Kilfinichen Pier Development Environmental Impact Assessment Report

KILFINICHEN ESTATE
Isle of Mull

Date: 23/08/2018

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Chapter 1: Introduction

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1 Introduction

This Environmental Impact Assessment Report (EIAR) has been produced on behalf of the Kilfinichen Estate, to support the Marine Licence application for their proposed Pier Development to facilitate the export of timber.

The Ardmeanach Peninsula contains approximately 1,075Ha of commercial timber. Currently harvested timber cannot be transported off the peninsula due to the single-tracked B8035 being in poor condition, resulting in Argyll and Bute Council (A&BC) prohibiting timber haulage operations.

The proposed location for the timber loading pier provides sheltered deep water, space for a stacking area, and lies within close proximity of the timber plantations, reducing the timber transport distance by road.

The proposed pier development will include the following components:

- A stacking area of approximately 0.67Ha to allow storing of timber prior to loading onto timber transport vessels;
- A 140m long causeway, with a 60m long hammerhead, surfaced with a 6m wide track and having a footprint of 0.8Ha, providing access to the loadout pier;
- Access bridge of 40m in length and floating pier; and
- A pre-existing pontoon which will be moved and incorporated in the causeway design.

Further detail on the Project Need, Consideration of Alternatives and full project description is provided in Chapter 2: Project Description.

Works above mean low-water springs (MLWS) have been consented under the Town and Country Planning (Scotland) Act 1997. The stacking area is above mean high-water springs (MHWS), and hence not subject to the Marine (Scotland) Act 2010. As explained in Chapter 3, Section 3.14 of this EIAR, the planning application was approved on the 23rd of October 2017.

A Marine Licence for the construction of the pier and associated infrastructure below MHWS is being sought under the Marine (Scotland) Act 2010. An Environmental Impact Assessment (EIA) is required for the development under the provisions of the Marine Works (Environmental Impact Assessment (Scotland) Regulations 2017. The findings of the EIA are provided in this EIAR.

The EIAR provides information on the proposed development to give an understanding of the nature of the project, along with the potential environmental impacts which may result from the construction and operation of the development. There are no future plans to discontinue use of this site, therefore, it is not considered necessary to assess for demolition and reinstatements works for closure of this site.

1.1 Objective

The objective of this EIAR is to:

- Explain the project need and alternatives considered;
- Provide a description of the proposed development including design features which were incorporated to avoid, prevent or reduce possible environmental impacts;
- Understand the relevant environmental baseline for the proposed development area;
- Identify the potential direct, indirect and cumulative environment impacts associated with the development;
- Assess the significance of the potential environmental impacts;
- Identify appropriate mitigation measures to avoid, prevent or reduce adverse impacts and maximise benefits; and
- Identify and assess potential residual impacts which may remain even after the implementation of appropriate mitigation.

1.2 The EIA Team

The Kilfinichen Estate commissioned Affric Limited to complete the EIA and produce the EIAR for the proposed Pier Development. Affric collaborated with Tracks Ecology and Drennan Marine Consultancy Ltd to produce the EIAR and associated Navigation Risk Assessment. Further information on the companies and key individuals' expertise are provided in Appendix A.1.

1.3 EIAR Structure

This EIAR is made of;

- Non-technical Summary; and
- Main Environmental Impact Assessment Report.

Identified mitigation within the EIAR has been incorporated into the Schedule of Mitigation included in Chapter 8.

A standalone Navigation Risk Assessment has also been produced, this will be a live document utilised throughout the operation of the pier and as such has not been incorporated within the EIAR.

Chapter 2: Project Description

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2 Project Description

2.1 Project Need

The Ardmeanach Peninsula is accessed by a single-track road (B8035). The B8035 provides the only access to the area for tourists, residents and commercial and agricultural users. The B8035 is deteriorating, for this reason Argyll and Bute Council have deemed the road infrastructure unsuitable for use by timber lorries, and have placed a prohibition on any timber haulage on the road. Of particular concern is the road between Ardvergnish and the cross roads, where the road 'floats' on peat. There is real risk that this stretch could fail completely, leaving residents stranded.

The Ardmeanach woodland is split into three areas all adjacent to the B8035: one north, one west, and one to the east as detailed in Drawing 44.02.10. Ardmeanach woodland contains approximately 1075ha of commercial timber. The majority of this timber is from the community-owned forest at Tiroran, ~795ha. The remaining ~280ha of forest is privately owned.

The existing forests are largely over mature but cannot be harvested and extracted due to the inability to transport the timber by road to the timber loading facility at Pennyghael on the south side of Loch Scridain, for onward processing and use. Without the ability to harvest it, the value in the timber is reducing over time. Over mature trees are generally too big to fit through the saw mills, so are chipped or pulped instead.

The Ardmeanach woodland is the epicentre of the Mull *Phytopthera ramorum* outbreak, which is a notifiable disease affecting larch crops. The diseased trees are subject to plant health orders which require immediate clear felling of all trees (whether infected or not) within 250m of a diseased tree. Without harvesting capabilities, felled trees are left to rot on the ground rather than being utilised as a sustainable resource.

2.2 Consideration of Alternatives

2.2.1 Timber Export Route

There is a timber export pier at Pennyghael, on the South side of Loch Scridain, however this would require timber to be moved by lorry on the B8035, which as discussed in Section 2.1, is prohibited without significant road upgrades. Upgrades to the road would cost a minimum of £900k (geogrid surfacing ~£90-105/m. (x 5.8km) and £10k per passing place (38 of) and would cause major disruption to road users. Even if the road could take the weight of the timber lorries, the use of the roads by timber lorries would give rise to significant congestion on this single tracked road, especially in the summer periods. Upgrade of the B8035 road has been deemed inappropriate due to the cost and disruption that would be caused.

In order to significantly reduce the requirement for road transport of timber on the B8035, a timber loading pier on the north side of Loch Scridain is required. There is a pontoon and associated boathouse located to the east of Aird Chill Fhinichin. The location affords sheltered waters of an appropriate depth to accommodate timber export vessels, however the structure of the existing pontoon is not currently suitable for timber loading. The site is readily accessible from all three plantations and would reduce the requirement to transport

timber on the public road to a maximum of 400m, while also entirely avoiding the 'floating' road crossing the peatland. The location is close to the B8035 and hence minimises the length of the access road, in addition there is space for timber stacking.

The proposal to construct a timber loading pier at Kilfinichen on the north side of Loch Scridain, will allow timber to be harvested and exported, while avoiding impacts on the B8035.

2.2.2 Construction Techniques

Alternative pier designs were considered, including:

- Open pile structure with suspended concrete deck;
- Combination pile wall with granular material infill; and
- Causeway, access bridge and floating pier.

Both the suspended deck and combination wall options require significant piling works, which would give rise to significant underwater noise emissions and may disturb or injure marine mammals. This makes these options less favourable, considering the close proximity of the Inner Hebrides and Minches candidate Special Area of Conservation (cSAC). The Inner Hebrides and Minches cSAC, designated for harbour porpoise (*Phocoena phocoena)* surrounds the Isle of Mull, and lies approximately 7.2km from the development (SNH, 2018). Furthermore, Otters *(Lutra lutra)* were also identified within the vicinity of the development and could be disturbed if a suspended deck or combination wall design was chosen (Great Glen Ecology, 2018), hence the option was not preferred.

The preferred option involves creation of a rock armoured causeway with an access bridge that leads to a mobile floating pier. The design of the causeway will incorporate the relocation of the existing pontoon, allowing boats utilising the existing infrastructure to continue to utilise the area.

Creation of the onshore stacking area will require the removal of rock, this material could be utilised in the construction of the causeway, minimising the need to dispose of rock as waste and the need to import construction material. Should the volume of rock arising from the creation of the stacking area be insufficient for the construction of the causeway, additional rock will be extracted during the construction of the proposed access track and bell mouth junction.

The selected design will also improve resource efficiency. The access bridge and floating pier will be detachable and is designed to be compatible with the existing timber loading facility at Pennyghael. As such the bridge and pier can transported between Kilfinichen and Pennyghael, depending on where it is required, allowing the asset to be shared.

2.3 The Project Elements

The Kilfinichen pier proposal constitutes of the following elements:

- **Stacking area**: The shoreside works for the approximately 0.67Ha timber stacking area have already been consented under the Town and Country Planning (Scotland) Act 1997. The area will allow storing of felled timber prior to loading onto timber

transport vessels. Creation of the stacking area will require material movement of approximately 15,000 tonnes, consisting of rock and gravel. An access track will connect the stacking area to the B8035, via a bell mouth junction with a bituminous surface. The stacking area and access tracks will be finished with a crushed stone surface.

The stacking area is also connected to the causeway via which timber can be moved onto the floating pier for load-out onto transport vessels. An appropriate surface water drainage plan was developed for the stacking area and will see the creation of swale (broad channel designed to slowly convey runoff water and remove pollutants). The swale will be approximately 10m in length, 400mm depth and have a minimum width of 200mm at the base, base as detailed in Drawings 1570-116 to 1570-117.

- **Causeway**: Drawings 1570-116 to 1570-120 detail the design of the causeway. The rock armoured causeway will be 140m long and have a 60m L-shaped return or hammerhead. The causeway will provide access to the access bridge and floating pier. In addition, the L shape design provides protection and access to the relocated pontoon. Rock extracted during construction of the timber stacking and access road bell mouth area will be used for the construction of the causeway.

  Rock armour will consist of two layers, secondary rock armour and primary rock armour, 0.6m and 1.3m thick respectively, giving the causeway an overall footprint of approximately 0.8Ha. The top of the causeway will feature a 6m wide crushed stone surfaced track, at an overall height of 5.5m above Chart Datum (CD). A concrete slab will be installed at the south eastern end of the causeway track, to form the approach to the access bridge. A 2.5m long concrete bankseat will be installed to accommodate the landward end of the access bridge. In addition, a concrete bridge jacking area to allow jacking up of the access bridge will be created.

- **Access bridge and floating pier**: The access bridge and floating pier will be hired and be brought to the site prefabricated. Installation of the 40m long access bridge will see it installed on top of a 2.5m long concrete bankseat at the toe of the causeway. A concrete bridge jacking area will be installed in the causeway revetment to the southeast of the bankseat to allowing lifting of the access bridge, as detailed Drawing 1570-117 to 1570-120. The seaward end of the bridge will be secured by spud legs on the seabed. The floating pier will be secured to the spud legs. The design enables easy disconnection of the access bridge and floating pier, allowing transportation and installation at the existing Pennyghael timber loading facility.

- **Pontoon**: The existing pontoon at the site will be retained and incorporated into the causeway design as detailed in Drawing 1570-120. A small concrete shore block will be constructed on the inside of the L-shaped return to provide foundation for the pontoon access bridge. A ready-made 12m access bridge will be installed and

attached to the concrete shore block and the floating pontoon. The pontoon will be installed with chain and anchor moorings to the seabed.

2.4 The Location

Kilfinichen is located in the centre of the Ardmeanach Peninsula on the west coast of the Isle of Mull. The proposed pier development site lies on the north site of Loch Scridain, immediately to the south of the B8035, and has a central grid reference of NM 4986 2829 (Drawing 44.02.01). The Kilfinichen Pier development falls within the boundaries of the Argyll and Bute Council. Drawing 44.02.09 details the redline boundary of the marine component of the development. The marine component of this development is the main scope of this document, while the terrestrial component detailed in Drawing 1570-117 is included for an understanding of any potential cumulative impacts. Table 2.1 details the red line boundary coordinates.

The proposed location of the pier is within the immediate vicinity of the 1,075Ha of timber plantation located on the Ardmeanach Peninsula, to the North, East and West of the development (Drawing 44.02.10).

Table 2.1 Red line boundary coordinates.

Point	Latitude	Longitude
1	56°22.834'N	006°03.217'W
2	56°22.832'N	006°03.213'W
2	56°22.829'N	006°03.214'W
4	56°22.801'N	006°03.159'W
5	56°22.799'N	006°03.192'W
6	56°22.797'N	006°03.192'W
7	56°22.799'N	006°03.158'W
8	56°22.794'N	006°03.149'W
9	56°22.784'N	006°03.164'W
10	56°22.783'N	006°03.161'W
11	56°22.793'N	006°03.146'W
12	56°22.790'N	006°03.140'W
13	56°22.780'N	006°03.163'W
14	56°22.774'N	006°03.168'W
15	56°22.770'N	006°03.166'W
16	56°22.765'N	006°03.160'W
17	56°22.764'N	006°03.152'W
18	56°22.765'N	006°03.142'W
19	56°22.783'N	006°03.094'W
20	56°22.776'N	006°03.079'W
21	56°22.773'N	006°03.083'W
22	56°22.768'N	006°03.072'W
23	56°22.778'N	006°03.057'W
24	56°22.783'N	006°03.068'W
25	56°22.780'N	006°03.073'W
26	56°22.787'N	006°03.088'W
27	56°22.793'N	006°03.085'W
28	56°22.799'N	006°03.089'W
29	56°22.836'N	006°03.182'W
30	56°22.839'N	006°03.194'W
31	56°22.840'N	006°03.198'W
32	56°22.837'N	006°03.207'W
33	56°22.835'N	006°0.3.216'W

2.5 Construction

2.5.1 Site Set-up

Prior to construction activities starting, the onshore site will be cleared of any vegetation and potential debris, and temporary offices and welfare facilities will be installed at the site. Installation of an otter fence to shield the onshore and nearshore construction will be conducted prior to commencing works, in order to prevent otters interacting with construction equipment.

2.5.2 Stacking Area

Creation of the timber stacking area will see earth movement via excavators and dumper trucks. Rock removal to create a level stacking and access track will be conducted using drilling and splitting, hydraulic peckers, and excavators. A combination of excavators and

vibrating rollers will be used to grade and compact the final crushed stone surface of the stacking area and access tracks. A bituminous material surfaced bell mouth junction will be installed to link the stacking area to the B8035 via the access track. The swale will be constructed using an excavator, and rip-rap check damns will be installed to slow the flow of water.

2.5.3 Causeway

Rock extracted during the creation of the timber stacking area will be predrilled and split by an excavator mounted hydraulic breaker to form the primary and secondary rock armour. Additional rock will be acquired from the creation of the access road bellmouth. The crushed rock fill will be placed by excavator and compacted using a vibrating roller working from the shoreline, outwards. As the rock revetment construction progresses, the rock armour layers will be placed on the side of the rock infill by excavator.

