement will be used to decide which option is most appropriate.

3.12.5 Preliminary Mitigation Measures

3.12.5.1 Construction Phase

Where potentially significant effects are identified, mitigation measures will be developed to avoid, reduce or offset them. In respect of effects relating to the construction phase, these may comprise an archaeological watching brief and/or the establishment of a Protocol for Archaeological Discoveries.

3.12.5.2 Operation Phase

Where potentially significant effects are identified, mitigation measures will be developed to avoid or reduce them. In respect of the operation phase, these may such measures are most likely to relate to the design of the proposed breakwater.

3.12.6 Summary of Scoping Exercise

The Proposed Development has some potential to result in significant effects upon hitherto unrecorded maritime archaeology during the construction phase and the Iona Conservation Area and St Mary's Abbey Scheduled Monument during the operational phase. Baseline data will be gathered to inform the design and the development of appropriate mitigation measures and visualisations will be prepared as appropriate.

3.13 Landscape and Visual

3.13.1 Baseline Conditions

The existing background will be established by providing an overview of the landscape character within which the proposed development sits, or which lies immediately adjacent to the proposed development site.

Iona Ferry Terminal consists of a slipway and pier jutting out into the Sound of Iona. Iona is a small island located west of Mull, on the west coast of Scotland. The port is important for the fishing industry, leisure and private boat operators, and provides a vital ferry link to the Isle of Mull.

The Landscape Character Assessments and Coastal Character Assessments were carried out by NatureScot, formerly known as Scottish Natural Heritage.

The proposed development is located within the Island Mixed Farmland Landscape Character Type (Type 49 – Landscape Character Assessment 2019). It forms the farmed fringe of the uplands on the island of Islay, Jura, Colonsay, Iona, Coll and Tiree. The Landscape Character Assessment details that the landform varies according to the underlying geology, but is typically undulating lowland, which becomes increasingly steep, uneven and rocky on the slopes leading to the upland moors. It is generally small-scale and complex. The slopes on the fringes of the lowland moors are typically shallow, but there are often rocky outcrops and areas of undulating terrain. These act as scale reference points in the landscape. The coastal landscape is also varied, with low cliffs, rocky outcrops, rock slabs and offshore islands in areas of relatively elevated terrain, and narrow bays of sand or shingle at points where a river or burn meets the sea. It is an extremely diverse landscape, with a patchy mix of moorland, farmland, scrub, bog and woodland. Fields vary in size. They tend to be smaller on undulating terrain and in areas close to settlements, but many are extensive and there is a gradual transition to open, rough grazing on the fringes of the surrounding moorland. The fields are partially enclosed by a historic pattern of stone walls on higher slopes and by wire fencing elsewhere. The marginal landscape supports very small, scattered farming communities; and is peppered with early ecclesiastical sites, which retain a spiritual importance, such as the medieval monastery on Iona. It dominates the coastline and commands international renown as the cradle of Scottish or Celtic Christianity.

The proposed development in Iona is located along Deposition Coasts of Islands Coastal Character Type (Type 12 – Coastal Character Assessment). Crofting or farms are set back from the coast. An open, low lying, largely treeless and windswept landscape with views of the Atlantic Ocean or North Sea, although dunes can often screen views of open sea and coast inland. Sparsely settled, low-key land management and lack of coastal development. Often wild, remote ‘edge of ocean’ feel. Big breakers and low-lying exposure of island landscapes, with few sights of land in large scale sea views. Combination of mountains with coast provides particularly high scenic quality and drama.

Of relevance is the Argyll and Bute Local Development Plan March 2015. One of the main objectives of the Plan is to ensure the outstanding quality of the natural, historic and cultural environment is protected, conserved and enhanced. The Iona site lies within the designated Settlement Zone. Policy LDP DM 1 – Development within the Development Management Zones establishes the acceptable scales of development in each of the zones with the boundaries of all the settlements and countryside zones outlined in the Plan.

Iona coastline is designated an Area of Panoramic Quality within the Plan. These areas are of regional importance in terms of their landscape quality. Policy SG LDP ENV 13 - Development Impact on Areas of Panoramic Quality aims to protect these areas against development that would diminish their very high scenic value.

Further, the Argyll and Bute Local Development Plan identifies several Local Nature Conservation Areas which are locally important sites for wildlife or nature interests. In Iona, there is a Local Nature Conservation Area to the south of the proposed development. Policy SG LDP ENV 5 - Development Impact on Local Nature Conservation Sites aims to protect these sites from damaging development.

The proposed development is located within Baile Mor Conservation Area (including the existing slipway), which contains a number of heritage sites including St Mary's Abbey (Category A listed building) and the Iona Nunnery (scheduled monument).

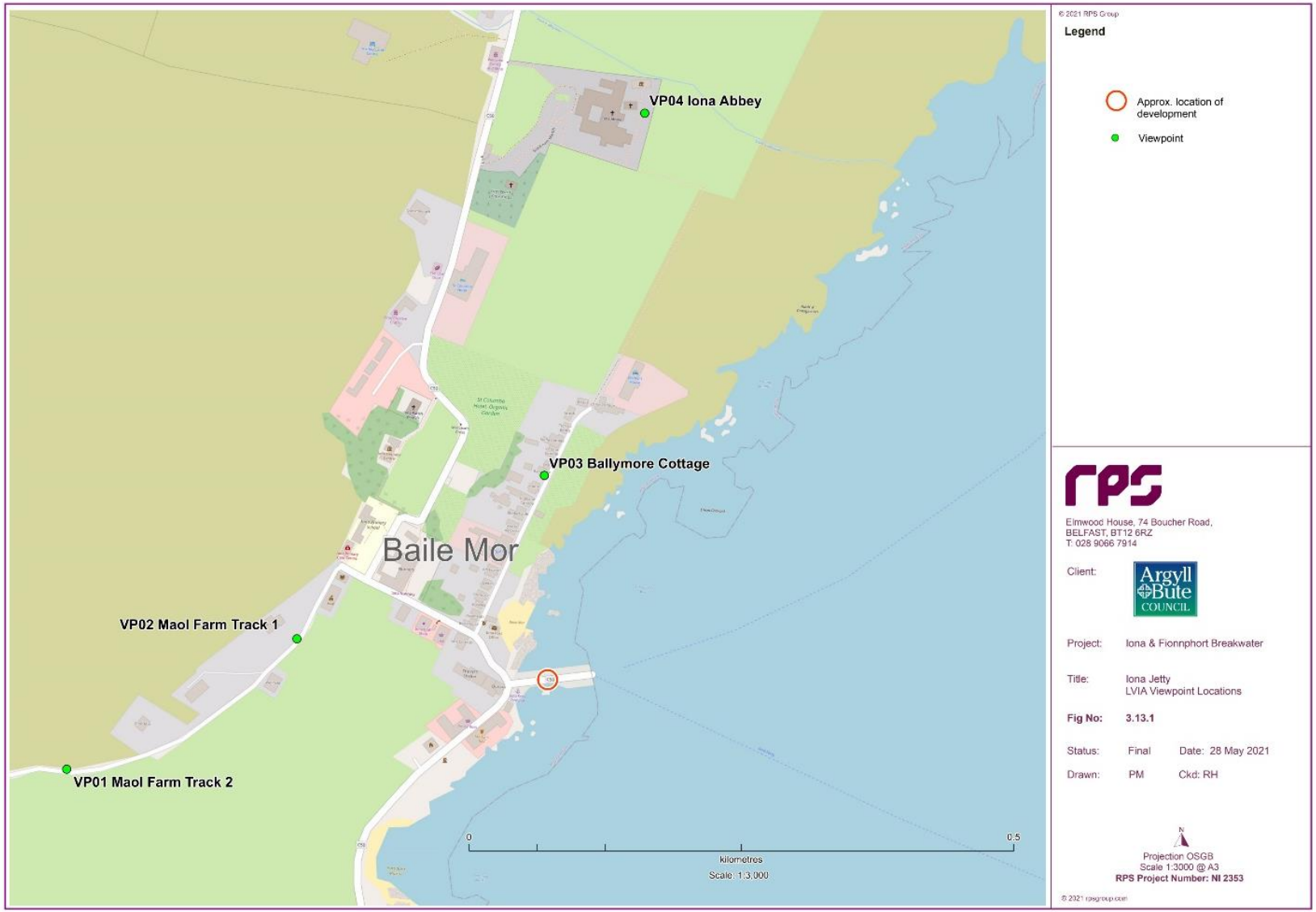

Figure 3-10 Viewpoint Locations with the following viewpoints selected for photomontages

Figure 3-11 Viewpoint 1 – South of Harbour from Maol Farm Lane

Figure 3-12 Viewpoint 2 – South of Harbour from Maol Farm Lane

Figure 3-13 Viewpoint 3 – Lane to Bishop's House at Ballymore Cottage

Figure 3-14 Viewpoint 4 from Iona Abbey towards Harbour

3.13.2 Potentially Significant Effects

3.13.2.1 Construction Phase

The proposed development has the potential to give rise to landscape effects during construction phase, as such impacts have the potential to be prominent though largely temporary in duration. A detailed landscape character assessment will be completed.

The proposed development has the potential for visual effects during construction phase, both from the immediate surroundings as well as from the wider Sound of Iona setting and a detailed visual impact assessment will be completed. Viewpoints will be carefully selected to illustrate representative views of the proposals as set out above.

