FIONNPHORT BREAKWATER AND OVERNIGHT BERTHING FACILITY

SCREENING OPINION UNDER, REGULATION 10 OF THE MARINE WORKS (ENVIRONMENTAL IMPACT ASSESSMENT) (SCOTLAND) REGULATIONS 2017 (as amended)

14 AUGUST 2020

Report Title	**SCREENING OPINION UNDER, REGULATION 10 OF THE MARINE WORKS (ENVIRONMENTAL IMPACT ASSESSMENT) (SCOTLAND) REGULATIONS 2017 (as amended)** **14 AUGUST 2020**
Report No.	00040-33/SR01-01
Job	Fionnphort Breakwater and Overnight Berthing Facility

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Revision No.	Comments	Checked by	Approved by	Date
A	Revised to separate Fionnphort site Screening Opinion from Iona Site Screening opinion as per Planning requirement and addressing Marine Scotland queries and stakeholder responses.	ES	ES	23/09/2020
B	Addressed additional Marine Scotland queries	ES	ES	28/10/2020

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The marine licensing requirements as Part 4 of the Marine (Scotland) Act 2010:

The proposed Breakwater and overnight Berthing Facilities works includes maritime activities and the following report presents the requirements in the Part 2, Regulation 10.

SCREENING OPINIONS

The requirements for requesting screening opinions as set out in Regulation 10 are presented below.

1.0 Site Location and Description

Extract of ©ordnance survey – Sound of Iona

1.1 Fionnphort:

Fionnphort Ferry Terminal consists of a pier and steep slipway. Fionnphort is the principal port of the Ross of Mull. The National Grid Reference for the site is NM301232.

Fionnphort is a small village located on the South West corner of the Isle of Mull. It is located approximately 35 miles west of Craignure, which is the main ferry port on the Isle of Mull.

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 SW.

The tidal range is 3.5m and the site is exposed to waves coming primarily from the South.

2.0 Existing Slipway and Pier

Existing Arial view of Sound of Iona

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:

- Caledonian MacBrayne;
- Crab/fishing vessel operators;
- Leisure boat operators;
- Private boat owners;

Caledonian MacBrayne operate the MV Loch Buie between Fionnphort and Iona. This is a 30m long vessel with a draught of 1.6m.

Current Levels are shown in drawing 00040_33_010 in Appendix A. The proposed pocket for dredging to -3.0m Chart Datum is also shown.

Tidal information is shown in Table 1 below:

Constant	Level to Ordnance Datum (OD)	Level to Chart Datum (CD)
Highest Astronomical Tide (HAT)	+2.68m OD	+4.50m CD
Mean High Water Springs (MHWS)	+2.18m OD	+4.00m CD
Mean High Water Neaps (MHWN)	+1.18m OD	+3.00m CD
Ordnance Datum (OD)	0.00m OD	+1.82m CD
Mean Low Water Neaps (MLWN)	-0.32m OD	+1.50m CD
Mean Low Water Springs (MLWS)	- 1.32m OD	+0.50m CD
Lowest Astronomical Tide (LAT)	-1.82m OD	0.00m CD
Chart Datum (CD)	-1.82m OD	0.00m CD

Table 1

3.0 Background and key decisions to date

The slipway has no overnight berthing available. Ferry operators are required to berth the vessel at Bull Hole, which requires access via dinghy at the start and end of operations each day. There are safety risks associated with accessing the ferry via dinghy, particularly during winter months. The slipway has limited protection from southerly and westerly wave action. This reduces the time available for safe landing of the ferry vessel at the pier. It can also result in excessive movement of the vessel at the berth, making landing and holding of the vessel in position difficult. There is restricted berthing length at the existing pier causing the ferry to overhang.

The infrastructure at Fionnphort is a slipway with a relatively small aligning structure. The structure is not long enough and is suitable for a vessel half the size of the current ferry, MV Loch Buie. The ferry cannot be berthed at the pier overnight and as a result the ferrymen must make a journey to and from the ferry by dinghy, morning and night. There are certain weather conditions where the ferry would be able to sail but the ferry men are unable to access the ferry by dinghy and so service is disrupted. The MV Loch Buie is the only Caledonian MacBrayne ferry where step on access to the ferry is not available (noted in the Scottish Ferries Plan)

The result of inadequate 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 breakwater and an overnight berth for the ferry at Fionnphort. 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.

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. Arch Henderson presented 7 separate options for the development, which comprised cofferdam structures, sheet piled walls, suspended decks, and rock armour revetments/breakwaters. The report recommended that the most cost effective solution is a cofferdam option at either Iona or Fionnphort. The options considered are all summarised below and are discussed in depth in the report included as Appendix C.

In 2019, Argyll and Bute Council appointed ByrneLooby to carry out a feasibility study of the proposed structures. In the opinion of ByrneLooby, the solutions proposed did not provide sufficient protection for the overnight berthing of the ferry. 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. ByrneLooby's proposed development at Fionnphort comprises a breakwater development, overnight berth, berthing monopile, and minor dredging works. Risks to passengers will be reduced and the risks to ferry operators will be significantly reduced as dinghy access to Bull Hole will no longer be required. The options considered are all summarised below and are discussed in depth in the report included as Appendix D.

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 Mull - to assess how new berthing facilities would impact the morphodynamics in the Sound of Iona and determine areas where significant sedimentation or erosion would occur. This report is included as Appendix E.

3.1 Design Options

Better definition of the height of the proposed structures, before the brief is submitted to consultants, should be included. References should include the previous JONSWAP wave data produced by Arch Henderson and any previous proposals for a breakwater.

1. A return period of 10 years (1.4m.) on the Fionnphort North breakwater, so define this 1.5m. above MHWS
2. A return period of 200 years (1.7m.) South of Fionnphort will require a breakwater at least 2.5m above MHWS. Arch Henderson have defined this height as 10.5m above Chart datum, which is 6m above MHWS. It may be possible to reduce this height if the 2.5:1 slope is reduced but costs incurred by the quantity of rock armour should be considered.

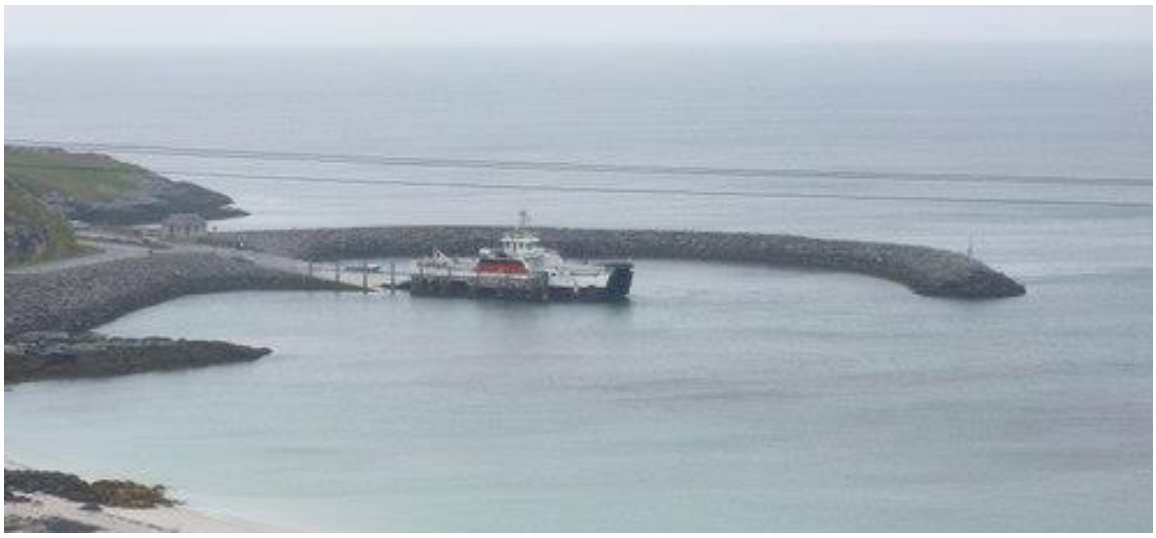
A breakwater structure which attaches to the Mull shore a modest distance to the south of the existing slipway and mole would improve conditions for landing as well as providing the required overnight berth. Keeping this distance from being too far would also shorten the required length of the access path. This structure could be composed principally of rock armour type boulders with an additional protruding facility to provide a face for the vessel to lie alongside. Provision would need to be made for securing warps/ropes which would need to accommodate tidal movements. Crew access would have to be provided from the shore. These provisions should also take into account possible future, and most likely larger, vessels allocated to the route.