Upon completion of the rock revetment construction and rock armouring, the surfaced causeway track will be created. Layers of geotextile will be installed, together with a crushed stone sub base and capping layers. The sub base and capping layers will be placed using excavators before being compacted using a vibrating roller. The concrete slab at the south eastern end of the causeway track will be poured in situ.

In situ concrete pouring will all be used to construct the bankseat and bridge jacking areas. All concrete operations will be appropriately managed to prevent any environmental harm as detailed in Chapter 8: Schedule of Mitigation.

2.5.4 Access Bridge and Floating Pier

The access bridge and floating pier will be prefabricated offsite and brought to site upon completion of the causeway works. Installation of the access bridge will see it positioned by the delivery vessel. It will then be secured at the bankseat at the landward end, while the spud legs will be deployed at the seaward end of the bridge to attached it to the seabed.

2.5.5 Pontoon

A small concrete shore block will be poured in situ on the inside of the L-shaped return to provide foundation for the pontoon access bridge. The existing pontoon will then be floated into position next to the causeway. It will be secured with chain and anchor moorings to the seabed and rock armour. The pre-fabricated 12m access bridge will then be lifted into position and secured to the concrete shore block and the pontoon.

2.5.6 Programme

Construction of the Kilfinichen pier is expected to take approximately 6 to 9 months.

2.6 Operation

This development will allow the shipping of approximately 376,000 tonnes of timber per harvest cycle, by sea, from all forestry blocks on the Ardmeanach Peninsula. The pier will transport approximately 9,250 tonnes of timber per year. Its sheltered location and deep water mean that the site can accommodate vessels of up to 3,500 tonnes at the proposed pier on a year-round basis, in various weather conditions. Timber will be delivered from the

forest by road and stockpiled in the stacking area, prior to being loaded onto vessels for transport by sea to United Kingdom (UK) and European destinations.

Operation of the pier will see marginal traffic increases. However, these will only consist of articulated timber lorries, with a peak of 20 per day, laden with 40 tonnes of timber to build up stocks at the pier, as set out in the Traffic Management Plan (Appendix B.1). Timber lorries are expected to only move over 400m of public road due to the close proximity of the pier to the harvesting site access track.

During non-harvesting periods, no timber lorries transporting timber to the stacking area are anticipated. The only potential vehicles related to pier operation outwith harvesting operations will potentially be maintenance vehicles. Furthermore, it is anticipated that during non-harvest periods, the access bridge and floating pier will be disconnected and moved to another location.

Harvesting operations of the current crop at Kilfinichen are anticipated to start in 2019 and last for at least 5 years.

2.7 Maintenance

Over time parts of the development are likely to require maintenance. In the long term, there may be requirements to augment/replace rock armour, and repair the pontoon, access bridge and the mobile floating pier. Concreted areas like the shore block over time may also require repairing. However, maintenance works are not of a scale that requires specific considering within the EIAR and any associated impacts will be less than those arising from construction.

2.8 Decommissioning

There are no future plans to discontinue use of this site, with the Crown Estate Scotland lease running for 99 years. It is not considered necessary to plan or assess for demolition and reinstatement works for closure of this site in this EIAR. However, it is likely that the rock armour would be removed by mechanical means in a reversal of the construction process and as such impacts will be similar to those associated with construction.

2.9 References

Great Glen Ecology. (2018). Survey of Otter at a proposed pier construction site, Kilfinichen Estate. 10.

SNH. (2018). SNH Site Link. Retrieved from https://gateway.snh.gov.uk/sitelink/

Chapter 3: Statutory Context & Policy

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3 Statutory Context & Policy

3.1 Consenting Permitting and License Process

3.1.1 Marine Licence

Under the Marine (Scotland) Act 2010 a number of activities listed under Part 4, Section 21 of the Act require a Marine Licence to be issued by the Marine Scotland Licensing Operations Team (MS-LOT). This includes any activity where the project intends to conduct any of the following below Mean High Water Springs (MHWS):

- Deposit of substances or objects into the sea or either onto or under the seabed,
- Construction/alteration/improvement of any works in or over the sea or on or under the seabed,
- Removal substances or objects from the seabed, or
- Dredging.

With the exception of the stacking area and access road, all elements of Kilfinichen Pier Development are below MHWS and hence will require a Marine Licence.

3.1.2 Environmental Impact Assessment

Schedule 1 of the Marine Works (EIA) (Scotland) Regulations 2017 provides a list of development types which require and EIAR. Included in the list is:

> *8.(2) Trading ports, piers for loading and unloading connected to land and outside ports (excluding ferry piers) which can take vessels of over 1,350 tonnes.*

The design and sheltered location of the proposed development will allow vessels of up to 3,500 tonnes to load, and as such the development EIAR to be submitted in support of the application for a Marine Licence.

A scoping report was submitted in December 2017 to provide Marine Scotland and their consultees appropriate information to allow them to provide a scoping opinion which this EIAR is based upon.

3.1.3 Marine Pre-Application Consultation

The Marine Licensing (Pre-application Consultation (PAC)) (Scotland) Regulations 2013, prescribe the marine licensable activities that are subject to PAC and in combination with the Marine (Scotland) Act 2010, set out the nature of the pre-application process. The Kilfinichen Pier Development falls within Regulation 4(d) as a construction activity within the marine area that exceeds 1000m^2 and is therefore required to go through the PAC process.

Consultation has been carried out to meet the requirements of the Marine Licensing (PAC) (Scotland) Regulations 2013, and a public meeting was held on 24th August 2017 in accordance with the Regulations. At the public meeting all consultees present expressed their supported for the scheme. Following the meeting a PAC report was produced and will be submitted in support of the Marine Licence application.

3.1.4 Planning Permission

Works above Mean Low Water Springs (MLWS) have been consented under the Town and Country Planning (Scotland) Act 1997. Planning approval for the development was received in 2015 (Ref.No:15/00197/PP) and there were no objections received from either the statutory consultees or local residents. Further detailed design saw an amendment (Ref. No: 17/01937/PP to the existing planning approval being submitted to Argyll and Bute Council (A&BC) in July 2017. This was minor amendment to the design and orientation of the pier facility, modification to the stacking area and rock causeway and a revised vehicle access to further reduce the use of the public highway. This amendment was approved on the 23rd of October 2017.

3.1.5 European Protected Species Licence

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

1) *The project is on Imperative Reasons of Overriding Public Interest;*
2) *There are not satisfactory alternatives; and*
3) *The proposed action must not be detrimental to the maintenance of the species at 'favourable conservation status'.*

There is evidence that otters are present in the immediate vicinity of the construction sites. If it is identified that the proposed construction actives have the potential to result in disturbance of otter layup's or holts, then an EPS licence may be required. Further detail is provided in Chapter 7: Otters.

3.2 Marine Policy

3.2.1 National Marine Plan

The proposed Kilfinichen Pier Development is below the MHWS and within 12NM of the Scottish coastline, meaning it falls within the remit of the Marine (Scotland) Act 2010. A requirement of the Act is the 2015 Scottish National Marine Plan (NMP). The NMP lays out policies for the sustainable development of Scottish seas and provides General Planning Principles created by Scottish Minister's, some of which apply to the proposed pier development (Scottish Government, 2015b). Multiple GENs are specific to environmental topics discussed in this EIAR; these are identified in Table 3.1, along with considerations made by the Kilfinichen Pier Development to meet the GEN requirements. GENs have been considered throughout the EIA process, and further detail is provided in the relevant topic-specific chapters of this EIAR.

Table 3.1 Scottish National Marine Plan GENs applicable to the Kilfinichen Pier Development.

General Planning Principles	Requirements	Kilfinichen Development Considerations	Chapter
GEN: 7 Landscape/seascape:	Marine planners and decision makers should ensure that development and use of the marine environment take seascape, landscape and visual impacts into account.	The small scale and low-lying features of the development mean that the landscape/seascape impacts are not significant. This was agreed during Scoping and as such they have not be considered within the EIAR.	N/A
GEN 8: Coastal process and flooding:	Developments and activities in the marine environment should be resilient to coastal change and flooding, and not have unacceptable adverse impact on coastal processes or contribute to coastal flooding.	Due to the small footprint of the development, it is not expected to contribute towards coastal change or flooding. It was agreed during Scoping that there was no need for further consideration within the EIAR.	N/A
GEN 9: Natural Heritage	Development and use of the marine environment must: (a) Comply with legal requirements for protected areas and protected species. (b) Not result in significant impact on the national status of Priority Marine Features. Protect and, where appropriate, enhance the health of the marine area.	Ecological features of interest have been provided within this EIAR. Legal requirements have been taken into consideration throughout. Mitigation measures are outlined in each of the Chapters 5-7, in the Schedule of Mitigation (Chapter 8) and in the Construction Environmental Management Document (CEMD). There are no significant residual impacts on any Priority Marine Features due to the proposed development.	5-8
GEN 10: Invasive Non-Native Species	Opportunities to reduce the introduction of invasive non-native species to a minimum or proactively improve the practice of existing activity should be taken when decisions are being made.	Vessels and equipment will be locally sourced, and hence the risk of introducing invasive non-native species is minimal.	5
GEN 11: Marine Litter	Developers, users and those accessing the marine environment must take measures to address marine litter where appropriate. Reduction of litter must be taken into account by decision makers.	Measures laid out in the Schedule of Mitigation are put in place to minimise the production of marine litter and to ensure appropriate waste removal.	8
GEN 12: Water Quality and Resource	Developments and activities should not result in a deterioration of the quality of waters to which the Water Framework Directive, Marine Strategy Framework Directive or other related Directives apply.	Standard industry best practice will be adopted in order to prevent deterioration of water quality. These are included in the Schedule of Mitigation.	8
GEN 13 Noise:	Development and use in the marine environment should avoid significant adverse effects of man-made noise and vibration, especially on species sensitive to such effects.	Pilling and other construction activities which could give rise to high marine noise and vibration have been avoided. It was agreed during Scoping that noise and vibration did not need to be considered within the EIAR.	N/A

General Planning Principles	Requirements	Kilfinichen Development Considerations	Chapter
GEN 17: Fairness	All marine interests will be treated with fairness and in a transparent manner when decisions are being made in the marine environment.	Kilfinichen Estate and contractors have had open and honest dialogue with stakeholders in the development of the Marine Licence submission and will publish the submission to ensure transparency.	PAC Report
GEN 18: Engagement	Early and effective engagement should be undertaken with the general public and all interested stakeholders to facilitate planning and consenting processes.	Pre-Application Consultation has been completed and a report provided to support the Marine Licence application.	PAC Report
GEN 19: Sound Evidence	Decision making in the marine environment will be based on sound scientific and socio–economic evidence.	Information provided in this EIAR is based on current available scientific evidence, to inform the decision-making process.	All
GEN 21: Cumulative Impacts	Cumulative impacts affecting the ecosystem of the marine plan area should be addressed in decision making and plan implementation.	Cumulative impacts are considered as part of the assessment in the topic-specific chapters.	5-7

The NMP lays out sector specific objectives and policies. The objectives regarding shipping, ports, harbours and ferries relevant to the project include:

> *"Sustainable growth and development of ports and harbours as a competitive sector, maximising their potential to facilitate cargo movement, passenger movement and support other sectors."* (Scottish Government, 2015a)

The relevant planning policy for this project are:

- **TRANSPORT 3:** *"Ferry routes and maritime transport to island and remote mainland areas provide essential connections and should be safeguarded from inappropriate marine development and use that would significantly interfere with their operation."* (Scottish Government, 2015a).
- **TRANSPORT 4:** *"Maintenance, repair and sustainable development of port and harbour facilities in support of other sectors should be supported in marine planning and decision making." (Scottish Government, 2015b).*
- **TRANSPORT 5:** *"Port and harbour operators should take into account future climate change and extreme water level projections, and where appropriate take the necessary steps to ensure their ports and harbours remain viable and resilient to a changing climate. Climate and sea level projections should also be taken into account in the design of any new ports and harbours, or of improvements to existing facilities." (Scottish Government, 2015b).*
- **TRANSPORT 7:** *"Marine and terrestrial planning processes should co-ordinate to: provide co-ordinated support to ports, harbours and ferry terminals to ensure they can respond to market influences and provide support to other sectors with necessary facilities and transport links."* (Scottish Government, 2015b).

Marine Planning Partnerships are being developed for 11 regions around Scotland. They will work to develop regional marine plans. The Isle of Mull lies within the Argyll & Bute Council (A&BC) Region but the Marine Planning Partnership for the area has not as yet been established.

3.2.2 Planning Policy

Although the elements of the proposed development considered by this EIAR do not require planning consent, due to the close proximity to land, it is deemed appropriate to set out the planning policy context. The development plan system in Scotland, which provides the framework for considering planning applications, is made up of two main documents

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

3.2.2.1 Scottish Third National Planning Framework

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

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

The Scottish Government provides advice and technical planning information in the form of Planning Advice Notes (PANs). Relevant PANs for the Kilfinichen Pier Development which will be used to support the EIA are identified below:

- PAN 1/2013: Environmental Impact Assessment (Scottish Government, 2013); and
- PAN 60: Planning for Natural Heritage (Scottish Government, 2008).

3.2.2.2 Argyll and Bute Local Development Plan

The Local Development Pan relevant to the Kilfinichen pier project is the Argyll and Bute Local Development Plan (AB-LDP) (A&BC, 2015), and associated supplementary guidance.

The AB-LDP was adopted in March 2015 and sets out an overarching planning policy for the A&BC, except that covered by the Loch Lomond and the Trossachs National Park Local Development Plan. Although this project is not specifically mentioned in the AB-LDP the project aligns with the plans objectives:

> "*to support the continued diversification and sustainable growth of Argyll and Bute's economy with a particular focus on our sustainable assets in terms of renewables, tourism, forestry, food and drink*" (A&BC, 2015)

and

> "*to work in partnership with local communities in a way that recognised their particular needs to deliver successful and sustainable local regeneration*" (A&BC, 2015).

Relevant sections of planning policies, will be identified, considered through the project development process and discussed within the EIAR. These include:

- **Policy LDP 4** — Supporting the Sustainable Development of our Coastal Zone;
- **Policy LDP 5** — Supporting the Sustainable Growth of Our Economy;
- **Policy LDP 10** — Maximising our Resources and Reducing our Consumption; and
- **Policy LDP 11** — Improving our Connectivity and Infrastructure.

3.3 References

A&BC. (2015). *Argyll and Bute Local Development Plan*. Retrieved from https://www.argyll-bute.gov.uk/ldp

Scottish Government. (2008). Planning Advice Note PAN 60 Planning for Natural Heritage.