3.13.2.2 Operation Phase

The proposed development has the potential to give rise to landscape effects during the operation phase and a detailed landscape character assessment will be completed.

The proposed development has the potential for visual effects, both from the immediate surroundings as well as from the wider Sound of Iona setting and the wider historical environment, and a detailed visual impact assessment will be completed. Viewpoints will be carefully selected to illustrate representative views of the proposals as set out above.

3.13.3 Inclusion or Exclusion from EIAR

As a result of potential effects to the landscape and visual environment from the proposed development, it is considered that Landscape & Visual should be scoped into the EIAR.

3.13.4 EIAR Assessment Methodology

The methodology for the LVIA chapter will be derived from Guidelines for Landscape and Visual Impact Assessment, Third Edition (The Landscape Institute and Institute of Environmental Management & Assessment, 2013, GLVIA3).

The landscape is appraised to allow it to be described and classified into landscape character areas that in turn enable the classification of landscape quality. The capacity of the landscape to accept change of the type proposed is assessed by determining the sensitivity of each landscape character area. Overall key landscape components are normally landform, vegetation and historical and cultural components. Landform relates to topography, drainage characteristics and geology. Historical and cultural components include historic landscapes, listed buildings, conservation areas and historic designed landscapes. Vegetation plays an important role in how the landscape and visual resources of an area are viewed and is an integral component of a landscape character.

Assessment will be undertaken through analysis of:

- Up to date digital copies of Ordnance Survey Discovery Series raster and OS vector maps;
- Aerial photography;
- NatureScot Landscape Character Assessment Series;
- NatureScot Local Landscape Areas Assessment;
- NatureScot Seascape Character Assessment;
- Argyle and Bute Landscape Capacity Study – Iona;
- Local Development Plan;

- Historic Environment Scotland – Inventory of Gardens and Designed Landscapes; and
- Plans and drawings of the Proposed Development

Site visits will be undertaken to assess the existing environment, to establish the existing visual resource and to identify sensitive receptors, i.e. landscape receptors, visual receptors including residential properties and any scenic viewpoints. Site visits will also be used to establish the perceived extent of landscape and visual impacts that may be associated with the proposed development.

The proposed redevelopment is then applied to this landscape and visual baseline and potential impacts predicted.

An assessment of any cumulative effects that could arise through other plans, projects and ongoing activities within the study area will be undertaken based on available information.

Cumulative effects landscape and visual effects on individual or specific groups of receptors will be considered.

3.13.5 Preliminary Mitigation Measures

3.13.5.1 Construction Phase

Mitigation or monitoring measures will be developed where appropriate to ensure that the predicted effects on landscape resources and visual receptors are reduced to insignificant levels.

3.13.5.2 Operation Phase

Mitigation or monitoring measures will be developed where appropriate to ensure that the predicted effects on landscape resources and visual receptors are reduced to insignificant levels.

3.13.6 Summary of Scoping Exercise

The scoping exercise has concluded that as a result of potential effects to the landscape and visual environment from the proposed development that Landscape & Visual should be scoped into the EIA.

3.14 Population and Human Health

3.14.1 Baseline Conditions

The proposed development is located within the Mull, Iona, Coll & Tiree intermediate zone of Argyll & Bute council area. The closest residential receptor is located approximately 130 m from the proposed works, along Baile Mor.

The Scottish Public Health Observatory (ScotPHO) profiles provide a snapshot of local population and health circumstance across Scotland. Within the Mull, Iona, Coll & Tiree intermediate zone, the majority of available indicators show similar health circumstance compared to the Scottish national average.

From the data available at the intermediate zone geographic level, the following indicators are considered to be better than the Scottish national average: alcohol-related hospital admissions; female life expectancy; employment deprivation; income deprivation; children in low income families; emergency patient admissions. The only indicator considered to be worse than the Scottish national average is “people living in the 15% most ‘access deprived’ areas, which reflects the rural nature of the area.

The EIAR will explore local population and health circumstance further by analysing and interpreting trends and wider statistics which are available at the council area geographic level.

3.14.2 Potentially Significant Effects

3.14.2.1 Construction Phase

Environmental health determinants (such as changes to air quality and noise exposure) typically have a local level impact, where potential change in hazard exposure is limited by physical dispersion characteristics. As a result, potential population and health effects associated with environmental pollutants would be limited to residential receptors in the immediate surrounding area of Iona. It is proposed that the potential population and health effects associated with temporary changes in environmental pollution generated during the construction phase is explored in detail within the EIAR chapter.

Socio-economic determinants of health (such as income and employment) have a potentially wider distribution than environmental determinants. However, due to the rural location of the proposed development, potential population and health effects associated with socio-economic factors are likely to remain limited to Mull, Iona, Coll & Tiree intermediate zone and the wider Argyll & Bute council area. It is proposed that the potential population and health effects associated with temporary socio-economic factors during the construction phase is explored in detail within the EIAR chapter.

3.14.2.2 Operation Phase

The proposed development would support an increase in tourism. As such, it is proposed that the potential population and health effects associated with socio-economic factors (such as income and employment) relating to an increase in tourism are investigated in more detail within the EIAR chapter.

As previously stated, potential population and health effects associated with environmental pollutants would be limited to residential receptors in the immediate surrounding area of Iona. Due to the predicted increase in

tourism, there may be associated long-term increases in environmental pollution. As such, it is proposed that the potential population and health effects associated with environmental health determinants are also explored in detail within the EIAR chapter.

3.14.3 Inclusion or Exclusion from EIAR

Based on the available project information, the following population and health determinants are proposed to be included for assessment within the EIAR (for both the construction and operational phase) to determine the significance of effect:

- changes in air quality (including odour and dust during construction);
- changes in noise exposure;
- changes in transport nature and flow rate; and
- changes in socio-economic factors (specifically, income and employment).

3.14.4 EIAR Assessment Methodology

Baseline data will be collected from publicly available third-party data sources and compared against the Scottish national average to provide detailed context on local population and health circumstance. The baseline section will expand on the snapshot information in Section 3.14.1, providing interpretation of trends and a wider selection of indicators.

The population and health EIAR chapter will draw from and build upon detailed project information and key outputs from the relevant inter-related technical disciplines scoped into the EIAR.

In the absence of any explicit guidance relating to the assessment of health in EIA, the assessment approach applies recognised Health Impact Assessment (HIA) guidance and combines this with the regulatory requirements defined for EIA to investigate, inform, assess and more effectively communicate how and where all health issues and opportunities are addressed.

A precautionary approach will be applied whereby the sensitivity of all nearby receptors is considered to be uniformly ‘high’ to capture the most sensitive individuals within the population.

3.14.5 Preliminary Mitigation Measures

3.14.5.1 Construction Phase

At this stage, preliminary mitigation measures during the construction phase relevant to population and health are anticipated to include production of an outline Construction Environmental Management Plan (oCEMP). The purpose of the oCEMP is to detail site-specific procedures and mitigation measures that should be adhered to in order to control the release of environmental pollution and ensure, so far as is practical, that construction activities do not adversely impact amenity or the surrounding environment.

The oCEMP would be protective of population and health on the basis that the procedures and mitigation measures detailed limit the release of environmental precursors to adverse health outcomes (such as dust, air pollutants and noise).

3.14.5.2 Operation Phase

At this stage, no preliminary mitigation measures relevant to population and health are anticipated during the operation phase.

3.14.6 Summary of Scoping Exercise

From the snapshot information provided by ScotPHO, local population and health circumstance within the Mull, Iona, Coll & Tiree intermediate zone seems to be similar to the Scottish national average. While this suggests that the local population would not be disproportionately sensitive to environmental and socio-economic changes, a precautionary approach will be applied to capture the most sensitive individuals within the population.

The population and health EIAR chapter will draw from and build upon detailed project information and key outputs from the relevant inter-related technical disciplines scoped into the EIAR. This information will be used to determine the significance of effect on population and health associated with changes in air quality, noise, transport nature/flow rate and socio-economic factors such as income and employment.

3.15 Waste

3.15.1 Baseline Conditions

Waste management at the Iona Ferry Terminal is currently operated to best practice guidance and in accordance with Schedule 1 of the Merchant Shipping and Fishing Vessels (Port Waste Reception Facilities) Regulations 2003. However, as Iona currently only consists of a pier and a slipway, there is no Port Waste Management plan in place due to the limited waste that occurs from operating the passenger ferry service to Fionnphort.

3.15.2 Potential Significant Effects

3.15.2.1 Construction Phase

Construction of the new rock armour breakwater will use clean quarried stone and therefore any significant effects from waste during the construction phase will be negligible. The construction stage waste assessment has thus been scoped out at this stage.

3.15.2.2 Operation Phase

The proposed development of the berthing piles is located at the existing Ferry Terminal and any vessels using this will continue to follow the harbours waste management procedures. Therefore, the operational stage waste assessment is scoped out.

3.15.3 Inclusion or Exclusion from EIAR

Waste will be scoped out of the EIA. It is considered that significant effects are unlikely to result from the Proposed Development. A qualitative assessment on the effects of waste will be sufficient to understand potential impacts of waste during development and operation.

3.15.4 EIAR Assessment Methodology

A qualitative assessment of potential effects in relation to waste will be undertaken as part of the EIAR. The assessment will comprise of the following stages:

- Assessment of waste related terms and definitions applicable to the Iona Breakwater Project;
- A review of applicable legislation and policy;
- A review of the Iona Breakwater Project design, undertaken in consultation with the project design team, to estimate the waste generation during the various phases;
- Consideration of potential interactions between proposals and the current site conditions, and identification of possible impacts;
- Assessment of impacts, within the context of the receiving waste management environment;
- Identification of measures and solutions to avoid, minimise or mitigate potential impacts; and
- Assessment of residual impacts, taking account of mitigation measures.