There should be protection to the overnight berth from northerly winds as well as the obvious southwest and westerly quarters, this could mean a turn in the structure, a curving structure or there could be an additional breakwater to the north which could if well designed offer multiple benefits to Fionnphort's whole spectrum of existing and future users.

In order 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. To achieve this 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 experienced at present.

Existing vessel moorings to the north of the existing slipway and mole would need to remain useable. Fionnphort would benefit considerably by the availability of additional alongside berthing to relieve boat congestion and ease traffic flow and safety to embarking passengers.

The following example of the breakwater and overnight berth at Eriskay shows a model which could be adapted to provide the infrastructure we need in the Sound of Iona



3.2 Options Considered:

Arch Henderson 2015

- Option 1 - double-wall cofferdam structure located at the end of the existing pier.
- Option 2 - large L-shaped double-wall cofferdam structure south of the existing slipway.
- Option 3 - large breakwater south of the existing slipway.
- Option 4 - large breakwater south of the existing slipway with a suspended RC deck on tubular piles.

ByrneLooby 2017:

- Option 1 - a circa 40m extension to the existing pier, and the development of a circa 70m rock armour revetment on the seaward side of the pier.
- Option 2 - a Rock Armour Breakwater with a crest length of circa 140m located approximately 125m south west of the existing slipway.
- Option 3 - a breakwater which extends circa 10m in a north westerly direction from the head of the existing pier. A monopile berthing pier, 40m in length immediately north east of the existing slipway and a new 10m wide reinforced concrete slipway, circa 62m in length, to the east of the existing slipway.
- Option 4 - 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. 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.
- Option 5 - a variation on Layout 4, with the overnight berth directly connected to the existing rock outcrop in the lee of the first leg of the breakwater.

3.3 Preferred Option

The preferred option being taken forward by Argyll and Bute Council is ByrneLooby Option 4.

3.3.1.1 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.

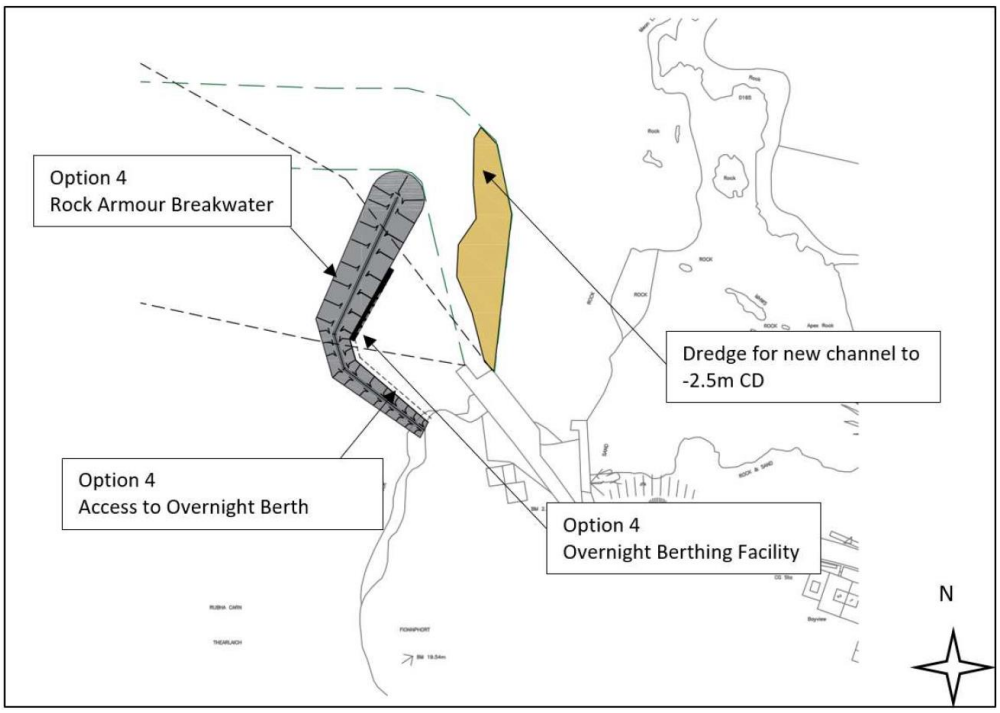
3.3.1.2 Overnight Berth

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.

3.3.1.3 Dredging

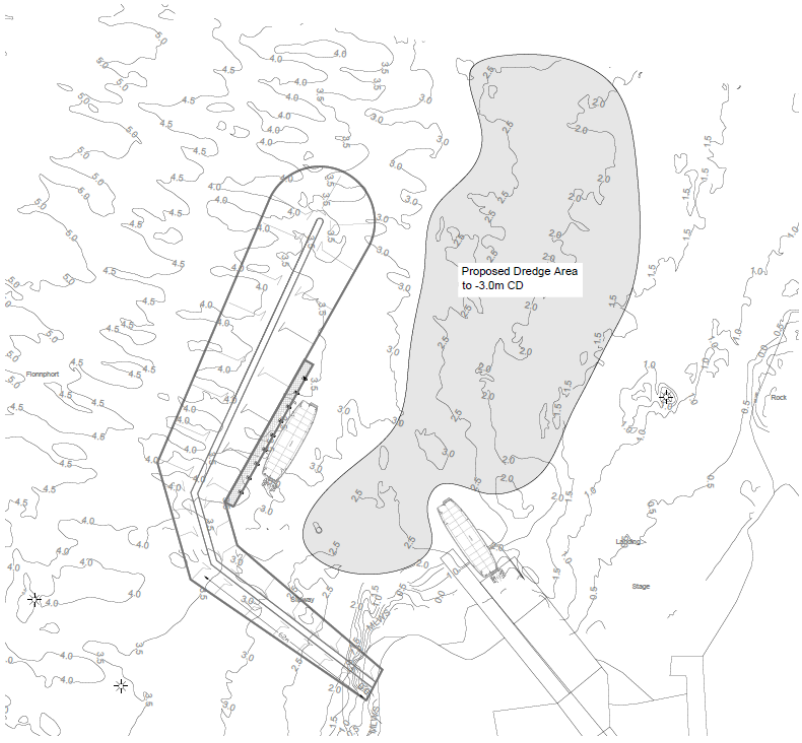
In order to accommodate the new navigation channel requirements, some dredging works will be required, however these will be minor in nature and comprise overburden dredging only.

3.3.1.4 Plan of Proposed Breakwater, Overnight Berthing Facility and Dredging at Fionnphort



Byrne Looby Option 4.

Additional Dredge Depth is proposed to be to -3.0m CD as per drawing below



Proposed Dredge Depth -3.0m CD

4.0 Technical Information for Overnight Berth and Breakwater

The primary objective is to achieve two outcomes,

- An overnight berthing facility for the Cal-Mac ferry which is accessible on foot for the crew, safe to work and secure for the vessel in all conditions, and which, by its construction, creates protection for the exposed landing slip at Fionnphort and enables additional alongside berthing to be created at the underdeveloped and overused existing facility.