Scottish Government. (2013). Planning Advice Note PAN 1/2013 Environmental Impact Assessment.

Scottish Government. (2014). *Scottish Planning Policy*. Edinburgh.

Scottish Government. (2015a). Scotland's National Marine Plan: A Single Framework for Managing our Seas.

Scottish Government. (2015b). *Scotland's National Marine Plan: General Policies*. Retrieved from http://www.gov.scot/Publications/2015/03/6517/5.

Chapter 4: Methodology

KILFINICHEN ESTATE
Isle of Mull

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4 Methodology

4.1 Overview of Approach and Methodology

One of the main purposes of the EIA process is to influence and improve design through iteration. Environmental impacts have been considered throughout the project, from the development option stage and through into the initial design stages of the project. Where possible, environmental considerations have been incorporated into the design, as detailed in Chapter 2: Project Description. The siting and design of the Kilfinichen Pier Development has been heavily influenced by aspects identified through the EIA process, including public opinion, and the potential for disturbance of the local fauna associated with the development.

The project design therefore has avoided and minimised impacts wherever possible and, as such, there are embedded 'primary mitigation measures' to avoid or reduce negative effects. These have been incorporated within the assessment of effects.

In addition, it is assumed that standard construction practices, such as those outlined in Guidance for Pollution Prevention documents (tertiary mitigation), have been applied in the assessment process and these are captured within the Schedule of Mitigation.

This section sets out the process undertaken in order to provide a methodical and robust assessment of environmental impacts that is used across all chapters of the Environmental Impact Assessment Report (EIAR) and aligns to the legislative requirements.

4.2 Scoping

A formal request for a scoping opinion, accompanied with the scoping report was submitted to Marine Scotland on the 13th December 2017, under Section 13, and in alignment with Schedule 4 of the Marine Works (EIA) Regulations 2017 (As Amended). The scoping opinion was provided by Marine Scotland on the 20th March 2018.

The main points raised in the scoping opinion have been identified and considered in the production of this document. Table 4.2.1 details a summary of the scoping opinions. The scoping summary table also details how each point has been addressed and directs the reader to the relevant sections of this EIAR.

The scoping opinion requested that a navigation risk assessment be undertaken. A such, an assessment was conducted, and the resulting report is provided as a standalone document, submitted with the Marine Licence application.

Table 17.1 of the scoping report is reproduced below (Table 4.2.2). Items scoped out (grey and green) have not been assessed through the EIAR process, and those in yellow have been subjected to a full assessment, as set out in Section 4.4.

Table 4.2.1 Summary of the scoping opinions and responses from the developer.

Chapter		Scoping Response	Response
5	Benthic Ecology	SNH advised that the impact of the proposed works upon the immediate and adjacent benthic habitats need to be considered as part of the EIA process, noting that without knowing what is present one cannot understand the likely impacts and their significance. Consequently, SNH does not agree with the applicant that benthic impacts should be scoped out of the EIA report and has advised that benthic studies be undertaken to inform the decision-making process.	To better understand the benthic communities within the proposed development area a benthic survey was undertaken. The results from the benthic survey and project details in Chapter 2: Project Description formed the basis for the assessment of potential impacts on Benthic Ecology in Chapter 6: Benthic Ecology. The assessment identified no significant effects on the benthic community as a result of the development.
2	Project Description	SNH advised that the proposed works could affect the Inner Hebrides and Minches SAC, however is content that, should the construction techniques detailed in the scoping report remain unchanged, the proposed works are unlikely to have a significant effect upon the SAC. SNH further advised that any significant changes to the proposed construction techniques that would result in increased noise within the water column would have to be subject to a Habitat Regulations Appraisal and subsequently would require to be considered as part of any EIA report supporting a marine licence application.	The design and construction methods have not changed from the details submitted in the Scoping Report.
2 & 8	Project Description & Schedule of Mitigation	The Scottish Ministers agree with SNH's conclusions and deem that the marine mammal interests of biodiversity and nature conservation are scoped OUT of the EIA report providing that the construction techniques and mitigation outlined in the scoping report are included in a SoM and detailed site plans and/or CEMP to ensure successful implementation.	The design and construction methods have not changed from the details submitted in the Scoping Report. Mitigation detailed in the Scoping Report is included in the Schedule of Mitigation.
7	Otters	SNH states: With regards to otters, the scoping report states that an otter survey carried out at the location of the proposed works in 2014 found no evidence of their presence. However, if otters are present within or in close proximity to the location of the proposed works, they have the potential to be impacted on during construction activities. The applicant has therefore, committed to undertaking otter surveys and is of the opinion that otter interests during construction should be scoped IN to the EIA report.	Otters have been scoped into the EIA for construction, and details of the assessment are provided in Chapter 7. Subsequent otter surveys revealed extensive otter activity in the area, and as such appropriate mitigation for construction has been identified.

Chapter		Scoping Response	Response
7	Otters	SNH states: The applicant does not expect any significant impacts to otters during operation, nonetheless, precautionary mitigation measures proposed include limiting the operating activity to daytime hours (7am to 7pm) and introducing vehicle speed limits within the site boundary.	Operational mitigation measures are outlined in Chapter 7, and included in the Schedule of Mitigation.
7 & 8	Otters & Schedule of Mitigation	The Scottish Ministers agree that the otter interests of biodiversity and nature conservation during construction are scoped IN to the EIA report and that otter interests during operation are scoped OUT of the EIA process, providing that the mitigation outlined in the scoping report is included in a SoM and detailed site plans and/or CEMP to ensure successful implementation.	Otters have been scoped into the EIA for construction, and details of the assessment are provided in Chapter 7. Subsequent otter surveys revealed extensive otter activity in the area, and as such appropriate mitigation for construction has been identified. All mitigation (including that proposed for Operation in the Scoping Report) is included in the Schedule of Mitigation.
6	Ornithology	As a result of the lack of baseline data around ornithological interests, the applicant proposes to undertake a baseline assessment consisting of two surveys of the site and the surrounding area to determine the presence of significant ornithological sites. The first survey (in winter) will inform whether an in-depth breeding bird survey is required to be undertaken. A vantage point survey has also been proposed to be undertaken at different tidal states to assess diurnal usage of the area, directly at the proposed works location.	An initial winter bird survey was conducted in line with this advice, and found no requirement for further breeding bird surveys. A vantage point survey was also conducted. Details are provided in Chapter 6.
6 & 8	Ornithology & Schedule of Mitigation	The Scottish Ministers agree that the ornithological interests of biodiversity and nature conservation during construction are scoped IN to the EIA report and anticipate that the data collected as part of the ornithological studies proposed in the scoping report will be included in the EIA report. Providing that the mitigation outlined in the scoping report is included in a SoM and detailed site plans and/or CEMP the Scottish Ministers agree that the ornithological interests during operation are scoped OUT of the EIA report.	Construction impacts on ornithological receptors are scoped into the EIA, and details of the assessment including results of the ornithological surveys are provided in Chapter 6. All mitigation (including that proposed for Operation in the Scoping Report) is included in the Schedule of Mitigation.
8	Schedule of Mitigation	The Scottish Ministers agree that landscape, seascape and visual impacts are scoped OUT of the EIA report, providing that the mitigation outlined in the scoping report is included in a SoM and detailed site plans and/or CEMP to ensure successful implementation	All mitigation detailed in the Scoping Report is included in the Schedule of Mitigation.

Chapter		Scoping Response	Response
8	Schedule of Mitigation	The Scottish Ministers agree that land and soil quality impacts are scoped OUT of the EIA report, providing that the mitigation outlined in the scoping report is included in a SoM and detailed site plans and/or CEMP to ensure successful implementation.	All mitigation detailed in the Scoping Report is included in the Schedule of Mitigation.
8	Schedule of Mitigation	The Scottish Ministers agree that population, human health and socioeconomic impacts are scoped OUT of the EIA report, providing that the mitigation outlined in the scoping report is included in a SoM and detailed site plans and/or CEMP to ensure successful implementation.	All mitigation detailed in the Scoping Report is included in the Schedule of Mitigation.
8	Schedule of Mitigation	The Scottish Ministers agree that noise and vibration impacts are scoped OUT of the EIA report, providing that the construction techniques detailed in the scoping report remain unchanged and the mitigation outlined in the scoping report is included in a SoM and detailed site plans and/or CEMP to ensure successful implementation.	All mitigation detailed in the Scoping Report is included in the Schedule of Mitigation.
8	Schedule of Mitigation	The Scottish Ministers agree that natural resource usage and waste impacts are scoped OUT of the EIA report, providing that the mitigation outlined in the scoping report is included in a SoM and detailed site plans and/or CEMP to ensure successful implementation.	All mitigation detailed in the Scoping Report is included in the Schedule of Mitigation.
8	Schedule of Mitigation	The Scottish Ministers agree that traffic and access impacts are scoped OUT of the EIA report, providing that the mitigation outlined in the scoping report is included in a SoM and detailed site plans and/or CEMP to ensure successful implementation.	All mitigation detailed in the Scoping Report is included in the Schedule of Mitigation.
4	Methodology	The MCA, however, has requested that a Navigational Risk Assessment relative to the scale of the works is undertaken in order to demonstrate the impact of the proposal on the range of vessels operating in the area and the measures taken to reduce any potential impacts. NLB did not express any navigational concerns.	The Navigational Risk Assessment was undertaken the resulting report is provided as a standalone document in support of the Marine Licence application.

Chapter		Scoping Response	Response
4	Methodology	The Scottish Ministers concur with the MCA's comments and agree that navigational impacts are scoped IN to the EIA report. The applicant is thus directed to refer to Appendix I for further information on the relevant requirements, as per MCA's consultation response.	Appendix 1 was consulted and used to inform the scope of the Navigation Risk Assessment. The Navigational Risk Assessment was undertaken the resulting report is provided as a standalone document in support of the Marine Licence application.
8	Schedule of Mitigation	The Scottish Ministers agree that water quality and coastal process impacts are scoped OUT of the EIA report, providing that the mitigation outlined in the scoping report is included in a SoM and site plans and/or CEMP to ensure successful implementation.	All mitigation detailed in the Scoping Report is included in the Schedule of Mitigation.
8	Schedule of Mitigation	The Scottish Ministers agree that impacts from major accidents and disasters are scoped OUT of the EIA report and welcome the applicant's commitment to utilise a Safety Management System throughout the construction and operation of the proposed works to manage incidents and risk.	All mitigation detailed in the Scoping Report is included in the Schedule of Mitigation.
4,5,6,7	Methodology, Benthic Ecology, Ornithology and Otters	Given, however, that new planning permissions and/or marine licences may be granted subsequent to the adoption of this scoping opinion, the Scottish Ministers confirm that cumulative impacts are scoped IN to the EIA report to ensure an up to date cumulative impact assessment is carried out at the point of application.	Cumulative impacts were assessed in relevant topic specific chapters. No significant cumulative impacts were identified.
N/A	N/A	If the proposed works are located in an area where Gaelic is spoken, the applicant is encouraged to adopt best practice by publicising details of the proposed works in both English and Gaelic.	The formal advert for the Marine Licence Application will be published in both English and Gaelic.

Table 4.2.2 Summary of topic scoped in and out.

Topic	Construction and Site Preparation	Operation
Air Quality		
Climate Change		Positive
Archaeology and Cultural Heritage		
Biodiversity and Nature Conservation – Otters and Ornithology		
Biodiversity and Nature Conservation – Marine		
Landscape and Visual		
Land and Soil Quality		
Population, Socio-economics and Human Health	Positive	Positive
Noise and Vibration - Both		Positive
Resource Usage and Waste		Positive
Traffic and Access		Positive
Water Quality – Terrestrial		
Major Accidents and Disasters		

Key

	Negligible Effect – Scoped Out
	Potential Effect – Scoped out as effectively reduced by mitigation proposed in the Scoping Report.
	Potential Significant Effect – Scoped In

4.3 Baseline Assessments

Baseline assessments have been completed for each of the EIA topic areas to be considered as part of this assessment. The following sources of information have been utilised in the compilation of baseline data:

- Desk based studies, making use of publicly available reports and data;
- Stakeholder dialogue, to identify additional data sources and information; and
- Site surveys and monitoring, when appropriate.

Full details of data sources used, and survey and monitoring methods employed for each topic are provided within the topic-specific sections.

The baseline information is utilised to understand the value of each environmental receptor and its sensitivity to the potential impacts associated with the development. This is then utilised to assess the significance of the effect each impact is predicted to have.

4.4 Assessment Methodology

The assessment criteria being applied to this EIA are detailed within this section. For each of the environmental topics being assessed, the appropriate professional guidelines for EIA have

been applied and followed where applicable, along with any other relevant guidance documents and best practice techniques.

The environmental assessment is conducted in two stages. The first stage characterises the nature of the impacts (positive or negative) and the second determines the level of significance of the effects. An effect results from the consequences of a change (or impact) acting on a resource / receptor. The precise nature of the effect will depend on the interaction between the degree of impact (e.g. extent, duration, magnitude, permanence etc.) and the sensitivity, value, or number of the resources / receptor in each case.

The assessment will identify the origins of environmental impacts, positive (beneficial) and negative (adverse), from the project and predict their effects on resources or receptors. A resource is any environmental component affected by an impact (e.g. items of environmental capital such as habitats, aquifers, landscape, views and community facilities). A receptor is any environmental or other defined feature (e.g. human beings) that is sensitive to, or has the potential to be affected by, an impact.

The assessments of whether the effects of the development on the receptors was made by suitably qualified and experienced practitioners. Where possible, quantitative analyses was undertaken to support the impact assessments. Where the subject did not lend itself to quantitative analysis, qualitative analysis based on the relevant literature and similar studies will be utilised to provide a robust assessment. This will be determined for each environmental topic, depending on the nature of the receptor.

The EIA only included the assessment of the significance of predicated impacts on ecological receptors, as all other topics were scoped out. Therefore, the assessment of the significance of predicted impacts on the ecological receptors is based on both the 'value' of a receptor and the nature and magnitude of the impact that the development will have on it. Effects on biodiversity may be direct (e.g. the loss of species or habitats), or indirect (e.g. effects due to noise, dust or disturbance), on receptors located both within or outwith the site boundary.

4.4.1 Evaluation of Ecological Receptors

The evaluation methodology has been adapted from the Guidelines for Ecological Impact Assessment in the United Kingdom (CIEEM, 2016). A key consideration in assessing the effects of any development on flora and fauna is to define the areas of habitat and the species that need to be considered. This required the identification of a potential zone of influence, which is defined as those areas and resources that may be affected by biophysical changes caused by project activities, however remote from the respective survey area.