3.15.5 Preliminary Mitigation Measures

3.15.5.1 Construction Phase

In relation to construction related waste, proposed preliminary measures will include the development of an outline CEMP. The oCEMP will include a Site Waste Management Plan (SWMP) to manage all waste materials generated on site. The oCEMP will contain site specific environmental measures and procedures for the management of waste and related pollution control measures.

3.15.5.2 Operation Phase

A site-specific pre-construction SWMP will be also prepared by the appointed contractor and form a component part of the oCEMP to ensure effective waste management and recycling of waste generated during the works. The SWMP will be prepared in line with the waste management hierarchy with waste reduction and re-use on site being of primary focus. The SWMP will be completed by the appointed contractor and implemented prior to construction works. The appointed contractors for the site preparation, earthworks and construction phases of the works will be contractually obliged to follow the SWMP and all relevant legislation.

3.15.6 Summary of Scoping Exercise

The scoping exercise has concluded that the potential effects of waste arising during the construction and operation phases should be scoped out of the EIAR. This is because the new breakwater will be constructed from clean quarried stone and, after construction is completed, the Iona Ferry Terminal will once again fall under the waste management procedures for Iona Ferry Terminal.

3.16 Cumulative Effects and Environmental Interactions

Consideration will be given to identified projects which have been approved (or are awaiting approval via planning or marine licencing), which may result in a cumulative effect when considered in combination with the Iona Breakwater Project.

The main project identified to date that shall be considered cumulatively is the Fionnphort Breakwater and Overnight Berth Project which has also been proposed by the Argyll and Bute Council. The Fionnphort Breakwater Project consists of a new rock armour breakwater and minor capital dredging works. Details of each element is provided below:

- **Rock Armour Breakwater:** A rock armour breakwater with an overall crest length of circa 175m. The breakwater comprises a rock armour structure with a proposed slope of 1 in 1.5. It extends in a north westerly direction from the existing rock outcrop, then turning north and north east over three legs. The function of the structure is primarily to provide defence from waves propagating from a southerly direction, however a high level of protection is also provided from westerly and northerly waves. There is a significant reduction in wave heights incident from a southerly direction.
- **Overnight Berth:** A 50m long overnight berthing structure is indicated in the lee of the outer arm of the breakwater. Access to this berth would be via a dedicated pedestrian (CalMac staff only) walkway running parallel to the lee of the breakwater, supported on an array of tubular piles. This berth will comprise a

piled structure with a steel deck. It will allow the ferry to be berthed at Fionnphort overnight and avoid the need to berth the vessel at Bull Hole. This will result in a considerable reduction in safety risks to the ferry operators who currently access Bull Hole via dinghy. Access from the structure to the ferry will be via ladder.

- **Dredging:** In order to accommodate the new navigation channel requirements, some dredging works will be required, however these will be minor in nature and comprise overburden dredging only. The approximate dredge volume is 7,800m^3. It is proposed that this is carried out by suction dredge, with the material also being deposited at the nearest licenced site, Port Ellen, Islay (MA030).

The potential for cumulative effects associated with the Iona Breakwater Project in combination with the Fionnphort Breakwater and Overnight Berth Project (and other project) will be considered during the EIA stage and additional mitigation measures applied where necessary.

4 SUMMARY AND CONCLUSIONS

This Environmental Impact Assessment (EIA) Scoping Report has been prepared by RPS on behalf of Argyll and Bute Council for the Iona Breakwater Project for which development consent is sought. It provides a robust roadmap for the preparation of an EIA Scoping Report and will inform a future application for development consent.

It is hoped that this EIA Scoping Report will assist Marine Scotland in providing a formal scoping opinion. The EIA Scoping Report has identified potentially significant environmental effects which require detailed examination as part of EIA, and those topics which can be scoped out of a future EIAR. Table 4-1 below outlines those potential environmental effects which have been scoped in or out of the EIAR, based on the analysis within this report.

Table 4-1: Summary of EIA Scoping

Report Section	Environmental Effect	Scoped In / Out
3.1	Risk of Major Accidents (Navigation & Safety)	Scoped In
3.2	Terrestrial Biodiversity	Scoped In
3.3	Marine Biodiversity incl. Underwater Noise	Scoped In
3.4	Land, Soils, Geology & Hydrogeology	Scoped Out
3.5	Water Quality	Scoped In
3.6	Flood Risk	Scoped In
3.7	Air Quality & Climate Change	Scoped Out
3.8	Terrestrial Noise & Vibration	Scoped In
3.9	Coastal Processes	Scoped In
3.10	Material Assets	Scoped Out
3.11	Traffic and Transportation	Scoped Out
3.12	Cultural Heritage	Scoped In
3.13	Landscape & Visual	Scoped In
3.14	Population & Human Health	Scoped In
3.15	Waste	Scoped Out

Consideration will also be given to identified projects which have been approved (or are awaiting approval via planning or marine licencing), which may result in a cumulative effect when considered in combination with the Iona Breakwater Project.

The main project identified to date that shall be considered cumulatively is the Fionnphort Breakwater and Overnight Berth Project which has also been proposed by the Argyll and Bute Council and consists of a new rock armour breakwater and minor capital dredging works.

The potential for cumulative effects associated with the Iona Breakwater Project in combination with the Fionnphort Breakwater and Overnight Berth Project (and other projects) will be considered during the EIA stage and additional mitigation measures applied where necessary.

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Appendix A – EIA Screening Opinion

marinescotland

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Date: 11 February 2021

Dear Ms Simoes,

SCREENING OPINION UNDER THE MARINE WORKS (ENVIRONMENTAL IMPACT ASSESSMENT) (SCOTLAND) REGULATIONS 2017 (AS AMENDED)

Thank you for your screening opinion request dated 14 August 2020 and further information dated 03 December 2020 in regards to the proposed breakwater and berthing facility upgrade works, including construction of new breakwaters and piled berthing structures, dredging and sea deposit of dredged material at Iona and Fionnphort ("the Proposed Works").

The Scottish Ministers consider the Proposed Works to fall under paragraph 10(m) of schedule 2 of The Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended) ("the 2017 MW Regulations"), with the Proposed Works being carried out in a sensitive area, as defined by the 2017 MW Regulations. Consequently, the Scottish Ministers are obliged to adopt a screening opinion as to whether the Proposed Works are, or are not, an Environmental Impact Assessment ("EIA") project under the 2017 MW Regulations.

Under regulation 10(5) of the 2017 MW Regulations, the Scottish Ministers have consulted with NatureScot (formerly Scottish Natural Heritage), the Scottish Environment Protection Agency ("SEPA"), Argyll and Bute Council and Historic Environment Scotland ("HES") as to their view on whether the Proposed Works are an EIA project. Copies of the consultation responses and advice received are attached for your review (at Appendix I). Due to reasons outwith its control, SEPA has been unable to provide a consultation response. Argyll and Bute Council has also been unable to provide a response to date however it is the Scottish Ministers' understanding that Argyll and Bute Council is currently screening the terrestrial concerns of this project under the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017.

When making a determination as to whether schedule 2 works are an EIA project, the Scottish Ministers must take into account such of the selection criteria set out in schedule 3 of the 2017 MW Regulations as are relevant to the Proposed Works. In this regard, the Scottish Ministers have considered the following:

Characteristics of the works

The total area of development, including both marine and terrestrial works, at Iona is 8,400m^2 and at Fionnphort is 9,000m^2.

The Proposed Works include the construction of a new rock armour breakwater to the south of the existing slipways at both Iona and Fionnphort in order to protect the slipways from waves from the prevailing southerly direction. 43,000m^3 of rock will be used to create a 177m long structure at Iona and 56,000m^3 of rock armour will be used to construct a 175m breakwater at Fionnphort. Materials will be delivered to site by barge and placed on the seabed using a grab crane.

Piling will also be required to improve the berthing facilities at both sites. In Iona, 96 tonnes of piles will be installed to create a series of berthing piles alongside the existing slipway to which the ferry can be secured. In Fionnphort, a 50m overnight berthing structure will be built in the lee of the new breakwater. This will be a piled structure with a steel deck and will be accessed by a new walkway running parallel to the breakwater which will be supported on an array of tubular piles. Piles at both sites will be installed into rock sockets cored into the seabed. No impact piling or blasting will be required.

The Proposed Works also include dredging in the approach channel at both sites. The dredge volume at Iona is anticipated to be 3,260m^3 and at Fionnphort, 7,800m^3. Material from both sites will be deposited at the nearest designated sea deposit site at Port Ellen, Islay. It is proposed to use a suction hopper dredger for the works.

The duration of the Proposed Works at each site is anticipated to be 52 weeks with the option for these to run in parallel.

During the Proposed works, piling and drilling of the bedrock are likely to produce significant underwater noise which NatureScot advised could disturb cetaceans in the vicinity. There is also the potential for the breakwaters to have a significant effect on coastal processes due to their location in a dynamic tidal environment.