Significant factors affect both locations which have a bearing on the successful solution. Sediment transport, geotechnical and wave height and character studies have been undertaken. Conservation and environmental impact studies are likely to be required, though the present report is the request on whether this will be required or not. The Sound of Iona has Maerl beds and a rich variety of marine wildlife and was formerly designated a Marine Consultation Area.

Submarine cables cross the sound to the south of Fionnphort. These are possibly completely obsolete now as communications are principally by microwave link.

At both sides of the sound the vessel berths by landing end on to the slip with the weight of the lowered ramp's friction on the slip creating the security of its ability to hold the berth, that is, there are no warps put ashore.

Fionnphort is exposed to swell particularly from the southwest and west. Wave height and character can be affected by the transition from the deeper waters outside the sound to the shoal water within the sound and by opposing forces of tide and wind or swell. Tidal streams can run at around 2.5kts at springs. The tidal range is in excess of 4 metres at springs. The depth of water is relatively shallow. Strong winds can affect berthing in Fionnphort when from anything west of southwest through to west and also to some degree from the northwest and north-north-west.

The visual impact of these structures will also affect their public profile and the ability to produce a design with the minimum aesthetic impact will improve the chances of the design passing not only local planning but worldwide scrutiny.

4.1 Material

4.1.1 Rock Armour

The volume of rock armour required for the proposed breakwater is 56,000m^3; 41,000m^3 of which is below MHWS.

4.1.2 Piles

The total tonnage of piles including rock sockets required for the proposed overnight berthing structure is 77t.

4.1.3 Dredging Volume

The approximate dredge volume is 7,800m^3. It is proposed that this is carried out by suction dredge, with the material being deposited at the nearest licenced site, Port Ellen, Islay (MA030). Prior to submission of a Licence for Dredging, sampling & testing is in the process of being undertaken to gather information on any possible levels of contamination. This matter will be dealt with in the Dredging and Sea Deposit Licence application.

4.1.4 Transport 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.

4.2 Design Life

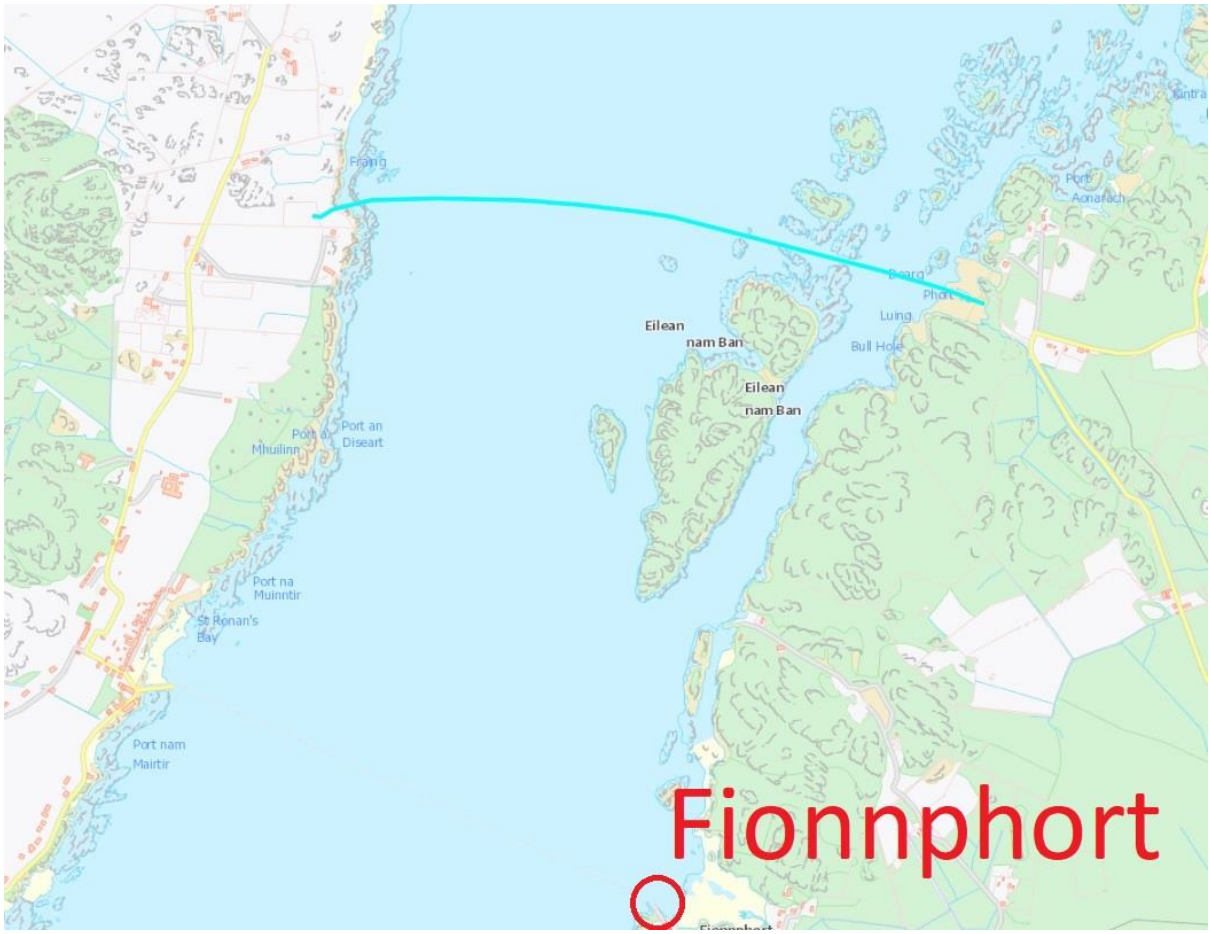
The design life of the structure is 120 years in accordance with the UK National Annex to BS EN 1990:2002, Category 5.

4.3 Duration of Works

The duration of the works at Fionnphort is estimated to be 52 weeks. 2 years if considered to be running in parallel with Iona Breakwater and Berthing Facility works. At this stage it is proposed to undertake these works at Fionnphort and the works at Iona in the same, single project timescale. The two projects are however being progressed separately at the same time; this means that delays in one of the projects will not affect the other. 52 weeks is expected to be the duration for works at Fionnphort in either scenario.

4.4 Services

Mains Electric is known to be present well to the north of the site as shown in the map below and the proposed works will have no interference with these services.



Scottish Water have confirmed that they have no apparatus that would be affected by the proposed works.

5.0 Outline Method Statement

The outline method of construction is likely to be:

- Site welfare facilities and site compound is 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. Therefore no impact is expected.
- 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 (1 vessel envisaged for this activity to both deliver piles to site and to install/drive piles. Piling activity will be from the west side of the proposed pile locations – the existing ferry slipway is approx. 70m away, therefore piling operations will not encroach on the movements 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 west & south faces 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 would be expected to involve in the region 75 movements. This will be unloaded from the south face) Whilst the installation of the breakwaters 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 70m from both ferries / tourism / fishing slipways, therefore rock armour activities will not encroach on the movement of ferries or other vessels.
- Access walkway for crew formed on breakwater & overnight berthing piles,
- Services installed along walkway to serve ferry when berthed and installation of fenders, bollards, safety ladders and security gate,
- Formation of the on-shore footpath to access the overnight berth from the existing pier,
- All works tested and commissioned in accordance with the specification,
- Contractor demobilisation.

It should be noted that a Construction Environmental Management Plan (CEMP) which will include Traffic & Navigation Management Plan (TNMP) and a Method Statement (MS) will be prepared by the successful Contractor and issued by Argyll and Bute Council. The Planning Schedule of Conditions should include a requirement for a CEMP, TNMP & MS prior to construction commencing in the usual manner.