The approach that has been undertaken throughout this EIA is to identify 'valued ecological receptors' i.e. species and habitats that are both valued in some way and could be affected by the proposed development, and separately, to consider legally protected species. Both species' populations and habitats have been valued using a broad geographical basis, with full details in Table 4.4.1.

The approach taken in this assessment is that a species population or habitat area that is of Regional or greater importance in biodiversity conservation terms is considered to be a valued ecological receptor. Therefore, if a species population or habitat area is considered to be of high local value or less, the proposed development is not anticipated to have an effect that would be significant in terms of the EIA Regulations. Exceptions are made if the species population or habitat area has been identified as having a high social or economic value, or if the species or habitat is legally protected.

Table 4.4.1 Nature conservation receptor evaluation criteria.

Value	Criteria
International	An internationally important site or a site proposed for, or considered worthy of such designation; A regularly occurring substantial population of internationally important species (listed on Annex IV of the Habitats Directive).
National	A nationally designated site, SSSI, or a site proposed for, or considered worthy of such designation; A viable area of habitat type listed in Annex I of the Habitats Directive or of smaller areas of such habitat which are essential to maintain the viability of a larger whole; or A regularly occurring substantial population of a nationally important species, e.g. listed on Schedule 5 & 8 of the 1981 Wildlife and Countryside Act.
Regional	Areas of internationally or nationally important habitats which are degraded but are considered readily restored; Viable areas of priority habitat or viable populations identified in the UK Biodiversity Action Plan or smaller areas/populations which are essential to maintain the viability of a larger area/population as a whole; Regionally important population/assemblage of an EPS, Schedule 1 and/or 5 species. Regionally important assemblages of other species or habitats.
High Local	Ancient semi-natural woodland, Local Nature Reserves (LNRs) and Local Nature Conservation Sites (LNCS); Locally important population/assemblage of an EPS, Schedule 1 and/or 5 species; or Sites containing viable breeding populations of species known to be county rarities (e.g. included in the LBAP) or supplying critical elements of their habitat requirements.
Moderate Local	Undesignated sites, features or species considered to appreciably enrich the habitat resource within the local context (within 2km radius from the site) and may benefit from mitigation as a good practice measure.
Low Local	Undesignated sites, features or species considered to appreciably enrich the habitat resource within the immediate environs of the site and may benefit from mitigation as a good practice measure.
Negligible	Common and widespread or modified habitats or species.
Negative	Invasive, alien species often scheduled under Section 14, Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

The approach of this assessment is to consider the value of the site for the species under consideration, rather than the nature conservation importance of the species itself, although this is a factor in the evaluation process with the level of use of the site (number of individuals using the site and nature and level of use) taken into consideration. An assessment is then made of the value of the site to that species, based upon a combination of data sources, professional judgment and knowledge of the site and wider area.

4.4.2 Legal Protection of Species

There is a need to identify all legally protected species that could be affected by the proposed development, to ensure that the development complies with all relevant nature conservation legislation. It is, therefore, appropriate to take into full consideration the legal protection of a species within the evaluation process.

4.4.3 Nature of Impact and Severity

In considering the impact severity a range of factors are taken into account as applicable to the subject matter. The factors utilised are based on the Institute of Ecology and Environmental Monitoring (IEEM) guidelines of ecological assessment (CIEEM, 2010). They include the:

- Geographical extent of the impact;
- Scale (Magnitude) of the impact: size, amount, intensity, volume;
- Frequency and timing: how often and when (time of day or seasonality);
- Duration, typically: short, medium, long-term and permeant or temporary; and
- Reversibility: can the effect be reversed or is it irreversible.

The magnitude of the impact takes into account the geographical extent, scale, frequency and timing as applicable for the subject area. The magnitude of impact terminology and criteria will be defined within each environmental chapter, but in most cases includes an overall magnitude term of negligible; low; medium; and major, high or large.

The duration of the impact is also noted, as permanent or temporary. Temporary impacts can be further sub-divided if necessary, in accordance with the following definitions, although use of this terminology is highly dependent on other factors within the environmental topic being assessed (e.g. lifecycle of flora and fauna species):

- Short-term: less than 1 year in duration;
- Medium-term: between one to three years in duration; and
- Long-term: more than three years in duration.

Whether or not an impact is reversible is also noted.

The initial assessment of impacts will take account of primary and tertiary mitigation (see Section 4.4.4). Potential significant adverse effects are then reassessed to understand the residual effects, taking account of all mitigation proposed.

To identify whether impacts are significant or not, it is important to undertake the assessment in terms of the integrity (coherence of the ecological structure and function) and conservation status (ability of the receptor to maintain its distribution and/or extent/size) of the receptor.

Table 4.4.2 provides an overview of the range of impact magnitudes referred to within this assessment.

Table 4.4.2 Definition of magnitude of impact.

Magnitude	Description
Negligible / None	Very slight change from the baseline conditions. Changes barely detectable, approximating to the 'no-change' situation. Any effects likely to be reversible within 12 months and not affect the conservation status or integrity of the receptor.
Low	Minor shift away from baseline conditions. Effects will be detectable but unlikely to be of a scale or duration to have a significant effect on the conservation status or integrity of the receptor in the short term (1-5 years). Overall baseline character of site will not alter substantially.
Medium	Clear effect on the conservation status or integrity of the receptor in the short to medium term (6-15 years), although this is likely to be reversible or replaceable in the long-term (15 years plus).
High	Total loss of, or major alteration to conservation status or integrity of a receptor with situation likely to be irreversible, even in the long term. Fundamental alteration to the character and composition of the site.

4.4.4 Indirect and Cumulative Impacts, and Impact Integrations

As well as direct impacts (resulting from the project itself), impacts can also be indirect or cumulative. There can also be interactions between multiple impacts resulting from one or more projects. Where this terminology is used within any assessment, the definitions for these are outlined below (as taken from 'Guidelines for the assessment of indirect and cumulative impacts as well as impact interactions' (European Commission, 1999)):

- Indirect: impacts on the environment, which are not a direct result of the project, often produced away from or as a result of a complex pathway. Sometimes referred to as second or third level impacts, or secondary impacts;
- Cumulative: impacts that result from incremental changes caused by other past, present or reasonably foreseeable future actions together with the project; and
- Impact interactions - the interactions between impacts whether between the impacts of just one project or between the impacts of other projects in the area.

4.4.5 Impact Significance

The significance of an effect is a product of the value of the ecological receptor and the magnitude of the impact on it, moderated by professional judgment. Table 4.4.3 illustrates a matrix based on these two parameters which is used for guidance in the assessment of significance. In terms of the EIA Regulations, only effects which are 'moderate' or 'major' are considered significant; the others constituting a non-significant effect.

Table 4.4.3 Significance of effects matrix.

Magnitude of Impact	Value				
	International	National	Regional	Moderate Local/ High Local	Low Local /Negligible
High	Major	Major	Moderate	Moderate	Minor/ Negligible
Medium	Major	Moderate	Moderate	Minor	Minor / Negligible
Low	Moderate	Minor	Minor	Minor	Minor / Negligible
Negligible	Minor	Negligible	Negligible	Negligible	Negligible

Key

Significant Effect

4.5 Approach to Mitigation

The Institute of Environmental Monitoring and Assessment (IEMA) define three categories of mitigation in their EIA guidance for Shaping Quality Development (IEMA, 2015). These categories will be used throughout this EIAR and are outlined below:

- **Primary (Inherent) Mitigation:** Modifications to the location or design of the development made during the pre-application phase that are an inherent part of the project, and do not require additional action to be taken.
    - E.g. Identifying a key habitat or archaeological feature, and amending the development's layout and operation, such that it remains unaffected;
- **Secondary (Foreseeable) Mitigation:** Actions that will require further activity in order to achieve the anticipated outcome. These may be imposed as part of the planning consent, or through inclusion in the EIAR.
    - E.g. Adoption of a Species Protection Plan to limit the effects of the development on a sensitive receptor through implementing protocols that will eb adhered to during construction operations; and
- **Tertiary (Inexorable) Mitigation:** Actions that would occur with or without input from the EIA feeding into the design process. These include actions that will be undertaken to meet other existing legislative requirements, or actions that are considered to be standard best practices used to manage commonly occurring environmental effects.
    - E.g. Aligning to Considerate Contractors' practices that manage activities which have potential nuisance effects.

As per the above IEMA categories, all the primary and tertiary mitigation embedded in the design and construction of the development is set out in the Project Description (Chapter 2), with topic specific elements discussed in the individual topic chapters. The primary and tertiary

mitigation measures will be used when assessing the significance of effects, since both these forms of mitigation are certain to be delivered. Thus, any effects that might arise without the primary and tertiary mitigation do not need to be identified as potential effects, as there is no potential for them to arise.

Secondary mitigation measures will be proposed where practicable for any potential significant adverse effects that are identified. Mitigation measures will then be developed, as required, taking into account current guidance, precedents from similar projects, effectiveness and feasibility of solutions, and incremental costs.

It may only be possible to reduce the severity of potential adverse effects through secondary mitigation, as some cannot be eliminated entirely. Residual effects are those that remain after mitigation has taken place. These are assessed in the same way as detailed in Section 4.4.

A Schedule of Mitigation (SoM) has been produced in line IEMA's guide to Delivering Quality Development (IEMA, 2016). The SoM is provided in Chapter 8 of this EIAR, and includes all primary, secondary, and tertiary mitigation identified by this EIAR, and the associated scoping report.

4.6 Consultation

As discussed in Chapter 3 (Statutory Context & Policy), the project is required to carry out pre-application Consultation, and a Pre-application Consultation Report has been produced for submission with the Marine Licence application. It should however be noted that, there has been additional dialogue with Marine Scotland and Scottish Natural Heritage to agree the scope of the Benthic Surveys and approach to otter mitigation this includes:

- Following the completion of otter survey, the results were discussed with SNH and it was agreed that an Otter Protection Plan (OPP) would be produced to support the application; and
- Affric's [Redacted] had a discussion with [Redacted] of Scottish Natural Heritage to discuss the scope of the benthic survey. The benthic survey plan was provided to SNH for review and agreement prior to the survey being completed.

4.7 Cumulative Effects

A review of planned onshore and offshore developments has been carried out to identify which should be considered within the EIAR within the topic-specific chapters. In the topic-specific chapters the identified developments were assessed to establish if any cumulative effects may arise.

4.8 References

CIEEM. (2010). Guidelines for Ecological Impact Assessment in Britain and Ireland: Marine and Coastal.

CIEEM. (2016). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal.

IEMA. (2015). Shaping Quality Development

IEMA. (2016). Delivering Quality Development.

Chapter 5: Benthic Ecology

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5 Benthic Ecology

5.1 Introduction

In this chapter, the potential effects arising from the construction phase of the Kilfinichen Pier Development on benthic ecology are discussed and assessed. Any required mitigation measures to minimise impacts are identified and residual effects are assessed.

5.2 Regulations and Sources of Information

5.2.1 Planning Framework

The Scottish National Marine Plan provides General Planning Principles (GEN) (Scottish Government, 2015), of which the following apply to the benthic ecology assessment:

- **GEN 9 Natural Heritage**: Development and use of the marine environment must:
  - Comply with legal requirements for protected areas and protected species;
  - Not result in significant impact on the national status of Priority Marine Features; and
  - Protect and, where appropriate, enhance the health of the marine area.
- **GEN 10 Invasive Non-Native Species**: Opportunities to reduce the introduction of invasive non-native species to a minimum or proactively improve the practice of existing activity should be taken when decisions are being made.

5.2.2 European and International Regulations

Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora, known as the 'Habitats Directive' was adopted in 1992. The Directive is the means by which the European Union meets its obligations under the Bern Convention. In order to comply with Article 3 of the directive, Special Areas of Conservation (SACs) must be designated in UK territorial waters in order to provide a network of high-quality conservation sites for habitats and species listed under Annexes I and II of the Directive. A total of thirteen marine habitats are detailed in Annexe I of the Directive, while eight benthic species are listed in Annexe II.

As such, species listed in Annexes I and II of the Habitats Directive are considered sensitive species for the purposes of this assessment.

Annexe I habitats which may be present in the vicinity of the development include:

- Sub-tidal sandbanks;
- Estuaries; and
- Intertidal mudflats and sandflats.

5.2.3 National Legislation

The primary legislative instrument transposing the Habitats Directive into UK law is The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) (the Habitats Regulations). The Habitats Regulations also provide protection to SACs, since they require that any proposal which has the potential to result in a negative Likely Significant Effect

(Alsenoy *et al.*) to an SAC or its designated features, to be subject to a Habitats Regulations Appraisal (HRA), and if necessary, an Appropriate Assessment (AA). The HRA and AA process ensures that no development can be consented if it may cause adverse effects on the integrity of a Natura Site, unless there are no alternatives, and there is an imperative reason of overriding public importance for the development to be constructed.

The Marine (Scotland) Act 2010 has established new powers to designate Marine Protected Areas (MPAs) in Scottish Territorial Waters, including those for nature conservation. There are no designated MPAs for the presence of benthic or intertidal habitats or species within the vicinity of the proposed development.

5.2.4 Other Guidance

The Marine (Scotland) Act 2010 sets out duties on Scottish Ministers to ensure Scotland's seas are managed sustainably. In order to help meet this requirement, the Joint Nature Conservation Committee (JNCC) and Scottish Natural Heritage (SNH) have produced a list of habitats and species occurring in Scottish waters, which are noted for their conservation importance. These are referred to as Priority Marine Features (PMFs) (Tyler-Walters *et al.*, 2016). Inclusion in the PMF list does not provide any additional legal protection, however, due consideration must be provided in Impact Assessments, and as such all PMFs are considered sensitive for the purpose of this assessment.

5.2.5 Sources of Information

The following sources of information were consulted in the compilation of this benthic ecological impact assessment:

- Kilfinichen Estate Benthic Survey (Fauna and Particle Size Distribution – PSA) (EcoFish Global, 2018); and
- SNH Sitelink (SNH, 2018).

5.3 Method of Assessment

5.3.1 Benthic Survey

A benthic survey was commissioned to inform this assessment. The benthic survey consisted of a desktop study, benthic video transects, and grab sample analysis. Benthic grab samples underwent laboratory particle size distribution (PSD) analysis and faunal identification and classification. The benthic video transects, and grab sampling was undertaken during a single site visit in June 2018.