Location of the works

Both Iona and Fionnphort lie within the Inner Hebrides and the Minches Special Area of Conservation designated for harbour porpoise (*Phocoena phocoena*). NatureScot advised that there is currently insufficient information to determine whether or not the proposal is likely to have a significant effect on harbour porpoise. It raised concerns relating to marine acoustic impacts from the construction of the Proposed Works including from piling and bedrock drilling. NatureScot also advised that a number of cetaceans which are European Protected Species are often recorded around the Sound of Iona and wider Hebridean Sea. The Scottish Ministers also note that the Proposed Works are within the Sea of Hebrides proposed Marine Protected Area which is designated for basking shark (*Cetorhinus maximus*) and minke whale (*Balaenoptera acutorostrata*). These features could also be affected by noise from the Proposed Works.

NatureScot also advised that sea grass, which is a Priority Marine Feature, is present on site to the north of Fionnphort, and the Sound of Iona has been identified as an area of management consideration for this species. Sea grass is an important habitat in terms of biodiversity and its blue carbon resource. Further, NatureScot advised that sea grass is sensitive to sedimentation associated with changes in tidal flows. It considered that there is currently not enough information to determine the likely impact of construction or operation on this feature and thus further information and surveys are required.

Baile Mor on Iona (including the existing slipway) is a designated Conservation Area and contains a number of heritage sites. HES advised that although there is a potential for the Proposed Works at both Iona and Fionnphort to be visible from the designated St Mary's Abbey (Category A listed building) and the Iona Nunnery (scheduled monument), significant impacts on the setting of the Abbey are unlikely.

Characteristics of the potential impact

In addition to the specific sites detailed above, HES identified that the Proposed Works at Fionnphort and Iona have the potential to impact on areas of archaeological sensitivity and recommended that an assessment of impacts on marine archaeology should be undertaken. The Scottish Ministers also identified that the construction of the breakwaters could have a significant effect on coastal processes, including by altering patterns of sedimentation and erosion. The Scottish Ministers recommend that further modelling to study impacts of the Proposed Works on coastal processes and further model validation are required. Certain aspects of physical processes have been investigated, for example sedimentation and wave height, to demonstrate effectiveness of the breakwater design, but not all physical processes have been evaluated, for example, impacts on the coast. It is also possible that the breakwaters will increase siltation in the approach channels and increase tidal stream velocities, and therefore turbulence, off the breakwater outer limits. Changes such as sediment disturbance may only occur on a localised scale but the applicant should demonstrate that the broader scale environment will not be negatively affected.

The Scottish Ministers consider that there is currently not enough clear evidence that there will be no significant impact of the Proposed Works on coastal processes and that further modelling is required with respect to waves, tidal currents and scouring, and suspended sediment transport. Further NatureScot advised that changes to tidal flow could affect the sea grass priority marine feature, thus increasing the significance of the effect on the environment.

The Scottish Ministers are in agreement with NatureScot that, due to insufficient information, it cannot currently be concluded that the Proposed Works will not have a significant effect on the environment.

Conclusion

In view of the findings above, the Scottish Ministers are of the opinion that the Proposed Works are an EIA project under the 2017 MW Regulations and, therefore, an EIA is required to be carried out in respect of the Proposed Works.

If you increase, alter or extend the Proposed Works, you are advised to contact Marine Scotland - Licensing Operations Team again to confirm if the screening opinion is still valid.

A copy of the screening opinion has been forwarded to Argyll and Bute Council planning department. The screening opinion has also been made publicly available through the Marine

Scotland Information website at Screening – Iona Breakwater with Berth and Fionnphort Breakwater with Overnight Berth – Iona and Fionnphort | Marine Scotland Information.

If you require any further assistance or advice on this matter, please do not hesitate to contact me.

Yours sincerely

Ellie Noble
Marine Scotland - Licensing Operations Team

Historic Environment Scotland

HISTORIC ENVIRONMENT SCOTLAND | ÀRAINNEACHD EACHDRAIDHEIL ALBA

By email to:
MS.MarineLicensing@gov.scot

Marine Scotland
Marine Laboratory
375 Victoria Road
Aberdeen
AB11 9DB

Longmore House
Salisbury Place
Edinburgh
EH9 1SH

Enquiry Line: 0131-668-8716
HMConsultations@hes.scot

Our case ID: 300048052

20 January 2021

Dear Marine Scotland

The Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017
Argyll and Bute Council - Iona Breakwater and Berth and Fionnphort Breakwater and Overnight [redacted]Berth
Request for Screening Opinion

Thank you for your consultation which we received on 17 December 2020 seeking our comments on an Environmental Impact Assessment (EIA) screening opinion for the above proposed development. This letter contains our comments for our historic environment interests. That is world heritage sites, scheduled monuments and their setting, category A-listed buildings and their setting, gardens and designed landscapes and battlefields on their respective Inventories.

Your archaeological and conservation advisors will also be able to offer advice for their interests. This may include unscheduled archaeology, category B- and C-listed buildings and conservation areas.

Proposed Development
We understand that this EIA screening request relates to the development of breakwater and berthing facilities at both Fionnphort on Mull and Baile Mor on Iona. We were previously consulted at screening separately for both the Fionnphort (Our reference 300047187) and Baile Mor (Our reference 300047208) developments.

Our Screening opinion
We have no comments to make on the requirement or otherwise for an EIA for this proposed development. However, you may find the information provided below helpful in reaching your decision on the matter.

Our advice
We do not consider that the proposed development would have a significant impact on our interests. Although there is the potential for both developments to be visible from **St Mary's Abbey (SM12968)** and the **Iona Nunnery (SM90350)**, we are content that significant impacts on the setting of the Abbey are unlikely. Further information regarding

our assessment of the potential impact on the setting of these monuments is included in the below annex.

However, we note that the proposed works at Fionnphort and Baile Mor have the potential to impact on areas of archaeological sensitivity within the marine environment. We therefore recommend that any application for a Marine Licence is supported by an assessment of impacts on marine archaeology, whether an Environmental Impact Assessment (EIA) is undertaken or not.

We hope this is helpful. Please contact us if you have any questions about this response. The officer managing this case is Samuel Fox and they can be contacted by phone on [redacted] or by email at samuel.fox@hes.scot.

Yours faithfully

Historic Environment Scotland

Annex

The monastic settlement that Columba founded in Iona when he arrived from Ireland in 563AD served as the point from where Christianity spread throughout the west coast of Scotland and northern England. It is of international cultural importance, not just for the Christian community but for understanding and appreciating the impact that religion subsequently had on the socio-economic fabric of Scotland and Northern Britain.

Iona Nunnery (SM90350) comprises the well-preserved ruins of an Augustinian convent founded in 1207 or 1208 and probably dissolved around 1574. Stone sculptures connected to an earlier Christian presence on Iona have been discovered at the monumen[redacted]greater length of sacred occupation on this site. The medieval religious foundations on Iona included substantial stone buildings and part of their role was to impress pilgrims and attract benefactors. The nunnery would have been designed to be prominent to pilgrims landing at Martyrs' Bay and on processing north past the nunnery toward St Mary's Abbey.

St Mary's Abbey (SM12968) comprises the remains of St Columba's monastic settlement, St Martin's Cross, and parts of medieval buildings associated with the Benedictine Abbey of St Mary founded around AD 1200 and subsequently restored over the last century. The monastery's position on the coastal plain emphasizes Iona's spiritual and physical isolation from the rest of the world. The main, medieval approach to the monastery was from the many landing places to the monastery's south, Martyrs' Bay being the most important spiritually, through the area now largely occupied by the later settlement on Baile Mor.

The setting of both monuments includes their relationship to the many small bays on the east coast of Iona around the settlement of Baile Mor, particularly Martyrs' Bay which lies to the immediate south of the proposed breakwater. Those landing on Iona as part of medieval pilgrimage would have had visibility of the monastic complex from their landing point; retention of these views therefore forms part of the setting of both monuments.

The proposed breakwater at Baile Mor lies off a bluff between the Martyrs' Bay and St Ronan's Bay, and is not itself in an area that would have been a suitable landing point for traditional vessels in the past. Whilst views from Martyrs' Bay towards the Abbey may be partially interrupted by the height of the proposed breakwater, views from the head of the Bay are unlikely to be interrupted any further by the proposed breakwater than they already are by the existing settlement of Baile Mor. The proposed steel piles adjacent to the existing slipway are commensurate with the marine infrastructure already in place.

Given the above, whilst the proposed development is likely to be visible in some views of the Abbey from the various bays on the east side of Iona, the severity of this impact on

the cultural significance of either the Abbey or the Nunnery does not raise issues of national importance.

Historic Environment Scotland
20 January 2021

[redacted]

Marine Scotland Science

T: +44 (0)131 244 2500
E: MSS_Advice@gov.scot

Ellie Noble
Marine Scotland Licensing Operations Team
Marine Laboratory
375 Victoria Road
Aberdeen
AB11 9DB

12 January 2021

Iona Breakwater and Berth and Fionnphort Breakwater and Overnight Berth Development

MSS have reviewed the request from MS-LOT and have provided comments on the potential impact of this project on coastal processes, and whether this project should be considered an EIA project.

Physical environment / coastal processes

The prevailing wind and wave conditions in the area are from the SW. The tidal range is 3.5 m and tidal streams can reach up to 2.5 knots at spring tides. The Sound of Iona is a dynamic environment. The preferred options for this project are a 175 m rock armour breakwater in Fionnphort and a 177 m breakwater at Iona to provide defence from waves propagating from a mostly southerly direction.