6.0 Additional Information on Planning Consent

Consultations were undertaken by ByrneLooby in August 2017 and March 2019 and are described in ByrneLooby Report (Appendix D) Section 4. In summary, following these two consultations:

> *ByrneLooby presented Fionnphort Option 5 and Iona Option 1A/1B. These were proffered by ByrneLooby as the most viable layouts for each site, taking into account wave attenuation performance, capital costs and potential environmental impacts.*
>
> *Additional outputs/queries from these consultations included:*
>
> - *Berthing piles requirement to the south of Iona slipway;*
> - *Extension of berthing face at Fionnphort slipway to allow for larger vessels;*
> - *Provision of a second overnight/emergency berth at Fionnphort;*
> - *Clarification on height of proposed breakwater structures.*

A pre-consultation report was received on 9th January 2020 from the Planning Department.

It should be recognised that the discussions undertaken were informal and that the following are initial comments that may change once a formal application is made. The main points are summarised as follows:

- The planning department has submitted a pre-application advice report.
- The planning department advised that a Screening Opinion would be required to establish whether or not an EIA would be required. This has been issued on 14th August 2020 to the planning department and to Marine Scotland.
- A Statutory Public Consultation (SPC) is potentially unlikely to be required. The requirement depends on the nature and scale of the project. The development area is 0.5ha at Fionnphort, which is less than 2ha so may not automatically trigger an SPC.
- A&BC Planning considers that security should be considered, such as fencing, to prevent unauthorised access to the breakwaters and overnight berth.

The following consultees have been consulted. Notification letters were sent along with a set of drawings to all consultees for additional pre application advice prior to the submission of your application. It is noted that it may be necessary to involve consultees who are listed below as a formal application progresses. Copies of the notifications are appended to Appendix F.

- Scottish Natural Heritage (SNH)
- Argyll and Bute Council Biodiversity Officer
- Scottish Water
- Argyll and Bute Council Environmental Health
- Flood Risk Assessor
- Scottish Environmental Protection Agency (SEPA)
- Argyll and Bute Council Roads
- Health and Safety Executive
- West of Scotland Archaeology Service (WOSAS)
- Historic Environment Scotland (HES)
- Argyll and Bute Marine and Coastal Development Officer
- Argyll and Bute Built Heritage and Conservation Officer
- Marine Scotland
- Crown Estate
- Northern Lighthouse Board (NLB)

- Caledonian Maritime Assets (CMAL)
- Scottish Fire and Rescue Service

Documents to be included with Planning Application:

- Drawings
- Specification
- Screening Opinion
- Design and Access Statement
- All surveys and studies undertaken up to date
    - Topographical Survey
    - Bathymetric Survey
    - Ground Investigation
    - Wave Modelling
    - Sedimentation Modelling
    - Feasibility Studies
- Stakeholder Notifications
- Ownership Notifications

Possible Supporting information that may be required for this application:

- Construction Environmental Management Plan (to be prepared by the successful Contractor)
- Traffic Management Plan (to be prepared by the successful Contractor)

7.0 Planning Policy and Environmental Designations

This section sets out relevant planning policy and details of environmental designations.

These policies have been outlined to provide context and to set the project in the context of local and national planning policy.

National planning policy is set out in Scottish Planning Policy (SPP). The relevant policy for Argyll and Bute comprises of the Local Development Plan (LDP) which was adopted in March 2015 and the Local Development Plan Proposed Supplementary Guidance (SG) which was adopted in June 2015.

The policy SG LDP TRAN 8 (Piers and Harbours) provides specific detail on LDP4 (Supporting the Sustainable Development of our Coastal Zone and Policy). SG LDP TRAN 8 states that 'development of new harbour infrastructure is to be encouraged provided that such development promotes the retention or expansion of commercial marine uses'. It also states that 'whilst economies of scale have reduced activity at some smaller piers and harbours they are still considered to have potential for leisure, recreation and tourism uses, especially with regard to small scale pleasure/yacht craft'.

SPP notes that increasing sustainable economic growth is the overall purpose of the Scottish Government. SPP states that this includes creating a supportive business environment and infrastructure development.

SPP states that improving the natural environment and the sustainable use of natural resources is a key national priority. The preservation of National and European designated sites is a duty of planning authorities and other public bodies.

SPP notes that the importance of archaeological remains should be taken into consideration when determining planning applications, and where preservation in-situ is not possible, appropriate excavation, recording, analysis, publication and archiving should be undertaken before or during works.

7.1 Designations

The Historic Environment Scotland (HES) and Scottish Natural Heritage (SNH) interactive website portals were accessed in order to identify potential designations in the vicinity of the site.

There are no listed buildings on or immediately adjacent to the slipway.

The Sound of Iona is within the **Inner Herbrides and the Minches Special Area of Conservation**.

Scottish Natural Heritage have identified the Sound of Iona as a **Marine Consultation Area.**

The maritime activities for the proposed rock armour breakwaters give an approximate land take of 0.5ha below Mean High Water Springs. It is unlikely that small scale maritime activities will have any notable widespread impacts on wildlife across the Sound of Iona.

7.2 Effect on designated sites and features

We have consulted with Argyll and Bute Council Biodiversity officer and the following advice has been given:

Designation: *SAC- National designation and is part of the Marine Protected Area*

- the whole coastline is designated as this.

The SAC is notified for Harbour porpoise Phocoena phocoena.- for any sightings, a watching brief and pre- construction checks will need to be carried out prior to works commencing as appropriate, as any drilling can disturb this protected mammal.

Protected Species Survey:

The coastline is noted for Otter- Lutra lutra (European Protected Species) and ground nesting birds.

In terms of survey work, I would recommend an Otter survey to determine the presence of Otter, holts, couches, lying–up areas spraint and any obvious paw prints. The report should provide mitigation advice on buffer zones and pre- construction start checks.

If the work is scheduled during the ground nesting season- (April-August)- the later date is dependent on the summer weather and number of broods, a bird survey will be necessary with mitigation.

All surveys to be carried out by a suitable qualified person at the optimum time of year and include mitigation.

Sea bed survey: as the area is within the SAC and MCA, a sea bed survey is recommended- video assessment. I ask that you consult Lorraine Holdstock- Marine Officer on this subject..

We are in the process of obtaining a Protected Species Survey covering this requirement.

SEPA have also advised that it is unlikely that a Controlled Activities Licence (CAR Licence) would be required from SEPA for the proposed works, but that a Waste Management Licence may be necessary if any of the dredging materials have to be deposited on land – this will not be the case however, as we will dispose of the dredged material at the nearest licenced disposal site, Port Ellen, Islay (MA030). A separate Dredging Licence Application is in the process of being prepared.

SEPA would be unlikely to object to the proposed works under the Town and Country Planning (Scotland) Acts if a full application was made. They do, however, recommend consultation be undertaken with Nature Scot (formerly SNH) with regards the protection of marine wildlife, including any European Protected Species and designated sites which might be affected.

To mitigate works in consideration of the site's designations (in reference to Harbour Porpoise, Basking Sharks and Minke Whale), it is proposed that piling works are undertaken outwith the months of July to September to ensure plankton feeding species present in waters at those times are not disturbed. No impact piling or blasting is proposed, the rock sockets will be installed by coring the rock in advance – the main noise would be from the generator on the top of the barge - therefore impulsive noises are not expected to be generated.

9 piles at a rate of 2 days per socket equates to around 2 weeks of piling works. A large rotary bored piling rig produces a weighted sound pressure level of 83dB at 10m – this is however larger than the proposed rig and the SPL will be less. A 50kVA diesel driven generator (power supply for hydraulic piling rig) produces a weighted sound pressure level of 64dB at 10m.

It is not anticipated that rock installation to create any significant noise to disturb sea life as the works are proposed near to the shore line and will be installed with a grabbing plant from the barge such that the rock will be placed rather than dropped, so minimising noise, therefore no impact on larger sea life travelling along the sound. Beneficially, the breakwaters will provide housing for otters, stones for them to sunbathe on as well as hiding/procreation places for them.