5.3.1.1 Desktop Study

A desktop study was undertaken to identify any designated sites and/or legally protected or ecologically significant species within the vicinity of the proposed pier development. This involved a review of the information available on the of the Scottish Environmental Protection Agency (SEPA) website that provides information on the status of surface waters under the Water Framework Directive 2000.

5.3.1.2 Benthic Video Survey

Three video transects were completed by an experienced diver using a handheld camera capable of taking both video and stills. The locations of the three transects are provided in Drawing 44.02.05. At least 3 photos were taken per transect, and where habitats or species of interest were observed, additional photos were taken.

5.3.1.3 Grab Samples

The grab sample locations were informed by the video survey, these are shown in Drawing 44.02.05. Due to the relatively homogenous nature of the benthic habitats identified during the video transects, only two grab sampling locations were selected within the survey area. The first near the coast (1A) and the second near the seaward end of the proposed development (2A). At each sampling location, two seabed samples were taken using 0.045m^2 Van Veen grab. One sample at each sampling point was sieved on location with any biological material retained in Formalin for transfer to the laboratory for analysis. The second sample was retained for particle size distribution analysis to further inform the understanding of habitat type.

5.3.1.4 Laboratory Analysis

The faunal identification and classification of grab samples were undertaken by personnel that participate in the National Marine Biological Analytical Quality Control (NMBAQC) scheme. Faunal identification and classification used the Infaunal Trophic Index (ITI). ITI describes the feeding behaviour of benthic communities using a single parameter. The ITI method sees invertebrates divided into four groups depending on the food type eaten by the invertebrate. ITI groups include:

- Group 1 - Suspension feeders;
- Group 2 - Surface detritus feeders;
- Group 3 - Surface deposit feeders; and
- Group 4 - Sub-surface deposit feeders.

PSD analysis was undertaken by ALS Environmental who are acreddited by the Environment Agency's Monitoring Certification Scheme.

Biotope code allocations were then made for each sample location using the Marine Habitat Classification of the British Islands [Joint Nature Conservation Committee, 2018]. The task was carried out by an experienced ecologist practised in matching UK biotopes to field survey data, with codes applied through experienced judgement and knowledge of the classification systems. All survey data were used to inform the biotope allocation process including the in-situ descriptions of the sediment and macrofaunal data (APEM, pers. comm.).

The video footage and stills obtained from the transect surveys were viewed by an experienced benthic ecologist. This allowed the various biotopes present to be classified according to the Marine Habitat Classification system for Britain & Ireland. In order to define the positions of the changes in biotopes from the diver transect survey, the start and end

points of the transects were first used to define the position of the biotopes at the first and last second of each video file. Then, due to the lack of geographic positioning data, the transect was recorded moving at a constant speed and direction between the start and end point. This allowed the biotope shown at each time on the video file to be extrapolated to an approximate position along the transect. This approach allowed an approximation to be made of where the biotope boundaries are likely to be located, and hence the extent of the biotopes estimated. It is noted that this the outputs of this process are subject to a degree of uncertainty, due to the assumptions made in absence of detailed positioning data (APEM, pers. comm.).

5.3.2 Method of Assessment

The methodology utilised to assess the potential effects resulting from the proposed pier development on benthic ecology is described in Chapter 4: Methodology.

5.4 Baseline

5.4.1 Environment

Loch Scridain is a long sea loch on the south western coastline of the Isle of Mull in the Inner Hebrides. The loch has an approximate surface area of 29km^2. The development site is located at the north east (inland) end of the loch, and is relatively sheltered sue to the Kilfinichen Peninsula, which protrudes into the loch, providing shelter from the prevailing westerly swells. The loch is 124m deep at its deepest point, but shallows to the north east, with the development located in an area of less than 10m water depth.

A study into the benthic environment of the North and West of Scotland and the Northern and Western Isles in 2005 found that there is very little published information on biological communities around the Isle of Mull (Wilding *et al.*, 2005).

5.4.2 Benthic Survey

A full description of the benthic survey and results can be found in Appendix C.1 with a summary of the results presented here.

5.4.2.1 Desktop Study

The desktop study identified the Loch Scridain is a coastal water with ID: 200064 in the Scotland River Basin District. It was also established that the loch has a typology of CW11.

The coastal waters of Loch Scridain are categorised by SEPA as not heavily modified or artificial. The overall status of the marine loch is classified as Good, with an overall Good ecological status and a chemical status of Pass. No current pressures on the water body were identified (EcoFish Global, 2018). Table 5.4.1 details the individual ecological quality parameters of Loch Scridain.

Table 5.4.1 Ecological quality parameters of Loch Scridain adapted from (EcoFish Global, 2018).

Ecological Quality Parameters of Loch Scridain	
Waterbody name	Loch Scridain
Waterbody ID	200064
Overall status	Good
Pre-HMWB status	Good
Overall ecology	Good
Physico-chem	High
Dissolved oxygen	High
Dissolved inorganic nitrogen	High
Biological elements	Good
Invertebrate animals	Good
Benthic invertebrates (IQI)	Good
Macroalgae (FSL)	High
Macroalgae (RSL)	Good
Phytoplankton	High
Specific pollutants	Pass
Unionised ammonia	Pass
Hydromorphology	High
Morphology	High

5.4.2.2 Video Transect Analysis

Analysis of the video transects identified a relatively homogenous benthic environment, consisting primarily of muddy sediments characterised with kelp and seaweed species. Occasional rocky habitats with kelp and seaweed species were also observed. The observed habitats within the development area were classified as four different biotope complexes (Drawing 44.02.08). The most widespread biotope complex across the proposed development area was SS.SMp.KSwSS.LsacCho (*Laminaria saccharina* and *Chorda* filum on sheltered upper infralittoral muddy sediment), with Biotope complexes LR.LLR.F.Asc (*Ascophyllum nodosum* on very sheltered mid eulittoral rock), IR.LIR.K.LhypLsac (Mixed *Laminaria hyperborea* and *Laminaria saccharina* on sheltered infralittoral rock) and IR.LIR.K.Lsac (*Ascophyllum nodosum* on very sheltered mid eulittoral rock) being localised habitat complexes (EcoFish Global, 2018 & APEM pers. comm.).

The SS.SMp.KSwSS.LsacCho covering large areas of the proposed development is designated as a Scottish PMF. No other designated biotopes were identified. The video transects also identified no invasive non-native species (INNS) listed by the GB non-native species register (APEM pers. comm.).

5.4.2.3 Benthic Grab Sample Analysis

Results from grab sample analysis concur with the observations from the video transects while identifying two further biotope complexes. Biotope complexes SS.SCS.CCS.MedLumVeb (*Mediomastus fragilis*, *Lumbrineris* spp. and venerid bivalves in circalittoral coarse sand or gravel) near the coast and SS.SMu.ISaMu.MelMagThy (*Melinna palmata* with *Magelona* spp. and *Thyasira* spp. in infralittoral sandy mud) near the seaward end of the development were identified (EcoFish Global, 2018 & APEM pers. comm.).

Identification of the fauna present in the grab samples showed a diversity of genus and species. Notable species recorded include an individual specimen of *Capitella* spp. in sample 1A, possibly indicating organic enrichment. An individual juvenile Blue Mussel (*Mytilus edulis)* which are an important commercial species was identified within the seaward 2A sample (EcoFish Global, 2018 & APEM pers. comm.).

The largest species abundance of 137 was found in sample 2A while 78 were recorded in sample 1A. Classified family groups included Nemertea, Nematoda, Annelida, Oligochaeta, Crustacea, Mollusca, Bryozoa, Ascidiacea, Phoronida and Echinodermata. The majority of these groups are surface detritus deposit feeders. Lower numbers of suspension deposit and sub-surface deposit feeders were recorded (EcoFish Global, 2018).

The ITI score for the 1A and 2A grab samples were 56.06 and 47.14 respectively. These scores are classified as *Changed* as they are between 30 and 60, this would indicate elevated levels of organic enrichment in the area (EcoFish Global, 2018).

The results from the PSD analysis indicate that the sediments in the study area are dominated by silt and soft sand, with only small amounts of coarser sediments identified. This supports the findings of the ecological assessment (EcoFish Global, 2018).

No designated or INNS species were recorded (APEM, pers. comm.).

5.4.3 Statutory Designated Sites

In the vicinity of the proposed development, no designated sites for benthic features were identified.

5.4.4 Identification of Receptors

The benthic survey identified multiple biotope complexes as detailed in Table 5.4.2. benthic habitats within the red line boundary of the development. The development footprint and the immediate vicinity may be subject to both direct and indirect impacts resulting from the construction of the Kilfinichen Pier, and are therefore identified as receptors. Limited data on the geographic abundance of the specific biotope complexes in Table 5.4.2 was identified. Therefore, a conservative approach was taken, and these biotopes considered to be of **Moderate Local** ecological value. The exception to this is the biotope complex SS.SMp.KSwSS.LsacCho which is designated as a Scottish PMF, and hence is assigned a value of **National**.

Table 5.4.2 Summary of Identified Benthic Receptors and their Ecological Value.

Receptor	Description	Value
SS.SMp.KSwSS.LsacCho	*Laminaria saccharina* and *Chorda* filum on sheltered upper infralittoral muddy sediment.	National
LR.LLR.F.Asc	*Ascophyllum nodosum* on very sheltered mid eulittoral rock.	Moderate local
IR.LIR.K.LhypLsac	Mixed *Laminaria hyperborea* and *Laminaria saccharina* on sheltered infralittoral rock.	Moderate local
IR.LIR.K.Lsac	*Ascophyllum nodosum* on very sheltered mid eulittoral rock.	Moderate local
SS.SCS.CCS.MedLumVeb	*Mediomastus fragilis*, *Lumbrineris* spp. and venerid bivalves in circalittoral coarse sand or gravel	Moderate local
SS.SMu.ISaMu.MelMagThy	*Melinna palmata* with *Magelona* spp. and *Thyasira* spp. in infralittoral sandy mud.	Moderate local

5.5 Impact Assessment

Construction activities may result in a variety of potential direct and indirect impacts on the benthic environment within the proposed development area and on the identified receptors in Table 5.4.2. The assessment of these impacts follows the methodology outlined in Chapter 4: Methodology and assesses the potential effects resulting from the construction required for the project as outlined in Chapter 2: Project Description.

5.5.1 Habitat Loss

The project description in Chapter 2 highlights the requirement to conduct land reclamation of 0.8Ha in order to construct the causeway for the Kilfinichen Pier development. As a result of this reclamation, a portion of the following biotopes identified within the benthic survey area, will be lost within the development footprint:

- SS.SMp.KSwSS.LsacCho;
- LR.LLR.F.Asc;
- IR.LIR.K.LhypLsac;
- IR.LIR.K.Lsac;
- SS.SCS.CCS.MedLumVeb; and
- SS.SMu.ISaMu.MelMagThy.

The direct loss of these biotope complexes will result in the loss of individuals, habitat, potential spawning sites, and foraging areas, for benthic communities in close proximity to the proposed development (Boyd et al., 2005).

Whilst there will be a loss of benthic flora, fauna, and habitat in the development footprint, it is not expected that this will have population level effects on the wider Loch Scridain benthic community. This is because a habitat loss of 0.8Ha (0.008km^2) is very small in the context of the overall area of Loch Scridain, approximately 29km^2 [Boyd et al., 2005]. The nature of the works is also unlikely to result in habitat fragmentation, which could potentially affect ecological processes, as the development does not create a barrier across Loch Scridain. The localised nature of the habitat loss results in this impact being assessed as **negligible**,

localised, and **permanent**. The value of the receptors ranges from **Moderate Local**, to **National**, hence the effect is assessed as **negligible, Non-Significant**.

5.5.2 Introduction of Invasive Non-Native Species

Invasive Non-native species (INNS) are flora or fauna that have been introduced either accidentally or intentionally beyond their natural marine range (Nall *et al.*, 2015). Such species may establish themselves within a habitat without impairing the integrity of the ecosystem. However, some can drastically degrade habitats, destabilise ecosystems and decimate local biodiversity (Bax *et al.*, 2003; Groeneveld *et al.*, 2018).

The benthic survey and literature review did not identify any presence of INNS in the vicinity of the development, or wider Loch Scridain (EcoFish Global, 2018).

There is a risk that non-native marine species could be introduced to Loch Scridain via various vectors associated with the proposed Kilfinichen Pier Development, including construction machinery and release of ballast water from vessels visiting the site. The introduction of INNS could result in serious ecological consequences for the benthic communities of the Loch Scridain, (Hulme Philip, 2009). However, vessels, materials and equipment associated utilised during the conduction will be locally sourced reducing the risk of INNS introduction. In addition, the adoption of best practice mitigation measures, including cleaning and inspection of plant and equipment, and the implementation of appropriate ballast water management systems, further reduces or removes the risk of such an event occurring. As such it is considered extremely unlikely that the construction works could lead to the introduction of non-native marine species. The potential impact on benthic receptors is therefore assessed as **negligible: long term, and reversible**, resulting in a **negligible: Non-Significant** effect.

5.5.3 Reduction in Water Quality

The proposed construction operations have the potential to result in a reduction in water quality in the vicinity of the site through increased sediment loading, and accidental releases of hazardous substances (such as oils). Increased sediment loading, and the resulting increased deposition rates can reduce productivity in the benthic environment, and potentially result in mortality though smothering, and decreasing light penetration (Erftemeijer *et al.*, 2012; Karel, 1999). An accidental release of hazardous substances can also result in mortality and reduced productivity in benthic receptors, predominantly through toxicological effects.

While water quality has been scoped out of this EIA, standard best practice mitigation measures for the prevention of surface water run-off, and accidental releases of hazardous substances are included in Chapter 8: Schedule of Mitigation. Implementation of these measures will minimise the levels of increased sediment loading resulting from construction, and the risk of a release of hazardous substances at a scale which could result in significant impacts on benthic receptors extremely unlikely. As such the effect associated with a reduction of water quality on all benthic receptors are assessed as **negligible: Non-Significant**.

5.6 Mitigation Measures

No significant impacts were identified, resulting in no specific mitigation required.

It is noted that the assessments in Section 5.5 assume the provision of various items of primary and tertiary mitigation. These are included in Chapter 8: Schedule of Mitigation, in order to ensure they are effectively implemented during the construction works.

5.7 Cumulative Impacts

No marine projects and marine licenses application in Loch Scridain were identified that could potentially give rise cumulative impacts.