JBA Consultancy conducted a morphodynamic modelling assessment in 2020 to investigate the impact of the proposed new berthing facilities on sedimentation at both project sites. They assessed how the new berthing facilities would impact the morphodynamics in the Sound of Iona, and identified areas where significant sedimentation or erosion would occur.

In the Fionnphort Screening Opinion document it is stated: "*To maintain depths and avoid silting up it may very likely be found that it is important to allow natural tidal scouring to continue in the berthing and mooring areas. It may be necessary to provide tunnels or boulder gaps in the breakwater below the low water mark. This is also likely to mitigate the possible development of increased tidal stream velocities off the breakwater outer limits which could create more turbulence than is expected at present.*"

MSS recommend that these aspects of natural tidal scouring and changes in tidal stream velocities (and therefore turbulence) should be explored in more detail, and we recommend that this should be through the EIA process.

In the JBA report it was also suggested that should further modelling be required, collection of hydrodynamic and sediment transport data should be considered to support calibration and/or validation of the model. This would include waves in the sound, tidal currents in the sound and suspended sediment transport. The report suggests that this would be desirable at several locations but should focus on the Iona side as a minimum as the modelling there has shown this to be critical.

MSS agree that further data collection would be highly valuable, to validate the models and gain confidence in the results.

The overall volume of material to be dredged is small (7600 m^3 and 3260 m^3 per site) and the applicant proposes to dump sediment at a licensed disposal site. Therefore, MSS would not expect any further specific modelling to be required for the dredging component of the activities. The reports

state that during periods of dredging, piling and construction of the breakwaters there might be localised sediment disturbance but this should stay localised and not affect the broader area. However, MSS note that little or no evidence is presented to support this statement on locality of impact.

The Iona screening report (section 19.3) mentions*: "Iona is still subject to further morphodynamic modelling throughout the current year and approximately May 2017 to 2021."* MSS request more information on the further modelling that is currently happening, and query whether the final report will be available with the licence application?

In summary: MSS recommend that further modelling to study impacts by the project on coastal processes (i.e. currents/tidal streams in the region, tidal scouring) and proper model validation (using better data) are required. Certain aspects of physical processes have already been investigated (e.g. sedimentation, wave height) to demonstrate effectiveness of the breakwater design, but not all physical processes have been evaluated, for example, impacts on the coast. Changes such as sediment disturbance may only occur on a localised scale but MSS advise that the applicant should demonstrate that the broader scale environment is not negatively affected.

MSS advise MS-LOT that, without clear evidence that there will be no significant impact of these developments on coastal processes, the projects on both sides of the Sound of Iona should be screened in to the EIA process.

Hopefully these comments are helpful to you. If you wish to discuss any matters further then please contact the REEA Advice inbox at MSS_Advice@gov.scot

Yours sincerely,

Renewable Energy Environmental Advice group
Marine Scotland Science

NatureScot

MacFarlane M (Marc)

From: Colin MacFarlane <Colin.MacFarlane@nature.scot>
Sent: 15 January 2021 14:47
To: Taylor K (Kate); MS Marine Licensing
Subject: RE: Screening - Argyll and Bute Council - Iona Breakwater and Berth and Fionnphort Breakwater and Overnight Berth - Response required by 7 Jan 2021
Attachments: Marine Scotland - NS Response to EIA Regs Screening Opinion - Iona and Fionnphort Breakwater and Berth - 15 Jan 2021 (A3375666).pdf

Hi Kate,

Please find attached our response for your consideration. Worth noting that we actually received, and responded to a formal planning application for this proposal from Argyll and Bute Council in early December 2020. Our response to you basically covers the main concerns we had with the planning application, minus the our landscape concerns, as I believe this falls outwith your interests. Hope this letter helps you with your decision making and don't hesitate to get in touch if you need any further information from myself.

Kind regards

Colin MacFarlane | Operations Manager and Argyll Islands Area Officer

NatureScot | The Enterprise Centre | Kilmory Industrial Estate | Lochgilphead | Argyll | PA31 8SH| Tel: [redacted] |

nature.scot | @nature_scot | *Scotland's Nature Agency* | *Buidheann Nàdair na h-Alba*

From: Kate.Taylor2@gov.scot <Kate.Taylor2@gov.scot>
Sent: 15 January 2021 10:49
To: Colin MacFarlane <Colin.MacFarlane@nature.scot>
Subject: RE: Screening - Argyll and Bute Council - Iona Breakwater and Berth and Fionnphort Breakwater and Overnight Berth - Response required by 7 Jan 2021

Hi Colin,

Apologies for not getting back to you sooner but can we expect to receive your response today?

Kind regards,

Kate

Kate Taylor
Marine Licensing Support Officer
Marine Scotland - Marine Planning & Policy

Scottish Government | Marine Laboratory | 375 Victoria Road | Aberdeen | AB11 9DB

Email: kate.taylor2@gov.scot
Website: https://www2.gov.scot/Topics/marine/Licensing/marine

COVID-19: Marine Scotland - Licensing Operations Team (LOT) is working from home and unable to respond to phone enquiries. Please communicate with LOT via email. Email addresses are MS.MarineRenewables@gov.scot for marine renewables correspondence or MS.MarineLicensing@gov.scot for all licensing queries.

From: Colin MacFarlane <Colin.MacFarlane@nature.scot>
Sent: 14 January 2021 09:48
To: Taylor K (Kate) <Kate.Taylor2@gov.scot>
Subject: RE: Screening - Argyll and Bute Council - Iona Breakwater and Berth and Fionnphort Breakwater and Overnight Berth - Response required by 7 Jan 2021

Hi Kate

Hope this finds you well. Thanks for the recent consultation regarding the above. I'm wondering if it would it be possible to have an extension to this consultation? The festive period and home schooling have led to delays in reviewing my casework. I can provide a response by the end of next week at the latest, but am hopeful I can pull something together prior to that.

Best wishes
Colin

Colin MacFarlane | Operations Manager and Argyll Islands Area Officer

NatureScot | The Enterprise Centre | Kilmory Industrial Estate | Lochgilphead | Argyll | PA31 8SH| Tel: [redacted]

nature.scot | @nature_scot | *Scotland's Nature Agency* | *Buidheann Nàdair na h-Alba*

From: MS.MarineLicensing@gov.scot <MS.MarineLicensing@gov.scot>
Sent: 17 December 2020 10:46
To: planning.north@sepa.org.uk; hmconsultations@hes.scot; ARGYLL_OUTERHEBRIDES <ARGYLL_OUTERHEBRIDES@nature.scot>; centralvalidationteam@argyll-bute.gov.uk
Subject: Screening - Argyll and Bute Council - Iona Breakwater and Berth and Fionnphort Breakwater and Overnight Berth - Response required by 7 Jan 2021

Dear Sir/Madam,

THE MARINE WORKS (ENVIRONMENTAL IMPACT ASSESSMENT) (SCOTLAND) REGULATIONS 2017 (AS AMENDED) ("the EIA Regulations")

CONSULTATION UNDER PART 2, REGULATION 10(5) OF THE EIA REGULATIONS

Argyll and Bute Council – Iona Breakwater and Berth and Fionnphort Breakwater and Overnight Berth

Argyll and Bute Council have requested the Scottish Ministers adopt a screening opinion in relation to the above proposed works under regulation 10(1) of the EIA Regulations.

I should be grateful if you would please review the associated information here and, as required by regulation 10(5) of the EIA Regulations, provide your view as to whether the above proposed works are an EIA project as defined in the EIA Regulations.

In accordance with regulation 10(6) of the EIA Regulations, please ensure you provide your view no later than 7 January 2021.

I am aware this screening request involves the festive period and a number of holidays. If you require more time, please contact me so a longer period can be agreed.

Kind regards,

Kate

Kate Taylor
Marine Licensing Support Officer
Marine Scotland - Marine Planning & Policy

Scottish Government | Marine Laboratory | 375 Victoria Road | Aberdeen | AB11 9DB

Email: kate.taylor2@gov.scot
Website: https://www2.gov.scot/Topics/marine/Licensing/marine

COVID-19: Marine Scotland - Licensing Operations Team (LOT) is working from home and unable to respond to phone enquiries. Please communicate with LOT via email. Email addresses are MS.MarineRenewables@gov.scot for marine renewables correspondence or MS.MarineLicensing@gov.scot for all licensing queries.

Sent by email to: MS.MarineLicensing@gov.scot

Kate Taylor
Marine Licensing Support Officer
Marine Scotland
Scottish Government
Marine Laboratory
375 Victoria Road
Aberdeen
AB11 9DB

Our Ref: CEA161548

Date: 15 January 2021

Dear Ms Taylor

The Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (As Amended)
Screening Opinion - Iona Breakwater and Berth and Fionnphort Breakwater and Overnight Berth

Thank you for your email received 18th December 2020 requesting comment from NatureScot regarding the above proposal.

The proposal could result in impacts on sensitive sites, habitats and species, which could give rise to significant environmental effects. We do not currently have sufficient information to ascertain whether appropriate mitigation could be implemented to avoid any significant environmental effects occurring. Further details are set out in our appraisal below.