On vessel movements, it is anticipated that materials will be delivered via sea but the installation of the piles and the rock armour will be off a barge spud legs such that only it's relocation will involve any movement.

7.3 Summary

The national and local planning policies above have identified that sustainable future growth is a key priority for Iona and Mull. An important aspect of sustainable growth is the protection of natural and archaeological resources in accordance with designations. It has been shown that the proposed development has the potential to provide improved lifeline service provision, and economic benefits via tourism and the expansion of commercial users.

It should be noted that Planning Schedule of Conditions should include piling works being restricted to outwith the months of July to September.

8.0 Land Use

The existing setting is predominantly maritime in nature, and therefore the land use will have temporarily minimal impact from a landscape and visual perspective.

The area of the proposed development is 9,000m^2. Discussions are underway for the 4,360m^2 below MLWS to be leased from The Crown Estate (Bidwells).

8.1 Construction

Argyll and Bute Council will negotiate with all appropriate landowners in relation to land access.

There will be minimal intrusion on the sea bed associated with construction of the breakwaters and overnight berthing. During construction, space will be required on or near to the pier to provide general access for machinery, material deliveries and laydowns, contractor compound and contractor's staff.

8.2 Operational

Surrounding land uses are predominately influenced by the main development. It is therefore considered that proposed facility and its associated access structure are compatible with the surrounding area.

9.0 Landscape and Visual Intrusion

The existing setting is predominantly maritime in nature, and therefore the land use will have temporarily minimal impact from a landscape and visual perspective.

The Sound of Iona across which the ferry service between Fionnphort and Iona operates is currently open water between the two slipways, with no other large marine infrastructure nearby.

9.1 Construction

Activities during construction will be visible from nearby properties at both Iona and Fionnphort and from the sea for a long period of time.

9.2 Operational

The construction of a breakwater and overnight berthing facility will permit a more reliable ferry link between Iona and Mull. The visual impact of the proposed breakwaters should be considered alongside the anticipated improvements to the ferry link able to be provided to the community.

To ensure that the visual impact of the schemes is reduced to the minimum that can be achieved, mitigation measures will be implemented. Potential mitigation may include:

- Designing breakwaters with natural rock sympathetic to the surrounding landscape.
- Ensuring the breakwaters are constructed to the minimum required height above highest tidal levels whilst considering Argyll and Bute Council's policy a return period of 1 in 200 years

10.0 Ecology, Habitat and Species

The overall impact of the Ground Investigation activities on ecological species and habitats is expected to be insignificant.

In many areas porpoises are present throughout the year but there do seem to be seasonal changes in distribution and sightings rates, most likely linked to prey availability and the location of suitable breeding and calving habitat. There appears to be a pattern of peak harbour porpoise numbers off the shelf in May and June, followed by a peak in numbers on the shelf two months later, is thought to relate to calving. These aggregations, occurring in August-September, have been noted for several coastal locations around the UK and coincide with the peak final months of the mating season for harbour porpoises.

Indeed, Calves are seen between February and September in UK waters, with a peak in June.

The relevant stakeholders have been notified of the proposals. Potential impacts will be reduced to acceptable levels though appropriate mitigation developed through consultations and respective responses. The ground investigations were undertaken in 2017.

Relevant stakeholders have been notified of the proposals and provided with proposed layout drawings. Stakeholders included the Royal Society for the Protection of Birds (RSPB), SEPA and SNH.

10.1 Construction

10.1.1 Loss of Habitat above tidal areas

The construction requires dredging, and therefore inter-tidal works are necessary; however sublittoral habitat are not anticipated to be lost with the dredging operations. Pile construction is also considered but is not expected that disruption caused by the piling will significantly impact on any habitats or species.

The overall impact of the proposed development is expected to be small and best management practices will be implemented during construction.

10.1.2 Birds

In support of the planning application for development at both sites, a Screening Opinion was submitted to the Planning Department and Marine Scotland. It is expected the comments on whether a bird survey will be required as part of any potential Ecology Survey. The survey will identify any most significant birds present in the site and any form of mitigation if necessary.

10.1.3 Otters

Otters are legally protected species. In support of the planning application for development at both sites, a Screening Opinion was submitted to the Planning Department and Marine Scotland. It is expected the comments on whether an otter survey will be required as part of any potential Ecology Survey. The survey will identify any most significant birds present in the site and any form of mitigation if necessary. However, as the breakwater will be constructed from land to sea or vice-versa it is concluded that the potential impact would be temporary and have a negligible impact on the permanent construction as this will offer sun-bathing and housing opportunities for otters.

10.1.4 Fish

Iona and Fionnphort are recognised fishing grounds, however the proposed structures are to support the ferry operations and it is anticipated that due to this and other sea borne in the area no impact is expected on fishing resources from the proposed development during construction.

Seals and other sea mammals are most likely also present at the site. It is anticipated that there will be some degree of disturbance to these during construction however, overall impacts are not considered significant.

10.2 Operational

10.2.1 Loss of Habitat above tidal areas

The re construction and introduction of additional rock armour is not expected to cause significant disturbance due to the existing regular marine traffic in the area.

10.2.2 Birds

Any additional noise generated by the proposed development is not considered significant when compared to existing vessel movement along the Sound of Iona.

Any potential mitigation measure will be detailed in any potential Ecological Report if necessary.

10.2.3 Otters

Any impacts would be temporary and have a beneficial impact on the otters in the long term.

10.2.4 Fish

No impact is expected on fishing resources from the proposed development during the operational phase.

10.3 Summary

The overall impact of the proposed facility on ecology, habitats and species is expected to be neutral, however, responses from the relevant stakeholders are expected shortly which will identify any potential impacts. The potential Ecological Report will assist on any potential mitigation.

Best management practices will be implemented during construction and any residual impacts will be minimised by appropriate mitigation measures, developed through consultation with the stakeholders.

11.0 Water Environment/Hydrology and Flood Risk

The potential pollution risks to water quality will be minimised during ground investigation through the production and compliance with a Safety and Health Plan and method statements. The pollution risk is likely to have no more impact them the existing ferries operations. Pollution is a particular concern as the Minch is a busy shipping lane.

11.1 Construction

Water Quality

There are a number of potential pollution risks associated with construction due to the presence of vehicle oils and lubricants, site waste and debris on the contractors' facilities. These potential pollution risks will be minimised through the implementation of best practice procedures throughout construction.

Prior to construction a Construction Environmental Plan (CEMP) will be produced by the appointed contractor and submitted to Marine Scotland and SEPA. The CEMP will include instructions on good construction practices, and a draft schedule of mitigation and emergency response measures. This will include detailed information on relevant SEPA Pollution Prevention Guidelines (PPGs).

There is also some potential for localised sediment disturbance and dispersion during the periods of dredging, piling and construction of the breakwaters. The size of the impact is likely to be localised due to the small land take areas (0.7ha) of the maritime works below mean high water springs. A set of suitable mitigation and response measures will be included in the CEMP in order to minimise the short term impact of sediment movement during these activities.

11.2 Operational

11.2.1 Water Quality

The Sediment Study conducted by JBA in 2020 (Appendix E) notes that construction of the breakwaters will result in reduced wave action in the lee of the structures and increase the risk of deposition within the berthing facilities and approach channels. Accumulation of sediment along the south sides of the breakwaters increases in all of the event tests conducted. This deposition is predicted to be localised and unlikely to affect navigation and berthing of vessels in the locations estimated by the model. The model estimates sediment deposition during the winter period of up to 1m along the south of the breakwater at Fionnphort.

11.2.2 Flood Risk

This is a scheme to protect ferries, rather than an on-land flood protection scheme therefore flood risk is not applicable. However, the proposed works show the top of the breakwaters at circa 1m above the 1 in 200 year still water level – which is in accordance with the Council's Flooding Policy.