5.8 Summary

The chapter assessed the potential impacts arising from the construction phase of the Kilfinichen Pier Development on benthic ecology. Considering the implementation of appropriate primary and tertiary mitigation, no significant impacts on the benthic ecological receptors were identified.

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Chapter 6: Ornithology

KILFINICHEN ESTATE
Isle of Mull

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6 Ornithology

6.1 Introduction

This chapter reviews the construction stage of the Kilfinichen Pier development in relation to ornithological receptors in and surrounding the site.

6.2 Regulations, Guidance and Sources of Information

The specific policy and guidance relevant to ornithological receptors are provided in this section.

6.2.1 The Birds Directive

Directive 2009/147/EC of the European Parliament and of the Council, on the conservation of wild birds, commonly known as the Birds Directive, protects all wild birds, their nests, eggs and habitats within the European Community. It gives member states of the European Union, the power and responsibility to classify Special Protection Areas (SPAs), to protect birds which are rare or vulnerable in Europe, as well as all migratory birds which regular visitors. The 2009 Directive is the consolidated (or 'codified') version of Council Directive 79/409/EEC which originally came into force in 1979 and was amended many times before being replaced by the current version.

6.2.2 The Habitats Directive

The European Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora, also referred to as the 'Habitats Directive'. The primary aim of the Habitats Directive is to maintain biodiversity within the Member States and is transposed into Scottish law by a combination of the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended in Scotland), commonly known and the 'Habitat Regulations' together with the Habitats Regulations 2010 (in relation to reserved matters).

The Habitats Regulations identify several habitats or species whose conservation interest requires the designation of Special Areas of Conservation and in combination with the designation of Special Protection Areas (SPAs) under the Birds Directive, form the Natura 2000 network of protected sites.

In addition, the Regulations make it an offence (subject to exceptions) to deliberately capture, kill, disturb, or trade in the animals listed in Schedule 2. However, these actions can be made lawful through the granting of licenses by the appropriate authorities. These species are commonly termed as European Protected Species (EPS).

6.2.3 UK Wildlife and Countryside Act 1981, and the Nature Conservation (Scotland) Act 2004

The primary legislation transferring the Birds Directive into UK law is the Wildlife and Countryside Act 1981, as amended (WCA) and the Nature Conservation (Scotland) Act 2004. Under these acts, all wild birds are protected under UK law and may not be taken, injured or killed without a licence at any time (with exceptions). Additionally, nests are also protected from damage or destruction while in use and eggs may not be taken or destroyed without a licence. For certain species, listed on Schedule 1 of the Act, special protection is provided, and it is an offence to disturb those species at their nest while it is in use.

As such, species listed on Schedule 1 of the WCA are considered sensitive species for the purposes of this assessment. In certain circumstances, where no significant effect is found following the assessment, but the works have the potential to disturb Schedule 1 species at their nest, this would be considered a significant effect. This is to ensure the works are legally compliant with the WCA, and to allow mitigation to be identified to protect the nests of Schedule 1 species from potential disturbance.

6.2.4 International Designations

Designated protected areas represent the very best of Europe's landscapes, plants and animals, rocks, fossils and landforms. Their protection and management will help to ensure that they remain in good health for all to enjoy, both now and for future generations. They may be designated to meet the needs of international directives and treaties, national legislation and policies, or more local needs and interests.

6.2.4.1 Natura Sites

Natura is the collective term given to Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). However, in this chapter only SPAs are considered as these are designated under the Birds Directive discussed in Section 6.2.1.1.

SPAs are internationally important for threatened habitats and species. They are also selected for a number of rare, threatened or vulnerable bird species listed in Annex I of the Birds Directive, and also for regularly occurring migratory species.

6.2.4.2 Ramsar Sites

Ramsar sites are wetlands of international importance, designated under the Ramsar Convention. Wetlands are defined as areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres. There are currently 51 Ramsar sites designated as internationally important wetlands in Scotland, covering a total area of about 313,000 hectares (SNH, 2017). All Ramsar sites in Scotland are also either SPAs or SACs (Natura 2000 sites), and many are also Sites of Special Scientific Interest (SSSIs), although the boundaries of the different designations are not always exactly the same (SNH, 2017). It is not surprising that internationally important wetlands are also of European interest for a wide variety of waterbirds, bogs, lochs, coastal wetlands and other water-dependent habitats and species. Although there is no specific legal framework that safeguards Scottish Ramsar sites, they benefit from the measures required to protect and enhance the Natura sites and SSSIs which overlap them. Scottish Natural Heritage (SNH) also includes Ramsar sites in its site condition monitoring programme.

6.2.5 National Designations

National designations cover a range of different types of protected area and are made by a variety of local and national authorities. Some of these designations focus on nature conservation, while others are concerned with special landscapes. The management of multi-functional protected areas (such as our National Parks), seeks to balance the needs of people, landscape and nature.

6.2.5.1 Sites of Scientific Interest

Sites of Special Scientific Interest (SSSI) are those areas of land and water (to the seaward limits of local authority areas), that SNH considers to best represent our natural heritage; its diversity of plants, animals and habitats, rocks and landforms, or a combination of such natural features. They are the essential building blocks of Scotland's protected areas for nature conservation. Many are also designated as Natura sites (SPAs and SACs). The national network of SSSIs in Scotland forms part of the wider Great Britain series. SNH designates SSSIs under the Nature Conservation (Scotland) Act 2004. SSSIs are protected by law. It is an offence for any person to intentionally or recklessly damage the protected natural features of an SSSI.

6.2.6 Local Designations

Local natural heritage designations identify areas that are important to people, generally in a Council area. Local nature conservation sites and special landscape areas may be known locally by other names, but all are used to direct local planning policies and highlight local sites of interest. Local nature reserves are areas of at least locally important natural heritage value, which local authorities own or manage, to provide opportunities for people to find out about their environment. Local designations are generally made by local authorities, though many are proposed by special interest and conservation groups, such as local Regionally Important Geological Sites (RIGS) Groups or the Scottish Wildlife Trust.

6.2.7 National and Local Biodiversity Action Plans (BAPs)

National and local Biodiversity Action Plans (BAPs) list species which have been identified as threatened, and for which action plans have been developed to aid recovery (JNCC, 2016). Any species listed on a National BAP are given special consideration for this impact assessment. Species listed on the local BAP (LBAP) are also identified.

6.2.8 Birds of Conservation Concern (BoCC)

Birds of Conservation Concern (BoCC) is a review carried out to assess the status of bird species in the UK, Channel Islands and Isle of Man (Eaton et al., 2015). This review also considers Globally Threatened species that have occurred in the UK over the last 25 years, taken from the IUCN Red List for birds (BirdLife International, 2015). A total of 244 species are assessed, and those for which populations or range are declining are identified. All bird species are classified into one of three groupings:

Red – species which are globally threatened, or which have suffered a historical population decline in the UK, or which have undergone a severe population decline or a severe range decline;

Amber – species of conservation concern across Europe, or which have undergone a historical population decline but are now recovering, or have undergone a moderate decline in breeding or non-breeding population or range, or are a rare breeder or have a restricted range or are internationally important; and

Green – species which do not fall into the previous two categories.

6.2.9 Other Sources of Information

Further sources of information which provided guidance for the ornithological assessment included:

- SNH interactive map facility at SiteLink (SNH, 2018); and
- Wintering bird survey at the proposed pier development site (Great Glen Ecology, 2018).

6.3 Method of Assessment

6.3.1 Baseline Methodology

6.3.1.1 Desktop Study

In order to assess the baseline conditions, a literature review utilising publicly available reports and research articles was carried out. A wintering and vantage point bird survey was undertaken by Great Glen Ecology on behalf of Kilfinichen Estate.

6.3.1.2 Wintering Bird Survey Methodology

In line with SNH guidelines for survey areas for wind farms (SNH, 2014), a survey area incorporating the proposed development plus a 500m buffer was developed as detailed in Appendix D.1, Map 1.

Surveying consisted of two individual surveys, one in early winter and a second approximately 2 months later following the initial survey, these were completed from 13th – 15th of December 2017 and 26th – 27th of February 2018 respectively. Each survey involved two different survey methods. A terrestrial survey was conducted involving a walkover method following the SNH guidance (SNH, 2014) and covered; roads, tracks, pathways, field boundaries, open land and woodland edges. All bird species were recorded using standard British Trust for Ornithology (BTO) species and activity codes. However, only target species were mapped. Target species were defined as those occurring on any of the following lists:

- Schedule 1 of the Wildlife & Countryside Act 1981;
- Annex 1 of the EC Birds Directive; and
- Red-listed Birds of Conservation Concern (SNH, 2014).

Surveys covering the intertidal and the open water areas employed the vantage point survey method, carried out directly at the site of the proposed pier development. The intertidal and open water survey extended 500m along the coastline on either side of the development, and 500m out to sea. Conducting the survey involved scanning periodically from the vantage point utilising binoculars and a telescope, recording all species and mapping target species. Target species were drawn from the list above but only included water birds (divers, grebes, cormorants, heron swans, geese, ducks, rails, waders, gulls, terns and kingfisher). Instead of the standard BTO activity codes used for the terrestrial survey, behaviour was coded as follows for the coastal survey:

- 1 – Roosting;
- 2 – Loafing/at rest;
- 3 – Foraging;
- 4 – Flying a non-continuous passage and;

- 5 – Flying a continuous passage.

To cover the tidal cycles, two 3-hour watches were undertaken during each survey, with one 1.5 hours watch during high tide and one 1.5 hours watch at low tide.

The initial vantage point (NM 49862 28287) utilised in the December 2017 survey was moved for the February 2018 survey as the new vantage point (NM 49777 28097) provided an improved view offer the survey area (SNH, 2014).

Both survey methods also assessed the presence of suitable nesting habitat within the survey area, in order to ascertain whether a breeding bird survey would be required.

6.3.1.3 Breeding Bird Survey

As detailed in Chapter 4; Methodology, Section 4.2, SNH agreed with the proposal made during the Scoping process, that the requirement for a detailed breeding bird survey should be informed by the wintering bird surveys. This was in order to ascertain whether suitable breeding habitat is present within the development area. The wintering bird surveys did not identify significant breeding bird habitat within the development area (Great Glen Ecology, 2018).

6.3.2 Impact Assessment Methodology

The evaluation of receptors, magnitude of impact and significance evaluation follows the methodology laid out in Chapter 4: Methodology. The likelihood of impact on the specific receptor is also provided as part of the summary of impacts.

6.4 Baseline

6.4.1 Designated Sites

There are several designated sites relatively near the proposed development site. However, only one is designated for ornithological interests which is Cnuic agus Cladach Mhuile SPA, designated for breeding Golden eagle *(Aquila chrysaetos)*. Appendix D.1, Map 1 details the location of the designated site relative to the proposed development.

6.4.1.1 Cnuic agus Cladach Mhuile SPA

The Cnuic agus Cladach Mhuile SPA is adjacent to the development site, and covers a large area, dominated by mountain and moorland habitat with small areas of broadleaved woodland. Multiple freshwater lochs are also found within the boundaries of the SPA. Cnuic agus Cladach Mhuile is designated for breeding golden eagle (*Aquila chrysaetos*). In 1992 during the breeding season, the site contained 14 pairs, representing 3.3% of the total breeding population of the UK at the time. The population for the west coast of Scotland possesses a high breeding productivity with 0.65 fledgelings per pair between 1981 and 1999, making it the highest density of any golden eagle population in the UK (SNH, 2002). Recent data is limited, however, numbers on the Isle of Mull are believed to remain stable, with potential increases in population numbers having occurred since 1999 (Whitfield, 2008).

6.4.2 Literature Review

The literature review identified 147 species of birds recorded as utilising the area within a 5km radius of the site. Of these, 27 are protected under Schedule 1 of the Wildlife and Countryside

Act 1981, and Mute Swans (*Cygnus olor*) are listed as an amber bird of conservation concern within the JNCC's State of the UK Birds (JNCC, 2017) (Table 6.4.1). However, none of these protected species has been recorded by the NBN (2017) within 1km of the site, or by SNH's geese surveys during Wetland Bird Survey counts [British Trust for Ornithology, 2017].

Table 6.4.1 Designated Species Found Within 5km of the Development Site.

Species		Species	
Common Name	**Scientific Name**	**Common Name**	**Scientific Name**
Kingfisher	*Alcedo atthis*	Great Northern Diver	*Gavia immer*
Greylag Goose	*Anser anser*	Red-Throated Diver	*Gavia stelleta*
Golden Eagle	*Aquila chrysaetos*	White-Tailed Eagle	*Haliaeetus albicilla*
Scaup	*Aythya marila*	Black-Tailed Godwit	*Limosa limosa*
Purple Sandpiper	*Calidris maritima*	Crossbill	*Loxia curvirostra*
Ruff	*Calidris pugnax*	Common Scoter	*Melanitta nigra*
Dotterel	*Charadrius morinellus*	Red Kite	*Milvus milvus*
Long-Tailed Duck	*Clangula hyemalis*	Whimbrel	*Numenius phaeopus*
Whooper Swan	*Cygnus*	Osprey	*Pandion haliaetus*
*Mute Swan	*Cygnus olor*	Snow Bunting	*Plectrophenax nivalis*
Merlin	*Falco columbarius*	Greenshank	*Tringa nebularia*
Peregrine	*Falco peregrinus*	Redwing	*Turdus iliacus*
Hobby	*Falco Subbuteo*	Fieldfare	*Turdus pilaris*
Black-Throated Diver	*Gavia arctica*	Barn Owl	*Tyto alba*

* listed as an amber bird of conservation concern not under schedule 1 of the Wildlife and Countryside Act 1981.

6.4.3 Wintering Bird Survey

6.4.3.1 Bird Species Present in the Survey Area

The wintering bird survey recorded 41 species as present within the survey area, with 13 of these being either Schedule 1, Annex 1 and/or a Red List species. Table 6.4.2 details the bird species recorded as present, together with any relevant desgnations. The full survey report is provided in Appendix D.1.

Table 6.4.2 Bird Species Recorded Present During Winter Bird Surveys at the Proposed Kilfinichen Pier Development, December (Great Glen Ecology, 2018).