In summary our concerns relate to the potential impact of the development upon the following interests:

- Inner Hebrides and the Minches Special Area of Conservation – Harbour Porpoise
- Priority Marine Feature – Sea Grass (present on site)
- Priority Marine Feature – Any other found during survey work
- European Protect Species – Cetaceans

Inner Hebrides and the Minches Special Area of Conservation

The proposal lies within the Inner Hebrides and the Minches Special Area of Conservation (SAC) designated for its Harbour Porpoise interest. The site's status means that the requirements of the Conservation (Natural Habitats, &c.) Regulations 1994 as amended (the "Habitats Regulations") or, for reserved matters, The Conservation of Habitats and Species Regulations 2017 apply. Consequently, Marine Scotland is required to consider the effect of the proposal on the SAC before it can be consented (commonly known as Habitats Regulations Appraisal). The SNH website has a summary of the legislative requirements (https://www.snh.scot/professional-advice/safeguarding-protected-areas-and-species/protected-species/legal-framework/habitats-directive-and-habitats-regulations).

In our view, there is insufficient information to determine whether the proposal is likely to have a significant effect on harbour porpoise. Our concerns relate to activities associated with the construction of the proposal. In order for this to be determined, we request that the applicant provides the following information:

- A cetacean protection plan that offsets any direct and indirect impacts from construction upon harbour porpoise is submitted. Included within this plan should be full details of piling activities (acoustic levels, timing, duration etc.), bedrock drilling (if required) and other marine acoustic impacts that may lead to disturbance of this species. The document must include mitigation to offset any potential impacts upon harbour porpoise, adhering to JNCC Best Practice guidance as required. The use of marine mammal observer will be necessary and NatureScot would welcome the opportunity to review this document prior to submission.

Priority Marine Feature

The proposal may impact Priority Marine Features and therefore Marine Scotland should consider the effect of the proposal on those interests before it can be consented.

NatureScot hold a record for sea grass north of Fionnaphort. Sea grass is a Priority Marine Feature (PMF) and the Sound of Iona has been identified as an area of management consideration for this species, as part of the present PMF review. This species often grows in large beds, in shallow, sandy, coastal waters like the Sound of Iona. It's an important habitat in terms of biodiversity and its blue carbon resource. This habitat is sensitive to sedimentation associated with changes in tidal flows.

To determine the likely impact of both construction and operation upon this important feature, and any others recorded during survey work, we request the following information:

- The applicant must undertake a visual survey to establish the extent of seagrass beds, and any other Priority Marine Features recorded within areas affected by construction, dredging and increased sedimentation associated with current regime change.

- NatureScot would welcome comment on survey methodology and areas of search prior to commencement. As a minimum we would advise visual surveys over 4 transects per search area, focusing on water of 5m or shallower. These transects could consist of video/ photo images from full ROV runs, diver footage or drop down survey.

- An assessment of the potential direct and indirect impacts of the development upon recorded PMF resource and details of any mitigation proposed to offset impacts to an acceptable level. JNCC Best Practice Guidance for Piling can be found here: https://data.jncc.gov.uk/data/31662b6a-19ed-4918-9fab-8fbcff752046/JNCC-CNCB-Piling-protocol-August2010-Web.pdf

European Protected Species

Cetaceans such as common dolphin, porpoise and minke whale are often recorded around the Sound of Iona and the wider Hebridean Sea. Cetaceans are European Protected Species and any development activity that will lead to their disturbance would likely require a licence. The submission of the above requested Cetacean Protection Plan will provide reassurance that all necessary mitigation will be implemented to reduce disturbance on porpoise, and this in turn, will benefit other cetaceans as well. Further information can be found at the link below: https://www.nature.scot/professional-advice/protected-areas-and-species/licensing/european-protected-species-licensing

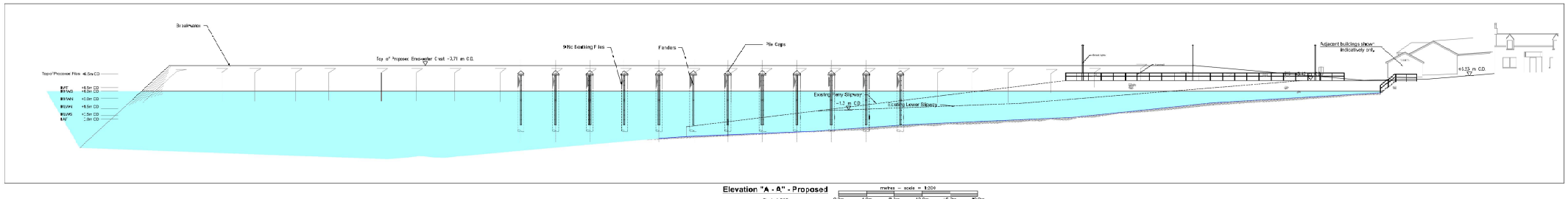
We hope this response helps inform the Marine Scotland's decision making about whether the proposal should form an Environmental Impact Assessment application.

We would welcome the opportunity to meet with the applicant to discuss the environmental information requested. If you require any further information regarding the above advice please do not hesitate to contact me.

Yours sincerely

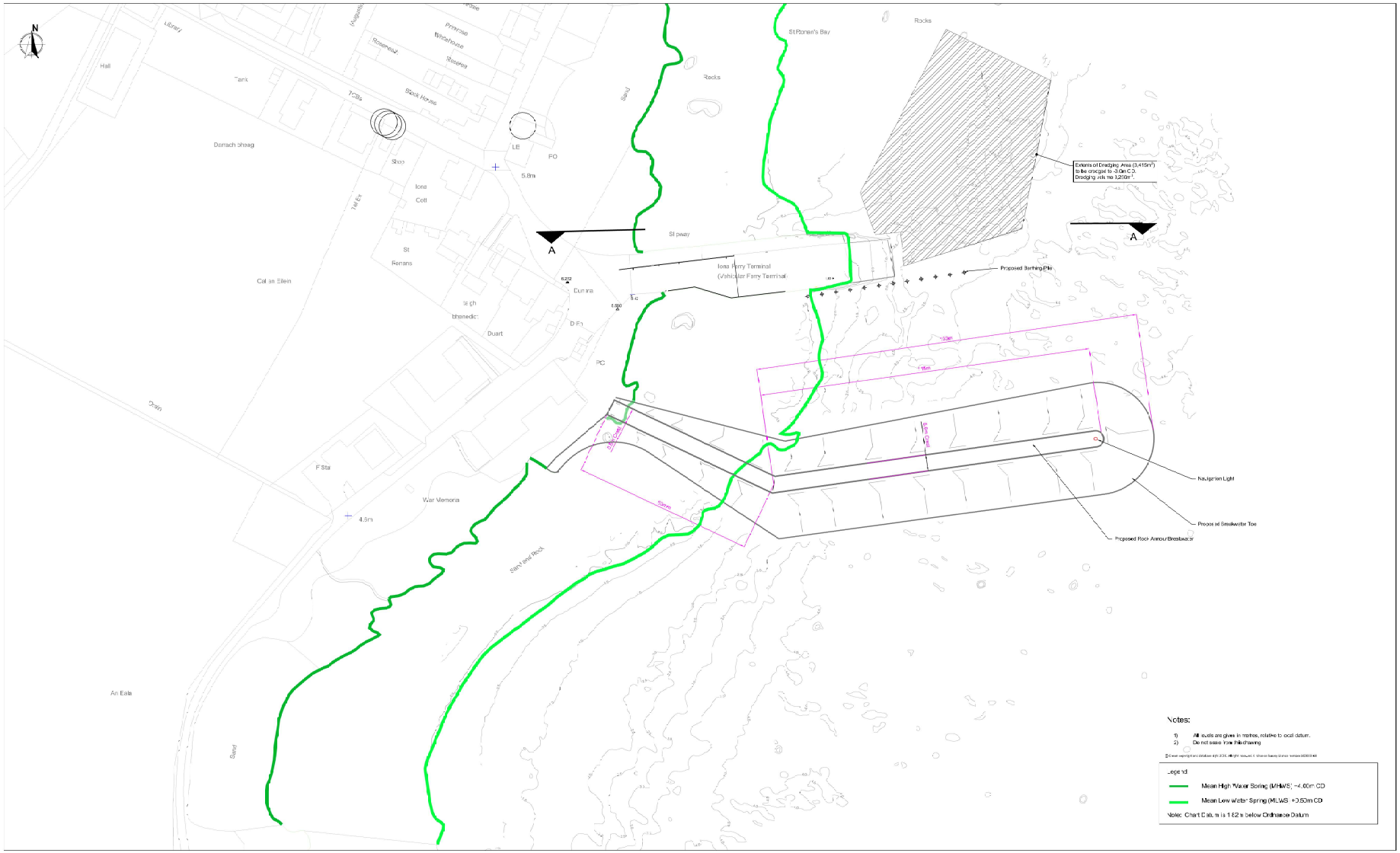
Colin MacFarlane
Operations Officer
Argyll Islands
Colin.MacFarlane@nature.scot

Appendix B – Project Drawings



Elevation "A - A" - Proposed

Scale 1:200



Plan on General Arrangement

Scale 1:500

NOTES

1. Verifying Dimensions.
   The contractor shall verify dimensions against such other drawings or site conditions as pertain to this part of the work.
2. Existing Services.
   Any information concerning the location of existing services released on this drawing, is intended for general guidance only. It shall be the responsibility of the contractor to determine and verify the exact horizontal and vertical alignment of all cables, pipes, etc. (both underground and overhead) before work commences.
3. Issue of Drawings.
   Hard copies, dwf and pdf will form a controlled issue of the drawing. All other formats (dwg, dxf etc.) are deemed to be an uncontrolled issue and any work carried out based on these files is at the recipients own risk. RPS will not accept any responsibility for any errors arising from the use of these files either by human error by the recipient, failing of un-dimensioned measurements, compatibility issues with the recipients software, and any errors arising when these files are used to aid the recipients drawing production or setting out on site.
4. Datum