We have also consulted with our Flooding Advisors, who agree and respond as follows:

> *It is understood that the proposed breakwaters and overnight berth are not for flood protection but rather protection of the ferries from rough seas. The plans show that the top of the piers will be circa 1 m above the 200 year still water level. The development is, in principle, acceptable from a flood risk standpoint. We would recommend consultation with Marine Scotland as they may be able to provide further comment.*

12.0 Geology & Hydrogeology

The proposed site will not have an impact on any features of geological interest or groundwater abstractions.

Boreholes are in the process of being carried out to support a Marine Licence Application through Maine Scotland for the works. Laboratory testing of samples for chemical analysis shall be carried out which will indicated whether there are any contamination present in the locality.

The proposed sites are not designated for its geological interests and therefore will be no impact on any features of particular geological interest.

No groundwater abstraction points will be affected by the proposals.

13.0 Waste

The generation of waste will be minimised onsite by the contractor during the ground investigation through the provision of adequate disposal facilities and guidance to inform staff members on their location.

13.1 Construction

Construction of the proposed development will generate waste material, excess construction materials and domestic waste from the contractor's staff. However, the quantities of waste are not expected to be significant.

The contractor is required to appropriately dispose of any waste materials generated by the works prior to, and during construction. Additionally, any waste generated by the contractor during contractor demobilisation must be disposed of appropriately. Recycling of waste materials should be considered and where this is not practical, disposed of at an approved waste disposal site. The contractor will be required to provide full details of their recycling and disposal for all waste items.

Additionally to ensure construction phase impact mitigation, it is anticipated that the contractor will prepare a CEMP.

13.2 Operational

No increase in waste production is expected to be generated by the construction of the proposed infrastructure.

14.0 Noise and Vibration

The noise generated by percussion and rotary equipment will be short term and masked by ambient noise from surrounding traffic. As mitigation, the ground investigation activity should be scheduled to avoid early and late timings.

BS 5228 (part 1) provides the following indicative noise levels for the following plant equipment:

Equipment	Noise Level at 10m (dB)	Comparative Noise Example
Cable percussion drilling rig (2t)*	74	Passenger car at 65 mph at 25 ft
Large rotary bored piling rig (110t)**	83	Food blender
Mini piling rig (5.4t)	75	Garbage disposal truck
Compressor (1t)	75	Vacuum cleaner

*this is larger than the rig to be used
** this is also larger than the rig to be used. The *Mini piling rig (5.4t)* is probably more accurate.

All equipment is less than 100dB (motorcycle).

The possible use of any noise suppression specific to each piece of equipment would need to be discussed with the successful Contractor.

Prior to construction a noise control plan will be produced by the appointed contractor and submitted to Environmental Health. This will identify any possible sources of noise that could inconvenience the local community. The plan will set out measures to avoid or mitigate such disturbance.

14.1 Construction

The use of plant and machinery has the potential, if not properly controlled, to result in adverse impacts at residential and commercial locations close to the proposed sites.

Sound is produced by mechanical vibration of a surface, which sets up rapid pressure fluctuations in the surrounding air. The ambient environmental noise at any location will vary according to the activities in progress around a location.

The overnight berthing facility piles will require to be driven by vibrating hammer to rock head. It is recognised this will generates a source of potentially intrusive noise. However, the short duration of its use will allow suitable time windows to be utilised, thus minimising the effect of noise pollution. Piling should be scheduled to avoid early and late timings, when residents are more sensitive to noise.

Dredging at both sites is over a relatively small area, although close to properties and is therefore expected to result in minor noise levels.

The rock revetment construction will be from land and the most significant impact will be the rock armour Lorries deliveries. A Traffic Management Plan will be included in the CEMP.

14.2 Operational

No change in operational noise levels are expected to be generated directly by the proposed construction of the overnight berthing facilities and breakwaters. The additional alongside berthing at the existing pier enabled by the construction of the overnight berthing facility at Fionnphort may result in a minor increase in use of the pier, however this would be expected to be accompanied by an increase in benefits to the community through tourism and/or business.

15.0 Air Quality

Potential adverse effects on air quality are unlikely due to the lack of dust availability expected onsite.

15.1 Construction

There are no activities identified on the proposed site which are expected to generate notable concentrations of dust.

15.2 Operational

Pollution sources of air quality during operation are expected to be insignificant and broadly similar to existing ferry and vehicular use. A minor increase may be expected through reduced cancellation of ferry crossings and any increase in visitors a more reliable ferry service would invite.

16.0 Archaeology, Designations and Cultural Heritage

The generation of waste will be minimised onsite by the contractor during the ground investigation through the provision of adequate disposal facilities and guidance to inform staff members on their location.

The Historic Environment Scotland (HES) and Scottish Natural Heritage (SNH) interactive website portals were accessed in order to identify potential designations in the vicinity of the site. The Sound of Iona is located within the Inner Hebrides and the Minches Special Area of Conservation (SAC), designated for its Harbour Porpoise interests.

Fionnphort has no designated buildings, monuments or sites.

16.1 Construction

The contractors will be required to report any archaeological finds during the works, such as during rock sockets activities and in the event that any historical artefacts are identified, the developer will ensure an appropriate mitigation strategy is agreed with an appointed archaeologist as required.

A photographic record of any identified building remains will be made by an archaeologist. The records will be logged with Historic Environment Scotland.

16.2 Operational

No archaeological sites have been identified which will be directly affected by the works.

17.0 Socio-economic Impacts

Sound of Iona Harbours Project Brief;

The Sound of Iona Harbour Project Brief was prepared by the Sound of Iona Harbours Group which is a subcommittee of South West Mull and Iona Development. This report discusses the current problems with infrastructure at Iona and Fionnphort and advises the primary objectives as:

- *"Protection to the exposed landing slip at Iona such that the Cal-Mac Ferry can safely and consistently expect to be able to berth without fear of service disruption, significant passenger discomfort, or threat to safety of passenger and vehicular traffic in anything other than extreme weather.*
- *An overnight berthing facility for the Cal-Mac ferry which is walk on accessible for the crew, safe to work and secure for the vessel in all conditions, and which by its construction creates protection for the exposed landing slip at Fionnphort and enables additional alongside berthing to be created at the underdeveloped and overused existing facility."*

South West Mull & Iona Development Group

Extensive consultation was undertaken with members of the South West Mull & Iona Development Group in August 2017. The general consensus was that the presented proposed layout would provide sufficient shelter to the existing and proposed infrastructure. Further consultations and public drop in sessions were held at both Fionnphort and Iona in March 2019. Additional outputs / queries have been address and are included in the proposed layouts in Appendix A.

The Future for the Sound of Iona Harbours, Sound of Iona Harbours Committee;

Byrne Looby prepared a report (Appendix D) on behalf of the Sound of Iona Harbours Committee to demonstrate the reasons why investment in landing and berthing facilities at Fionnphort and Iona is required. It identifies the risks of landing at Fionnphort, and particularly Iona for the Loch Buie ferry. It also highlights how the Loch Buie is the only vessel in the CalMac fleet requiring dinghy access. The report discusses the difficulties which CalMac have in accessing the ferry from the dinghy when sheltered in Bull Hole.

Various options were assembled, the preferred solution mitigating CalMac's operational difficulties are included in the proposed layout in Appendix A.

17.1 Construction

The contractor will employ the necessary mitigation measures required to minimize any residual impacts. Such mitigation measures may include:

- liaison with local businesses and users
- setting a programme and working time criteria for the contractors delivery activities that will avoid busy periods though only dredging activity will slightly encroach on ferry route and this will be discussed and agreed with CalMac.
- the construction of the breakwater is away from the ferry route and users of the sea (i.e. navigational routes and berthing locations) therefore any impact on other businesses and economic activities in the area is expected to be nil or minimal.

Existing Ferry Service

- the construction of the breakwater is away from the ferry route, therefore any impact on the ferry service is expected to be nil or minimal.