Common name	Scientific Name	BTO Code	Schedule 1 (S), Annex 1 (A), Red List (R)
Blackbird	Turdus merula	B.	
Blue Tit	cyanistes caeruleus	BT	
Buzzard	Buteo buteo	BZ	
Chatffinch	Fringilla coelebs	CH	
Coal Tit	Periparus ater	CT	
Common Crossbill	Loxia curvirostra	CR	S
Common Gull	Larus canus	CM	
Curlew	Numenius arquata	CU	R
Dunlin	Calidris alpina	DN	
Dunnock	Prunella modularis	D.	
Goldcrest	Regulus regulus	GC	
Goldfinch	Carduelis carduelis	GO	
Great Black-backed Gull	Larus marinus	GB	

Common name	Scientific Name	BTO Code	Schedule 1 (S), Annex 1 (A), Red List (R)
Great Northern Diver	Gavia immer	ND	S,A
Great Tit	Parus major	GT	
Greenshank	Tringa nebularia	GK	S
Grey Heron	Ardea cinerea	H.	
Guillemot	Uria aalge	GU	
Herring Gull	Larus argentatus	HG	R
Hooded Crow	Corvus cornix	HC	
Lapwing	Vanellus vanellus	L.	R
Mallard	Anas platyrhynchos	MA	
Meadow Pipit	Anthus pratensis	MP	
Oystercatcher	Haematopus ostralegu	OC	
Raven	Corvus corax	RN	
Razorbill	Alca torda	RA	
Red-breasted Merganser	Mergus serrator	RM	
Redshank	Tringa totanus	RK	
Red-throated Diver	Gavia stellata	RH	S,A
Redwing	Turdus iliacus	RE	S,R
Robin	Erithacus rubecula	R.	
Rock Pipit	Anthus petrosus	RC	
European Shag	Phalacrocorax aristotelis	SA	A,R
Skylark	Alauda arvensis	S.	R
Snipe	Gallinago gallinago	SN	
Song Thrush	Turdus philomelos	ST	R
Starling	Sturnus vulgaris	SG	R
Treecreeper	Certhia familiaris	TC	
Wood Pigeon	Columba palumbus	WP	
Woodcock	Scolopax rusticola	WK	R
Wern	Troglodytes troglodytes	WR	

Of the listed species, 28 were recorded during both the December and February visits. common crossbill, dunlin, goldfinch, lapwing, meadow pipit, redshank and treecreeper were only recorded during the December 2017 survey. The survey in February 2018 recorded 6 species (coat tit, dunnock guillemot, razorbill, red-throated diver and skylark) that were not recorded during the initial survey.

The most numerous species recorded during the December 2017 survey were herring gulls (Table 6.4.3) which were found inland, at the coastline, and the intertidal zones during low and hide tide. Foraging behaviour was only recorded by European shag and great northern divers during low tide (Great Glen Ecology, 2018). Appendix D.1, Map 2a, 3a and 4a detail the location of the observed target species.

Table 6.4.3 Numbers of Target Species Recorded Present During the Walkover and Vantage Point Survey in December 2017 (Great Glen Ecology, 2018).

Target Species	No. of Specimens	Location
Woodcock	1	Inland
Common Crossbill	1	Inland
Redwing	1	Inland
Song Thrush	1	Inland
Eurasian Curlew	3	Coastline and intertidal zone during low tide.
Lapwing	9	Inland
Starling	16	Inland
Herring Gull	24	Inland, coastline and intertidal zone during low and high tide.
European Shag	10	Intertidal zone during low and high tide.
Great Northern Diver	7	Intertidal zone during low and high tide.
Greenshank	1	Intertidal zone during high tide

During the February 2018 survey, 11 target species were recorded with high numbers of herring gulls (n=29) and skylarks (n=21) observed as detailed in Table 6.4.4. The location of recorded targets species is detailed in Appendix D.1, Map 2b, 3b and 4b. Seabird behaviour generally involved loafing during low and high tide, although an individual European shag was observed foraging and a roosting greenshank (Great Glen Ecology, 2018).

Table 6.4.4 Numbers of Target Species Recorded Present During the Walkover and Vantage Point Survey in February 2018 (Great Glen Ecology, 2018).

Target Species	No. of Specimens	Location
European Shag	10	Coastline and intertidal zone during low and high tide.
Woodcock	1	Inland
Herring Gull	29	Inland, coastline and intertidal zone during low and high tide.
Eurasian Curlew	4	Coastline
Starling	18	Inland
Song Thrush	3	Inland
Greenshank	2	Intertidal zone during high tide.
Redwing	3	Inland
Skylark	21	Inland
Great Northern Diver	8	Intertidal zone during low and high tide.
Red-Throated Diver	2	Intertidal zone during high tide.

6.4.3.2 Nesting Habitat for Schedule 1, Annex 1 and Red List species

The survey also considered the distribution of suitable breeding habitat for target species, in order to ascertain which species may breed within the vicinity of the development site. The target species which may breed within the vicinity of the site, given the distribution suitable nesting habitat within the survey area are detailed in Table 6.4.5. An outline of the suitable breeding habitat for each species is also provided.

Table 6.4.5 Target Species for which Suitable Breeding Habitat was Recorded Within the Survey Area (Great Glen Ecology, 2018).

Species	Suitable Habitat
Common Crossbill	Breeds in commercial coniferous plantations, semi-natural, natural and mixed woodlands
Eurasian Curlew	Breeds on wetlands, mountain habitats and coastal marshes.
Lapwing	Breeds on grasslands and wetlands.
Skylark	Breeds on upland grassland, farmland, heaths and coastal marshes.
Song Thrush	Breeds in broadleaved and coniferous woodland, hedgerows and gardens.
Starling	Breeds in trees in open country, farmland and woodland, and in urban areas.
Woodcock	Breeds in deciduous or mixed woodland and moorland. Limited suitable habitat observed in the survey area.

It is noted that that while suitable breeding habitat for the species detailed in Table 6.4.5 was identified as present within the survey area, theses habitats were only present in the 500m survey buffer, and not within the red line boundary of the proposed development. As such it is considered very unlikely that these species will breed within the development area itself.

Nesting habitat for herring gull in the survey area was identified to be scarce, while very limited to no suitable nesting habitat for European shag was recorded. No suitable habitat in the survey area was identified for greenshank, red-throated diver and redwing. Finally, great northern divers do not breed in the UK, and hence breeding pairs will not be present within the development area (Great Glen Ecology, 2018).

Due to the absence of suitable breeding habitat for the target species within the development area, no breeding bird surveys were required to inform the ornithological assessment. Impacts on ornithological receptors resulting from a loss of breeding habitat are also not further assessed.

6.4.4 Identification of Receptors

Only the Cnuic agus Cladach Mhuile SPA and its ornithological qualifying features, together with the target species included in Annex 1 of the Birds Directive, Schedule 1 of the Wildlife and Countryside Act, or the Red-List for Birds of Conservation Concern, recorded as present during the wintering bird surveys are taken forward to assessment (Table 6.5.1). The 27 protected species identified during the literature review (Section 6.4.2) within a 5km radius, but not within 1km of the proposed development, and not recorded present during the bird surveys are not considered further in this assessment. This is based on the following rationale:

- Species not included in the lists detailed above (non-target species) have a value of **low local/negligible**, according to the criteria set out in Chapter 4: Methodology; and
- The construction impacts are not anticipated to extend further than 1km from the development site, as such the magnitude of effect on these species is assessed **negligible/no-change**.

Therefore, the potential impacts on non-target, and target species not present within a 1km radius are assessed as **negligible, Non-Significant**.

Table 6.5.1 Species Taken Forward to Impact Assessment.

Species	
Common Crossbill	Herring Gull
Eurasian Curlew	Lapwing
Great Northern Diver	Red-throated Diver
Greenshank	Redwing
European Shag	Skylark
Starling	Song Thrush
Woodcock	Golden Eagle

6.5 Impact Assessment

The assessment of effects during construction is based on the project description outlined in Chapter 2. The following aspects of the development are assessed for their potential effects on the valued ornithological receptors detailed above;

- Foraging habitat loss resulting from the construction of the causeway;
- Disturbance resulting from construction site activities;
- Reductions in water quality; and
- Physical interactions with construction equipment.

6.5.1 Foraging Habitat Loss

The construction of the Kilfinichen Pier causeway, through the placement of rock and infill material, will result in a permanent loss of foraging habitat for ornithological receptors within the intertidal and marine environment. A significant loss of foraging ground can significantly affect the feeding efficiency of birds (Goss-Custard et al., 1994), leading to reduced body mass and poor health (Galbraith et al., 2002). However, the total area of habitat loss resulting from the construction of the Kilfinichen Pier is only 0.8ha (0.008km^2), which equates to 0.028% of the available marine habitat in Loch Shcridain, which has an area of approximately 29km^2.

Common Crossbill

Common crossbill *(Loxia curvirostra)* are given a value of **national** importance. The species feeds entirely on seeds extracted from cones of coniferous trees including Sitka spruce (*Picea sitchensis*), Scots pine (*Pinus sylvestris*) and Norway spruce (*Picea abies*). The species also rarely leaves coniferous woodlands, and hence is not expected to forage or utilise the coastline or the marine environment (Marquiss & Rae, 1994). As the area of habitat loss only affects the marine and intertidal environments, the potential impact on common crossbill is assessed **no change**.

Waders

The waders identified in the proximity to the proposed development included Eurasian curlew (*Numenius arquata*), greenshank (*Tringa nebularia*) and woodcock (*Scolopax rusticola*). Waders are commonly found along the shoreline, utilising intertidal mudflats and sandflats as feeding grounds (O'Brien & Bainbridge, 2002). The wintering bird survey recorded Eurasian curlew foraging within the proposed development. Other wader species were not observed foraging, however the intertidal zone within the development boundary does provide suitable habitat for these species (Great Glen Ecology, 2018). As detailed above the area lost is very small in the context of the wider available habitat for these species, so whilst the intertidal

habitat loss is **permanent,** the overall impact magnitude is considered **negligible** and **localised**. The ecological value of the woodcock and Eurasian curlew is **national,** while the greenshank is of **international** ecological value. Therefore, the resulting impact on woodcock and Eurasian curlew is assessed as **negligible: Non-Significant,** and the on greenshank as **minor: Non-Significant.**

Loons

Loons or divers are a group of aquatic birds, loons recorded as present in the survey area include the great northern diver *(Gavia immer)* and the red-throated diver *(Gavia stellate)*. Both species are listed on Annex 1 of the Birds Directive and as such are of **international** value. Divers actively hunt underwater and prey prominently consist of fish, though their diet is regularly supplemented with crustaceans and amphibians (Gingras & Paszkowski, 2006). Only great northern divers were observed foraging during the bird surveys, however the habitat is equally suitable for red throated divers. The loss of foraging habitat available to loons is extremely limited, equating to just 0.0028% of the locally available habitat. The potential effect on these species is therefore assessed as **permanent** and **localised,** with a **negligible** magnitude of impact, and an overall **minor: Non-Significant**.

European Shag

European shag *(Phalacrocorax aristotelis)* is a pursuit-diver feeding predominantly in benthic habitats with sand eels being a key prey species (Lewis, Phillips, Burthe, Wanless, & Daunt, 2015). Listed on Annex 1 of the Birds Directive, the species has an **international** ecological value. During both surveys, 10 shag were recorded, with some observed foraging within the proposed development area during both surveys. As such, the proposed development will result in a permanent loss of foraging habitat for this species. However, the development will only reduce the locally available foraging habitat by approximately 0.0028%, which is unlikely to result in any detectable change for the species. Therefore, the magnitude of impact is assessed as **negligible, localised** and **permanent**, giving rise to a **minor: Non-Significant** effect.

Starling

Starling *(Sturnus vulgaris)* are terrestrial birds feeding and breeding on land. The species is largely insectivorous but also feeds on seeds, fruits and food waste (British Trust for Ornithology, 2018). The extraction of materials from the onshore stacking area to create the causeway will result in a permanent loss of approximately 0.67Ha of terrestrial habitat. However, the affected area is not unique or considered to be of high value to starlings, and extensive alternative habitat exists in the vicinity of the site. Hence the foraging habitat loss is not expected to result in a detectable change from baseline conditions for this species. Starlings are assigned a value of **national**, and the magnitude of impact is assessed as **negligible, localised** and **permanent**, giving rise to a **negligible: Non-Significant** effect.

Herring Gull

Herring gulls *(Larus argentatus)* were the most numerous species observed during the wintering bird survey (Great Glen Ecology, 2018). The species has **national** ecological value due to being listed on the Red-list of Birds of Conservation Concern. The species was not recorded as foraging in the area (Great Glen Ecology, 2018). This notwithstanding, herring gulls

are omnivores and opportunists capable of feeding on fish, seeds, crustaceans and waste in the terrestrial and marine environment (Bond, 2015), meaning that the development site is likely to provide some foraging habitat to the species. However, the development will only reduce the locally available foraging habitat by approximately 0.0028%, which is unlikely to result in any detectable change for the species. Therefore, the magnitude of impact is assessed as **negligible, localised** and **permanent**, giving rise to a **negligible: Non-Significant** effect.

Lapwing

Lapwing *(Vanellus vanellus)* are generally only found near the coastline during the breeding season where they nest in a ground scrape (RSPB, 2018), this concurs with the findings of the surveys which only recorded the species further inland (Great Glen Ecology, 2018). The species is listed on the Red-list of Birds of Conservation Concern and as such is considered to have a **national** ecological value. Aquatic invertebrates in shallow coastal pools and coastal marshlands form an important food component during the breeding season in March to late August (Ausden, Rowlands, Sutherland, & James, 2010). As such, the intertidal areas of the development site may provide some limited foraging habitat for this species. However, the small scale of habitat loss (0.8ha), is unlikely to result in any significant change from baseline conditions for this species. Therefore, the impact is assessed as **negligible, localised** and **permanent**, giving rise to a **negligible: Non-Significant** effect.

Skylark

Skylarks (*Alauda arvensis*) are terrestrial birds with no known reliance on the marine or intertidal habitat (Copland, Crowe, Wilson, & O'Halloran, 2012). The extraction of materials from the onshore stacking area to create the causeway will result in a permanent loss of approximately 0.67Ha of terrestrial habitat. However, the affected area is not unique or considered to be of high value to skylarks, and extensive alternative habitat exists in the vicinity of the site. Hence the foraging habitat loss is not expected to result in a detectable change from baseline conditions for this species. Skylarks are assigned a value of **national**, and the magnitude of impact is assessed as **negligible, localised** and **permanent**, giving rise to a negligible**: Non-Significant** effect.

Cnuic agus Cladach Mhuile SPA

The Cnuic agus Cladach Mhuile SPA lies approximately 200m North of the proposed development and is designated for breeding populations of Golden eagle (*Aquila chrysaetos*) (SNH, 2018). The proposed development red line boundary does not overlap with this designated site, therefore the direct impact on the SPA is assessed as **no change**.