Notes:

1) Do not scale from this drawing.
2) Contractor's compound to be agreed with Project Manager
3) Slipway access to be maintained.

rev	amendments	check	date

RPS Elmwood House, 74 Boucher Road, Belfast BT12 6RZ
T +44 (0) 28 9065 78 45
F +44 (0) 28 9065 3540
W www.rpsgroup.com/ireland
E ireland@rpsgroup.com

Client: Argyll & Bute Council

Project: Iona and Fionnphort Breakwater

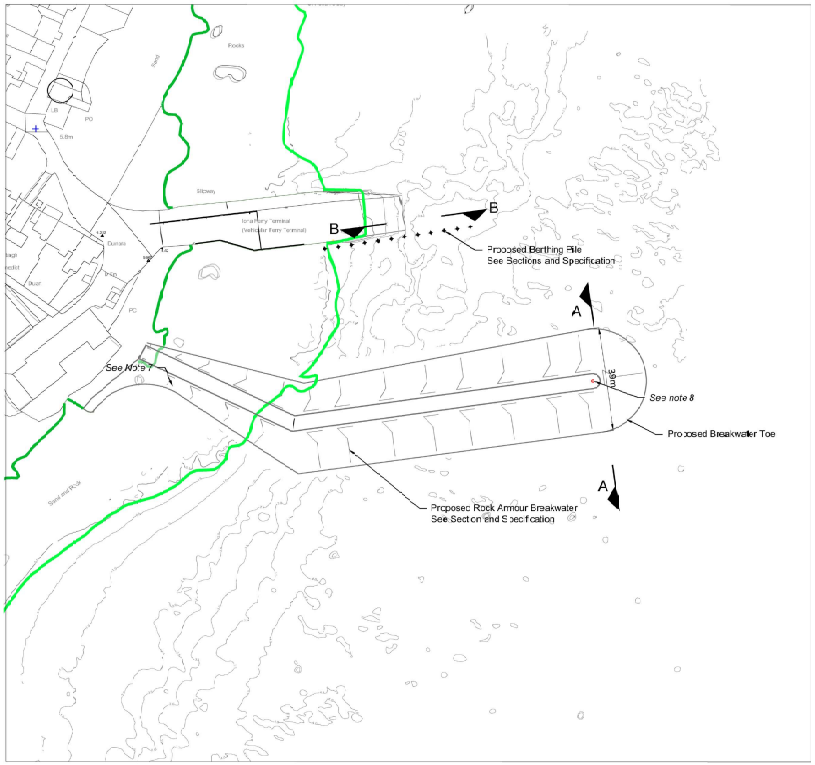
Title: Iona Breakwater and Berth Proposed General Arrangement and Elevations

Project Number	Sheet Size	Drawing Scale
IBE1828	A0	1:500

Drawing Number: IFB-RPS-XX-XX-C-DR-0005

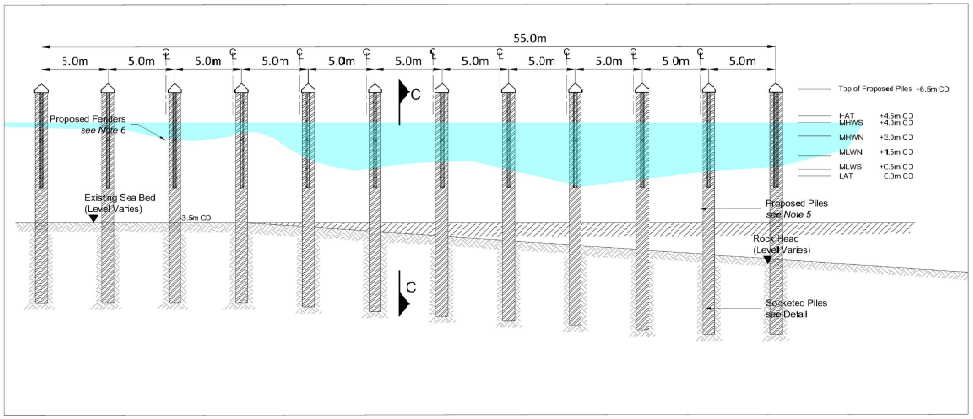
Drawn By	Status	Revision
DWR	-	-

Checked By	Approved By	Date
DH	AKB	23/4/21



Plan
Scale1:1,000

metres - scale = 1:1,000
0.0m 20m 40m 60m 80m 100m



Elevation B-B
Scale1:200

metres - scale = 1:200
0.0m 4.0m 8.0m 12.0m 16.0m 20.0m

NOTES

1. Verifying Dimensions.
   The contractor shall verify dimensions against such other drawings or site conditions as pertain to this part of the work.

2. Existing Services
   Any information concerning the location of existing services indicated on this drawing is intended for general guidance only. It shall be the responsibility of the contractor to determine and verify the exact horizontal and vertical alignment of all cables, pipes, etc. (both underground and overhead) before work commences.

3. Issue of Drawings.
   Hard copies, dwf and pdf will form a controlled issue of the drawing. All other formats (dwg, dxf etc.) are deemed to be an uncontrolled issue and any work carried out based on these files is at the recipients own risk. RPS will not accept any responsibility for any errors arising from the use of these files, either by human error by the recipient, listing of un-dimensior ed measurements, compatibility issues with the recipient's software, and any errors arising when these files are used to aid the recipients drawing production, or setting out on site.

4. Datum

NOTES

1) Do not scale from this drawing.

2) All levels are in metres relative to Chart Datum.

3) Primary Rock Armour:
   - 4.5t rocks placed as required to bring to formation.

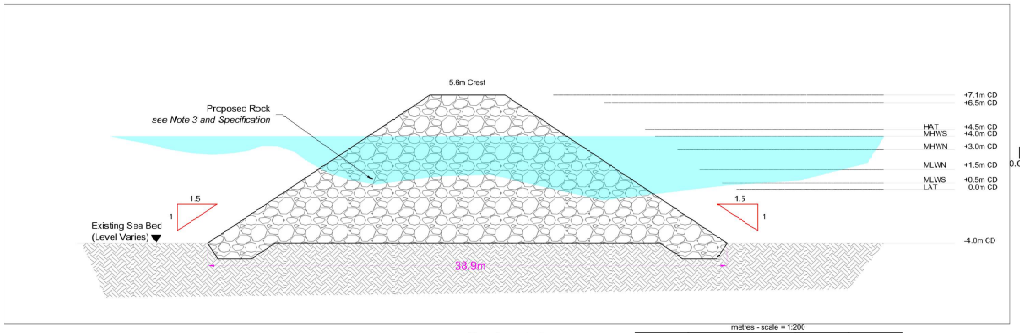
4) Berthing Facility

5) Piles
   - 914mm circular steel piles
   - Rock Sockets

6) Fenders
   - Capacity to be confirmed.

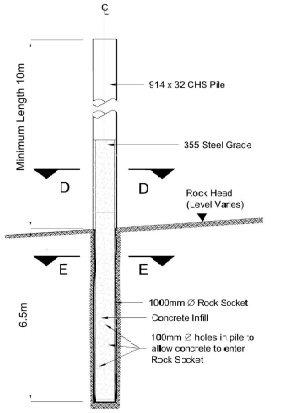
7) Galvanised Security Gate

8) The proposed breakwater will require to be marked with an Aid to Navigation (AtoN) at the most seaward extent. The breakwater should be marked with a red light flashing twice every six seconds [Fl(2)R6s 2 M] and the light should have a nominal range of 2 miles and be at least 2 metres above the surface of the breakwater.



Section A-A
Scale1:200

metres - scale = 1:200
0.0m 4.0m 8.0m 12.0m 16.0m 20.0m



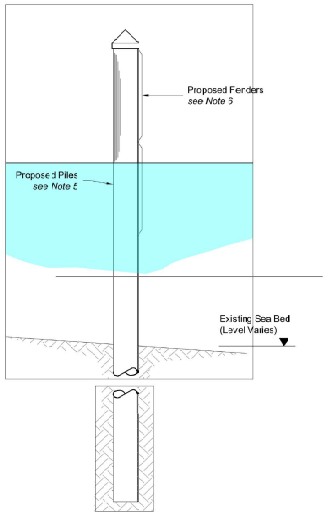
X_Sect Thro Rock Socket (Typ)
Scale1:100

0.0m 2.0m 4.0m 6.0m 8.0m 10.0m

Section D-D
Scale1:50

Section E-E
Scale1:50

0.0m 1.0m 2.0m 3.0m 4.0m 5.0m



Sectional Elevation C-C
Scale1:100

0.0m 2.0m 4.0m 6.0m 8.0m 10.0m

Legend:

- Mean High Water Spring (MHWS) +4.00m CD
- Mean Low Water Spring (MLWS) +0.50m CD

Note: Chart Datum is 1.82m below Ordnance Datum

rev	amendments	check	date

rps
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W www.rpsgroup.com/ireland
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Client
Argyll & Bute Council

Project
Iona and Fionnphort Breakwater
-

Title
Iona Breakwater and
Berth Proposed Sections and
Outline Details

Project Number	Sheet Size	Drawing Scale
BE1823	A1	1:1000

Drawing Number
IFB-RPS-XX-XX-C-DR-0006

Drawn By	Status	Revision
DWR	-	-

Checked By	Approved By	Date
DH	AKB	23/4/21

Appendix C – Sediment Analysis Results (2020)