- The dredging operations can be overnight or arranged with Calmac. No impact as we are dredging on the ferry route.

Tourism / recreational vessels / wildlife watching / seagoing tours

- no interruption to tourism or recreational vehicles is anticipated as the location and construction of the breakwater & piles are away from the navigation channel. Piles will be installed from the inner side of the breakwater with plant operating from a barge
- the construction of the breakwater is away from the ferry route and other users of the sea (i.e. navigational routes and berthing locations) therefore any impact on other businesses and economic activities in the area is expected to be nil or minimal.
- The formation level of the breakwater and its construction is a slow process activity, therefore not creating a hazard to fishes.
- The piling activity is via rotary coring method (as opposed to vibration or hammering) forming rock sockets onto which the piles will be slid/installed onto; therefore minimal noise is expected to be generated for this activity.

17.2 Operational

Existing Ferry Service

- More reliable service following construction of breakwater and protection from wave forces.
- Continued long term service provision through removal of requirement to berth overnight at Bull Hole.

Recreational vessels / wildlife watching / seagoing tours

- Increased reliability of ferry service for the area is expected to provide benefits to existing and future businesses whether using the existing piers & slipways or the ferry service itself.
- Wildlife will benefit from the formation of the breakwater which provides, house, sunbathing and protection for a number of species.

18.0 Technical issues that will confirm design certainty

18.1 Ground Investigation

ByrneLooby Report (Appendix D) from which the preferred Options have been selected states:

Ground Investigation works were carried out by Causeway Geotech in August 2018. The works comprised marine boreholes, soil sampling, in-situ and laboratory testing, and marine geophysical surveying. It comprised 13 marine boreholes with rotary coring. The works were carried out via a modular jack-up barge, with the geophysical survey carried out using bathymetric and sub-bottom profilers. Laboratory testing was carried out offsite.

The ground investigation is summaries as follows:

- *Marine sands and gravel deposits were encountered at all boreholes to a maximum depth of 5m;*
- *Stiff to very stiff sandy gravelly clay was encountered in varying thicknesses at three locations (two at Iona, one at Fionnphort);*
- *Bedrock underling the overburden material was found to be schist at Iona and felsic granite at Fionnphort.*

The geotechnical interpretative report provided by Causeway Geotech indicates the suitability of gravity type rock armour breakwaters, and rock socketed pile solutions. They recommend the appointment of specialists for the detailed design stage of the development.

Some dredging of overburden may be required at Fionnphort to facilitate the new navigation channel. In order to be cost effective, this dredging should be limited to the overburden material which comprises sand, with clays and gravels at greater depths (Borehole 12). The sand may be reused in the core of the breakwater structure if the engineering properties suit the design. A backhoe dredger would be suitable for this application as it is the most basic dredging plant for the limited dredging required. It is suitable for working in discrete locations.

18.2 Wave Modelling

ByrneLooby Report (Appendix D) from which the preferred Options have been selected states:

Existing Layout

The existing layout at Fionnphort is vulnerable to waves incident from all sectors. The topography of the area allows for a breakwater configuration which will provide a greater degree of protection however.

The model indicates that a 1 in 1 year significant wave height of 2.28m and, and a 1 in 50 year significant wave height of 2.67m is incident south of the proposed breakwater location (boundary condition). Some loss of energy is likely between this point and the existing pier and slipway location; however, it is clear that these are unacceptable wave heights at a ferry landing location.

Option 4

The proposed breakwater development in Fionnphort will result in a considerable reduction in wave heights at the slipway and proposed overnight berth.

For the prevailing wind conditions, the 1 in 1 year wave heights at the overnight berth will be reduced to 0.63m at the slipway (Case 6) and 0.34m at the overnight berth (Case 6). Refer to Figure 6-1.

Similarly, the 1 in 50 year wave height will be reduced to 0.79m at the slipway (Case 12) and 0.41m at the overnight berth (Case 12).

18.3 Sedimentation

ByrneLooby Report (Appendix D) from which the preferred Options have been selected adopts wave modelling analysis using a 1:50 year event in section 6.4.1. In accordance with Argyll and Bute Council's policy a return period of 1 in 200 years has been adopted and this has been considered in the JBA report (Appendix E), the summarised Sedimentation Report from which states:

From the events tested, the duration over which high energy conditions occurred has more influence than the magnitude of the overall event. This is evident from the pronounced sediment movement trends from the winter period compared to the negligible trends seen from the 200-year extreme storm event.

The mechanism of sediment deposition is a result of a longshore transport gradient along the east of Iona from south to north. The deep channel offshore and the structure itself act as a sink for the transported sediment. This trend is backed up by anecdotal information collected by ABC.

During a winter period, up to 1m of sediment has the potential to build up in the approach channel at Iona, resulting in a bed level of -5mOD compared to -6mOD. However, sensitivity testing of the morphological acceleration factor shows this may contribute to 50% of this deposition.

Alternative breakwater arrangements have been modelled to attempt to mitigate this deposition however they result in similar erosion/deposition patterns and do not have much influence in mitigating the deposition of sediment.

19.0 Summary and Conclusion

19.1 Executive Summaries from Consultants Reports

19.1.1 From ByrneLooby Report (Appendix D):

- *The existing marine infrastructure between Fionnphort and Iona is in urgent need of investment. The primary investment required is the installation of coastal protection structures in order to reduce wave heights at both berthing locations. This will reduce safety risks to passengers and operators.*
- *Concept layouts of proposed coastal protection structures were prepared by ByrneLooby. These layouts were discussed with stakeholders at a number of consultations.*
- *One option at Fionnphort and three options at Iona were modelled using Mike21 Hydrodynamic Modelling software. The model showed that the proposed layout at Fionnphort results in a significant reduction of wave heights.*
- *Option 5 was selected by ByrneLooby as the preferred option at Fionnphort. The estimated cost of this development is £8.3m.*
- *The proposed development at Fionnphort will comprise a breakwater development, overnight berth, berthing monopile, and minor dredging works. Risks to passengers will be reduced and the risks to ferry operators will be significantly reduced as dinghy access to Bull Hole will no longer be required.*
- *It will be necessary for Argyll and Bute Council to carry out an Environmental Impact Screening and prepare a Planning Application and Marine Scotland Licence Application.*
- *Sediment Analysis and Ground Investigations were carried out on behalf of Argyll and Bute Council and managed by ByrneLooby as part of this commission. These are included in the appendices to this report.*
- *ByrneLooby recommends that designers are appointed to carry out detailed design of the structures. A number of the design parameters are identified in this report. It is recommended that detailed design is carried out at an early stage to ensure that suitable designs and drawings are issued for the permitting Planning and Marine Scotland licensing) process.*

19.1.2 From JBA Report (Appendix E):

This study has undertaken a morphodynamic modelling exercise to understand the sediment transport regime of the Sound of Iona and assess how this may be affected by the construction of new berthing facilities at Iona and Fionnphort.