Units	%	%	%	%	%	Mg/m3	N/A	% M/M
Method No	ASC/SOP/303	ASC/SOP/303	SUB_01*	SUB_01*	SUB_01*	SOCOTEC Doncaster*	SUB_02*	SOCOTEC Env Chem*
Limit of Detection	0.2	0.2	N/A	N/A	N/A	N/A	N/A	0.02
Accreditation	UKAS	UKAS	N	N	N	N	UKAS	UKAS
Client Reference:	**Total Moisture @ 120°C**	**Total Solids**	**Gravel (>2mm)**	**Sand (63-2000 µm)**	**Silt (<63 µm)**	**Particle Density**	**Asbestos**	**TOC**
BHI1 ES101 0.00-0.15m	24.4	75.6	0.0	98.9	1.1	2.69	NAIIS	0.24
BHI1 ES102 0.20-0.70m	25.9	74.1	2.9	93.3	3.8	2.63	NAIIS	0.26
BHI2 ES101 0.00-0.15m	23.6	76.4	10.8	88.0	1.1	2.75	NAIIS	0.21
BHI2 ES102 0.15-0.45m	20.9	79.1	36.8	61.5	1.7	2.70	NAIIS	0.13
BHI3 ES101 0.00-0.15m	24.8	75.2	0.0	99.0	1.0	2.69	NAIIS	0.20
BHI3 ES102 0.15-0.40m	22.4	77.6	0.0	98.5	1.5	2.73	NAIIS	0.16
BHI3 ES103 0.40-0.65m	24.1	75.9	0.0	98.2	1.8	2.71	NAIIS	0.18

Units	mg/Kg (Dry Weight)							
Method No	SOCOTEC Env Chem*							
Limit of Detection	0.5	0.04	0.5	0.5	0.01	0.5	0.5	2
Accreditation	UKAS	UKAS	UKAS	UKAS	N	UKAS	UKAS	UKAS
Client Reference:	**Arsenic**	**Cadmium**	**Chromium**	**Copper**	**Mercury**	**Nickel**	**Lead**	**Zinc**
BHI1 ES101 0.00-0.15m	1.3	0.14	4.5	4.4	0.06	4.6	2.7	4.7
BHI1 ES102 0.20-0.70m	1.2	0.20	5.2	4.5	0.04	5.2	4.4	11.8
BHI2 ES101 0.00-0.15m	1.2	0.14	4.9	5.2	0.02	5.3	2.9	9.4
BHI2 ES102 0.15-0.45m	2.0	0.18	8.9	13.1	0.02	13.4	3.5	18.4
BHI3 ES101 0.00-0.15m	1.3	0.14	7.6	6.2	0.02	6.3	2.6	10.4
BHI3 ES102 0.15-0.40m	0.9	0.15	7.9	4.9	0.03	6.1	3.1	12.8
BHI3 ES103 0.40-0.65m	1.1	0.17	7.4	5.0	0.03	5.8	4.2	11.2
Revised AL1 mg/kg dry weight	**20**	**0.4**	**50**	**30**	**0.25**	**30**	**50**	**130**
Revised AL2 mg/kg dry weight	**70**	**4**	**370**	**300**	**1.25**	**150**	**400**	**600**

Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
Method No	ASC/SOP/301	ASC/SOP/301	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304
Limit of Detection	1	1	1	1	1	1	1	1
Accreditation	UKAS	UKAS	UKAS	UKAS	UKAS	UKAS	UKAS	UKAS
Client Reference:	**Dibutyltin (DBT)**	**Tributyltin (TBT)**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Benzo[a]anthracene**	**Benzo[a]pyrene**	**Benzo[b]fluoranthene**
BHI1 ES101 0.00-0.15m	<5	<5	<1	<1	<1	<1	<1	<1
BHI1 ES102 0.20-0.70m	<5	7.18	<1	<1	<1	1.03	1.47	1.92
BHI2 ES101 0.00-0.15m	<5	<5	<1	<1	1.52	1.50	<1	1.15
BHI2 ES102 0.15-0.45m	<5	<5	<1	<1	<1	<1	<1	<1
BHI3 ES101 0.00-0.15m	<5	<5	<1	<1	<1	<1	<1	<1
BHI3 ES102 0.15-0.40m	<5	<5	<1	<1	<1	<1	<1	<1
BHI3 ES103 0.40-0.65m	<5	8.32	<1	<1	<1	<1	<1	1.21
Revised AL1 mg/kg dry weight	**-**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Revised AL2 mg/kg dry weight	**-**	**0.5**	**-**	**-**	**-**	**-**	**-**	**-**

Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304
Limit of Detection	1	1	1	1	1	1	1	1
Accreditation	UKAS	UKAS	UKAS	UKAS	UKAS	UKAS	UKAS	UKAS
Client Reference:	**Benzo[ghi]perylene**	**Benzo[k]fluoranthene**	**Chrysene**	**Dibenzo[ah]anthracene**	**Fluoranthene**	**Fluorene**	**Indeno[1,2,3-cd]pyrene**	**Naphthalene**
BHI1 ES101 0.00-0.15m	<1	<1	<1	<1	<1	<1	<1	<1
BHI1 ES102 0.20-0.70m	1.70	<1	1.44	<1	1.17	<1	1.46	<1
BHI2 ES101 0.00-0.15m	1.25	<1	1.83	<1	2.02	<1	<1	<1
BHI2 ES102 0.15-0.45m	<1	<1	<1	<1	<1	<1	<1	<1
BHI3 ES101 0.00-0.15m	<1	<1	<1	<1	<1	<1	<1	<1
BHI3 ES102 0.15-0.40m	<1	<1	<1	<1	<1	<1	<1	<1
BHI3 ES103 0.40-0.65m	<1	<1	<1	<1	1.16	<1	<1	<1
Revised AL1 mg/kg dry weight	**0.1**	**0.1**	**0.1**	**0.01**	**0.1**	**0.1**	**0.1**	**0.1**
Revised AL2 mg/kg dry weight	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/306	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
Limit of Detection	1	1	100	0.08	0.08	0.08	0.08	0.08
Accreditation	UKAS	UKAS	N	UKAS	UKAS	UKAS	UKAS	UKAS
Client Reference:	**Phenanthrene**	**Pyrene**	**Total Hydrocarbon Content**	**PCB28**	**PCB52**	**PCB101**	**PCB118**	**PCB138**
BHI1 ES101 0.00-0.15m	<1	<1	2660	<0.08	<0.08	<0.08	<0.08	<0.08
BHI1 ES102 0.20-0.70m	1.53	2.37	5720	<0.08	<0.08	<0.08	<0.08	<0.08
BHI2 ES101 0.00-0.15m	1.37	2.60	3090	<0.08	<0.08	<0.08	<0.08	<0.08
BHI2 ES102 0.15-0.45m	<1	1.16	1510	<0.08	<0.08	<0.08	<0.08	<0.08
BHI3 ES101 0.00-0.15m	<1	<1	2750	<0.08	<0.08	<0.08	<0.08	<0.08
BHI3 ES102 0.15-0.40m	<1	<1	1690	<0.08	<0.08	<0.08	<0.08	<0.08
BHI3 ES103 0.40-0.65m	1.59	1.89	3040	<0.08	<0.08	<0.08	<0.08	<0.08
Revised AL1 mg/kg dry weight	**0.1**	**0.1**	**100**	-	-	-	-	-
Revised AL2 mg/kg dry weight	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
Limit of Detection	0.08	0.08	0.1	0.1	0.1	0.1	0.1	0.1
Accreditation	UKAS	UKAS	UKAS	UKAS	UKAS	UKAS	UKAS	UKAS
Client Reference:	**PCB153**	**PCB180**	alpha-Hexachlorcyclohexane	beta-Hexachlorcyclohexane	gamma-Hexachlorcyclohexane	Dieldrin	Hexachlorobenzene	p,p'-Dichorodiphenyldichloroethylene
BHI1 ES101 0.00-0.15m	<0.08	<0.08	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BHI1 ES102 0.20-0.70m	<0.08	<0.08	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BHI2 ES101 0.00-0.15m	<0.08	<0.08	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BHI2 ES102 0.15-0.45m	<0.08	<0.08	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BHI3 ES101 0.00-0.15m	<0.08	<0.08	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BHI3 ES102 0.15-0.40m	<0.08	<0.08	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BHI3 ES103 0.40-0.65m	<0.08	<0.08	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Revised AL1 mg/kg dry weight	**-**	**-**	-	-	-	-	-	-
Revised AL2 mg/kg dry weight	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
Method No	ASC/SOP/302	ASC/SOP/302
Limit of Detection	0.1	0.1
Accreditation	N*	UKAS
Client Reference:	p,p'-Dichorodiphenyltrichloroethane	p,p'-Dichorodiphenyldichloroethane
BHI1 ES101 0.00-0.15m	<0.1	<0.1
BHI1 ES102 0.20-0.70m	<0.1	<0.1
BHI2 ES101 0.00-0.15m	<0.1	<0.1
BHI2 ES102 0.15-0.45m	<0.1	<0.1
BHI3 ES101 0.00-0.15m	<0.1	<0.1
BHI3 ES102 0.15-0.40m	<0.1	<0.1
BHI3 ES103 0.40-0.65m	<0.1	<0.1
Revised AL1 mg/kg dry weight	**-**	**-**
Revised AL2 mg/kg dry weight	**-**	**-**