The modelling was developed to understand:

- *How the proposals influence morphodynamic behaviour within the Sound of Iona under extreme conditions.*
- *How the proposals influence morphodynamic behaviour within the Sound of Iona throughout a typical winter season.*
- *Based on the modelling conducted and results presented the following conclusions can be drawn:*
- *Construction of the breakwaters will result in reduced wave action in the lee of the structure.*
- *The addition of breakwaters increases the risk of deposition within the berthing facilities and approach channels.*
- *Generally, this occurs for all events testing in both Iona and Fionnphort. The one exception is under north easterly conditions, where the waves are too small to impact sediment movement to any large extent.*

- *Accumulation of sediment along the south sides of the breakwaters increases in all of the event tests conducted. This deposition is predicted to be localised and unlikely to affect navigation and berthing of vessels in the locations estimated by the model.*
- *The duration over which high energy conditions occur are shown to have more influence than the overall magnitude of the event: the winter period model shows that the cumulative changes in the bed become much more pronounced compared to the 200-year extreme event.*
- *The mechanism of this deposition has been shown to be the result of a longshore generated current on the eastern side of Iona which results in a predominant south to north transport gradient close to the island. The structure and deeper navigation channel here act as a sink for this transported sediment. This is supported by the anecdotal information collected by ABC.*
- *The model estimates sediment deposition during the winter period of up to 2m along the south of the breakwater at Iona, and up to 1m along the south of the breakwater at Fionnphort.*
- *Attempts to mitigate this deposition through alternative breakwater arrangements result in similar erosion/deposition patterns and do not have much influence in mitigating the deposition of sediment.*

To support the design of the structures, the above results require careful consideration and should be interpreted within the context of the limitations and assumptions of the modelling. Morphodynamic modelling of any form is inherently uncertain but the conditions within the Sound of Iona make this an extremely challenging environment.

The lack of available recorded data to calibrate and validate the model performance results in high uncertainty in the predicted morphodynamic behaviour. While efforts have been made to calibrate the tidal flow, this cannot be achieved with the wave climate and associated sediment transport.

Tests on the model have shown that it is waves that are the predominant control on sediment transport within the sound, meaning that the model predictions are sensitive to the parameterisation of this component. Testing the wave-related transport factors (SUSW and BEDW) shows that using the default value of 1 may overestimate sediment movement in shallow wave-dominated areas such as the Sound of Iona.

Previous discussions with ABC and Cal Mac representatives indicated that, generally, there are little sedimentation issues at the existing slipways. While there is anecdotal evidence that the shoreline position and level can vary considerably during high-energy conditions, the changes below low water are thought to be minimal.

Of the model results presented, confidence in the behaviour of the winter period simulation is most critical as the results here demonstrate that there is potential for the navigation and berthing to be affected.

The model uses a bathymetry representation that combines datasets and has required manual manipulation to transition between the two and better align with chart information. The bathymetry within the model will control the sediment transport predictions which, if this changes, will influence the results.

It should be noted that while three output points analysed at each location all show similar trends of sediment accumulation behind the breakwater, there may also be localised areas of higher deposition and erosion nearer the shoreline which cannot be appropriately represented by this type of modelling.

The results presented here should therefore be considered as providing an indication of the overall morphodynamic trends in the study area.

Further work

Prior to the finalisation of the designs, and construction, the following activities are recommended to support the design process.

1. Bathymetric survey of berthing areas, including extending into deeper water to better capture the transition to the coarser datasets.

2. This survey should be carried out at least bi-annually (e.g. before and after the winter period) to establish the critical seasonal variation.

3. Upon completion of two additional surveys an assessment of the change should be undertaken, including a correlation exercise with the offshore wave conditions.

4. Additional sediment samples from multiple locations inside harbour areas and around proposed breakwater locations on both sides of the Sound, but on the Iona side as a minimum. Areas sampled during the feasibility study should be resampled to provide details of bed composition changes that could help inform sediment transport patterns.

5. Should further modelling be required, collection of hydrodynamic and sediment transport conditions should be considered to support calibration validation. This would include – waves in the sound, tidal currents in the sound and suspended sediment transport. This would be desirable at several locations but should focus on the Iona side as a minimum, as the modelling here has shown this to be critical.

19.2 Constraints Noted

Sedimentation at Fionnphort is noted as insignificant in JBA's sedimentation Report (Appendix E) on the inside of the breakwater and along the ferry route.

19.3 Final Summary

19.3.1 Environmental Assessment / Statement

This summary statement assesses the potential environmental effects associated with the proposed Ground Investigation, which would be located as indicated in the drawings No CM1052_MA_0109 – Iona Explanatory Boreholes Information.

The assessment has identified where the Ground Investigation has the potential to have adverse impacts on important receptors.

19.3.2 Designations

The Historic Environment Scotland (HES) and Scottish Natural Heritage (SNH) interactive website portals were accessed in order to identify potential designations in the vicinity of the site. The Sound of Iona is located within the Inner Hebrides and the Minches Special Area of Conservation (SAC), designated for its Harbour Porpoise interests.

19.3.3 Land Use/ Landscape and Visual Intrusion

The existing setting is predominantly maritime in nature, and therefore the land use will have temporarily minimal impact from a landscape and visual perspective.

19.3.4 Ecology, Habitats and Species

The overall impact of the Ground Investigation activities on ecological species and habitats is expected to be insignificant.

In many areas porpoises are present throughout the year but there do seem to be seasonal changes in distribution and sightings rates, most likely linked to prey availability and the location of suitable breeding and calving habitat. There appears to be a pattern of peak harbour porpoise numbers off the shelf in May and June, followed by a peak in numbers on the shelf two months later, is thought to relate to calving. These aggregations, occurring in August-September, have been noted for several coastal locations around the UK and coincide with the peak final months of the mating season for harbour porpoises.

Indeed, Calves are seen between February and September in UK waters, with a peak in June.

The relevant stakeholders have been notified of the proposals. Potential impacts will be reduced to acceptable levels though appropriate mitigation developed through consultations and respective responses. The ground investigations were undertaken in 2017.

19.3.5 Water Environment/ Hydrology and Flood Risk

The potential pollution risks to water quality will be minimised during ground investigation through the production and compliance with a Safety and Health Plan and method statements. The pollution risk is likely to have no more impact them the existing ferries operations. Pollution is a particular concern as the Minch is a busy shipping lane.

19.3.6 Geology and Hydrogeology

The proposed site will not have an impact on any features of geological interest or groundwater abstractions.

19.3.7 Noise and Vibration

The noise generated by percussion and rotary equipment will be short term and masked by ambient noise from surrounding traffic. As mitigation, the ground investigation activity should be scheduled to avoid early and late timings.

BS 5228 (part 1) provides the following indicative noise levels for the following plant equipment:

Equipment	Noise Level at 10m (dB)	Comparative Noise Example
Cable percussion drilling rig (2t)*	74	Passenger car at 65 mph at 25 ft
Large rotary bored piling rig (110t)**	83	Food blender
Mini piling rig (5.4t)	75	Garbage disposal truck
Compressor (1t)	75	Vacuum cleaner

*this is larger than the rig to be used

** this is also larger than the rig to be used. The *Mini piling rig (5.4t)* is probably more accurate.

All equipment is less than 100dB (motorcycle).

The possible use of any noise suppression specific to each piece of equipment would need to be discussed with the successful Contractor.

19.3.8 Waste

The generation of waste will be minimised onsite by the contractor during the ground investigation through the provision of adequate disposal facilities and guidance to inform staff members on their location.

19.3.9 Air Quality

Potential adverse effects on air quality are unlikely due to the lack of dust availability expected on site.

19.3.10 Archaeology and Cultural Heritage

During the ground investigation, there will not be any direct impacts or material changes affecting any designated sites in the vicinity. However, should any feature be encountered then and appointed archaeologist will take appropriate records and follow an appropriate mitigation strategy.

19.3.11 Ground Investigation Activities

An outline of the ground investigation activities and method statement has been provided above, however a detailed method will be provided by the specialist contractor on appointment. No significant impacts are anticipated during the ground investigation phase. Where potentially negative impacts are identified, the provision of suitable best practice mitigation measures will help minimise potential environmental impacts to an acceptable level.

It is unlikely that small scale ground investigation activities will have any notable widespread impacts on wildlife across the Sound of Iona.

20.0 Requesting a screening decision from the Planning Authorities

Confirmation on to whether the proposed development requires EIA.

Confirmation on to whether the development consist a major development.

Appendix A

Drawings

Appendix B

Pre-Application Advice Report

Appendix C

Arch Henderson Report

Appendix D

ByrneLooby Report

Appendix E

JBA Report

Appendix F

Notifications