The SPA is designated for breeding golden eagle, which are of **international** ecological value, and are frequently reported on the Isle of Mull, but data on distribution and population size is limited. As detailed in Section 6.4.1 the SPA held a very high breeding productivity compared to other areas of the UK in 1992 (JNNC, 2005). Golden eagles in western Scotland are known to have a mean territory size of approximately 6827ha (McGrady, Grant, & Bainbridge, 2002). Therefore, the territory of golden eagles within the SPA could overlap the proposed development area. However, their prey consists mainly of small to medium-sized terrestrial mammals (Bedrosian et al., 2017) with the species also known to feed on carrion (Sanches-Zapata & Eguia, 2010). Records also show some reliance on marine seabirds, mainly fulmars

(Watson, Leitch, & Rae, 1993), but fulmars are not recorded as being present within 5km of the site, and hence availability of this prey resource will not be affected by the proposed development. The only habitat lost as a result of the development is 0.8ha or marine and intertidal habitat, which does not include any valuable foraging grounds for golden eagles. Therefore, the indirect impacts on the golden eagle qualifying feature of this SPA is therefore assessed as **no-change**.

6.5.2 Disturbance from Construction Site Activity

Construction activities will give rise to disturbance associated with: site set-up; causeway construction, rock armour placement; access bridge and floating pier installation and vehicle movements such as excavators. All of which can give rise to in-air noise disturbance. Construction works will generally be limited to daytime hours, however, in winter there is a potential for lighting to be required in the early morning and late afternoon / early evening periods. The presence of humans, vessels and machinery in the area may also cause disturbance to some bird species.

Noise pollution can directly cause damage to birds' physiology (Francis, Prtega, & Cruz, 2009); or indirectly affect their communication ability, depending on the bird species (Ortega, 2012). The species most likely to be in the vicinity of the development noise are Waders, Herring Gulls, Loons, European Shag and Lapwing. European Shag, Herring Gulls and Eurasian Curlew were recorded in the immediate vicinity of the proposed development. The other species were all recorded within approximately 250m of the development site (Map 2a to 4b). It is noted that foraging waders move around the coastline, utilising different sections of the coast (Dias, Granadeiro, & Palmeirim, 2009). Noise disturbance will only occur when they are roosting or foraging in the immediate vicinity of the construction site.

Noise arising from on-site machinery is anticipated to be minimal due to the small nature of the project with only two 32 tonne tracked excavators, a 25 tonne excavator, a vibrating roller, a tracked dumper, and a wheeled dumper. Delivery of noise from construction traffic will be minimal as all required plant will arrive at site within a one-week period, and remain on site during construction. Few material deliveries are expected, as most material is sourced locally (Campbell of Doune Ltd, 2015). The construction team is expected to be approximately 3 individuals (Campbell of Doune Ltd, 2015), anticipated to arrive by one vehicle making it an insignificant noise source as birds at the proposed development site are accustomed to traffic due to the B8035 running along the coastline.

Light pollution has been shown to have effects on birds in a number of ways: visual impairment (Rodriguez et al., 2015), disorientation (Evans, 1996), behavioural changes (Longcore & Rich, 2004), habitat preferences and foraging modifications (Santos et al., 2010). In winter, additional light may also have a positive effect on some bird species with increased illumination for foraging, as has been shown in some wader species (Santos et al., 2010). Where lighting is required to facilitate work in a safe environment for the construction personnel, it will be designed to only illuminate the required areas, and lights will be switched off when not in use.

Common Crossbill

Studies regarding disturbance sensitivity of Common Crossbill are limited, they belong to the passerine birds. Passerines have been shown to be affected by artificial lights during night, increasing their activity periods by up 4-5 hours, thus increasing their energy expenditure, and negatively affecting health (Bryrkjedal, Lislevand, & Vogler, 2012). The only recorded specimen was approximately 420m from the proposed development, placing it beyond recommended disturbance buffers for construction of 150m -300m (Ruddock & Whitfield, 2007). The species also rarely leaves coniferous woodlands, and is not expected to forage or utilise the coastline or the marine environment (Marquiss & Rae, 1994). As such the species is unlikely to be present in the areas affected by the presence of personnel and equipment, or those subjected to increased noise or light emissions during the construction period, so the resulting impacts are assessed as **no change**.

Waders

The recorded waders in the vicinity of the proposed development included Eurasian curlew, greenshank and woodcock. The ecological value of the woodcock and Eurasian curlew is **national,** while the greenshank is of **international** ecological value. These species display different disturbance distances to human presence and construction work, and the following disturbance ranges are provided by the literature:

- Eurasian curlew show no response at distances exceeding approximately 80m (Ruddock & Whitfield, 2007);
- Greenshank show no response at ranges exceeding 45m (Ruddock & Whitfield, 2007); and
- Woodcock are unlikely to react to disturbance at ranges exceeding 150m (Ferrand, Aubry, Landry, & Priol, 2013).

It is however noticed that the disturbance distance will vary depending on multiple variables, such as the nature and magnitude of the disturbance (Ferrand et al., 2013). The three wader species predominantly utilise the intertidal mudflats and sandflats in the immediate vicinity of the proposed development for foraging, and hence are likely to be disturbed by the construction works. Disturbance resulting from the presence of personnel and equipment, noise, and light emissions may therefore result in some avoidance of the development site. However, when set against the context of the amount of alternative habitat available to these species, the small scale of the development, and fact that the construction works will generally only occur during daylight hours means that this is unlikely to constitute a significant change from baseline conditions. The effect of disturbance on these species is therefore assessed as **negligible**, **localised** and **temporary**, giving rise to a **negligible: Non-Significant** effect on Woodcock and Eurasian Curlew, and a **minor: Non-Significant** effect on Greenshank.

Loons

The only loon spices recorded within the vicinity of the development site were Great Northern Diver and Red-throated diver which have an **international** ecological value. Disturbance distances for both species varies dependant on multiple variables including: habitat size, topography, and individual variation (Ruddock & Whitfield, 2007). Great Northern Divers were observed foraging within approximately 175m from the proposed development site. Therefore

construction noise, lighting and the presence of personnel and equipment could result in disturbance of these species, as research shows avoidance behaviour and fleeing at ranges of 150 – 300m (Ruddock & Whitfield, 2007). Little is known about the disturbance distance of Red-throated divers, although it is assumed that the distance is similar to those of Great Northern Divers (Ruddock & Whitfield, 2007). Similarly, little is known about disturbance from artificial light, however, the effect of artificial light is anticipated minimal, as only working areas will be illuminated and all light switched off when not required.

Set against the context of the amount of alternative habitat available to these species, the small scale of the development, and fact that the construction works will generally only occur during daylight hours means that this is unlikely to constitute a significant change from baseline conditions. The effect of disturbance on Loons is therefore assessed as **negligible**, **localised** and **temporary**, giving rise to a **minor: Non-Significant** effect.

European Shag

The wintering bird survey identified Shag foraging within the immediate vicinity of the proposed development (Great Glen Ecology, 2018). Studies indicating disturbance distance are limited, one study indicates a disturbance rate of 45% during foraging at distances of 1-10m and 30% disturbance at 10-30m as a result of vessels encroaching on foraging habitat (Velando & Munilla, 2011). Studies associated with construction noise and lightning were not identified. However, impacts arising from construction noise will be minimal due to limited amount of machinery being utilised. Disturbance resulting from artificial lighting is not anticipated as construction will predominantly take place during daylight hours, and where lighting is required, only active working areas will be illuminated, which should not affect the shag's marine foraging habitat. As such, only localised disturbance is expected, and extensive alternative foraging habitat is available for this species. The effects of disturbance on this receptor of **international** value is therefore assessed as **negligible**, **localised** and **temporary**, giving rise to a **minor: Non-significant effect**.

Starling

Starling are terrestrial birds feeding and breeding on land. Little information is available regarding the sensitivity of starlings to disturbance. The extraction of materials from the onshore stacking area to create the causeway may result in some disturbance of starlings in the vicinity of the site, through the presence of personnel and equipment, together with noise and light emissions. This may result in some displacement of starlings from the vicinity of the site, however extensive alternative habitat is available in the area surrounding the site. As such the disturbance is unlikely to result in impacts on this species, even at an individual level. Starlings are assigned a value of **national**, and the magnitude of impact is assessed as **negligible, localised** and **temporary**, giving rise to a **negligible: Non-Significant** effect.

Herring Gull

Herring gulls are known for their curiosity and being relatively tolerant of anthropogenic disturbance (Belant, 1997), although studies indicate regular disturbance by humans through noise and interaction during foraging and hatching periods negatively affects reproductive successes (Hunt, 1972). The disturbance during hatching periods results in adults being flushed

away from their eggs, leaving them exposed to thermal stress and predation, reducing overall hatching productivity (Calladine, 1997).

Light pollution is known to negatively influence seabirds (Rodriguez et al., 2015), impacts on herring gulls are lesser known, but it is proposed that the species is more vulnerable in the breeding season (Breton & Chardine, 2008). However, the wintering bird survey identified very limited potential suitable nesting habitat (Great Glen Ecology, 2018), reducing the likelihood of impacts on nesting Herring Gulls. While the species was extensively recorded in the vicinity of the proposed works, the overall magnitude of impact on the species of **national** ecological value is assessed as **low**. This is because only a small area will be exposed to disturbance from construction, in the context of the area of alternative habitat in Loch Shcridain. Any required artificial lighting will also be limited to active working areas. Therefore, the impact is assessed as **localised** and **temporary**, giving rise to a **Minor: Non-Significant effect**.

Lapwing

Little information into disturbance potential of Lapwing is known. Some research indicates a moderate sensitivity to noise and visual stimuli. The studies suggest no response to visual disturbance at approximately 300-400m (Cutts, Hemingway, & Spencer, 2013). No studies were identified that highlighted a sensitivity to artificial light. Effects of artificial lights are considered insignificant as utilisation of artificial lights will be minimised and restricted to working areas.

The only recorded specimens of Lapwing were inland during the December survey, approximately 375m from the proposed development, and at this range the species is unlikely to be subject to significant disturbance. During the breeding season, this species may move into the coastal zone and hence be closer to the development, increasing their exposure to disturbance.

The impact on Lapwing, which have a **national** ecological value is assessed as **negligible**, **localised** and **temporary**, since the disturbance will affect a very small area in the context of the extent of alternative habitat in the region. As such the resulting impact is **minor: Non-Significant.**

Skylark

Skylarks life cycle occurs on land with no known reliance on the marine or intertidal habitat (Copland et al., 2012). The extraction of materials from the onshore stacking area to create the causeway may result in some disturbance of skylarks in the vicinity of the site, through the presence of personnel and equipment, together with noise and light emissions. This may result in some displacement of skylarks from the vicinity of the site, however extensive alternative habitat is available in the area surrounding the site. As such the disturbance is unlikely to result in impacts on this species, even at an individual level. Skylarks are assigned a value of **national**, and the magnitude of impact is assessed as **negligible, localised** and **temporary**, giving rise to a **negligible: Non-Significant** effect.

Cnuic agus Cladach Mhuile SPA

The designated site and its qualifying feature (breeding Golden eagle) lies approximately 200m North of the proposed development. The construction activities will be confined to the site,

noise emissions from the works will be limited and are unlikely to propagate into the SPA at level which may result in disturbance, and artificial lighting will be directional, and will not illuminate areas of the SPA. Therefore, the direct impacts on the designated site are assessed as **no change**.

Golden Eagle associated with the SPA have large ranges and prefer prey species not typically associated with the intertidal area. As such it is unlikely that golden eagles will be present in the vicinity of the development area, a hypothesis which is confirmed by the fact that golden eagles were note recorded as present during the winter bird surveys (Great Glen Ecology, 2018). Hence, it is extremely unlikely that golden eagles will be in the area where they could be disturbed by the construction works. Therefore, the indirect impacts on the golden eagle qualifying feature of this SPA is therefore assessed as **no-change**.

6.5.3 Reduction in Water Quality

The proposed construction operations have the potential to result in a reduction in water quality in the vicinity of the site through increased sediment loading, and accidental releases of hazardous substances (such as oils). Increased sediment loading can reduce the foraging success of waterfowl and seabirds through increasing turbidity, or indirect effects on prey species distribution. With regard to an accidental release of hazardous substances, depending on the quantities involved, this could result in lethal or sub-lethal effects on waterfowl and seabirds, including both direct immediate impacts on their health, and indirect longer-term impacts to their lifecycle and behaviour.

It is noted that a reduction in water quality will not affect terrestrial species hence, impacts on the common crossbill, starling, skylark, golden eagles and the Cnuic agus Cladach Mhuile SPA are assessed as **no-change**.

While water quality has been scoped out of this EIA, standard best practice mitigation measures for the prevention of surface water run-off, and accidental releases of hazardous substances are included Chapter 8: Schedule of Mitigation. Implementation of these measures will minimise the levels of increased sediment loading resulting from construction, and the risk of a release of hazardous substances at a scale which could result in significant impacts on ornithological receptors extremely unlikely. As such the effect associated with a reduction of water quality on waders, loons, European shag, and herring gulls are assessed as **negligible: Non-Significant.**

6.5.4 Physical Interactions with Construction Equipment

While the bird surveys conducted to support this assessment concluded that there was little suitable breeding habitat for the target bird species within the site boundary, there is still the possibility that non-breeding, and potentially breeding birds will be present within the site during the construction works. As such there is the potential for physical interactions between construction equipment and ornithological receptors, which may result in lethal and sub-lethal effects. However, the limited extent of the of the construction operations, combined with the low value of the habitat identified within the site boundary makes it unlikely that ornithological receptors will have physical interactions with construction equipment. Therefore, the magnitude of effect on all ornithological receptors is assessed **minor: Non-Significant**.

6.6 Mitigation Measures

The impact assessment identified no significant effect as a result of the construction phase of the development on ornithological features, as such no specific secondary mitigation is required.

However, in line with standard best practice, all construction personnel will be instructed to remain vigilant for bird presence during construction operations, through site inductions and toolbox talks. If a bird is present in an area where it may be injured by the construction operations, related works will be stopped, until the bird has left the area. If an occupied nest is identified within the site boundary, an initial temporary exclusion zone of at least 20m will be established around the nest. A suitably qualified ornithologist will then be consulted to develop an appropriate mitigation strategy for the longer term, including the identification of an appropriate species and situation specific exclusion zone (this may be less than 20m).

It is noted that the assessments in Section 6.5 assume the provision of various items of primary and tertiary mitigation. These are included in Chapter 8: Schedule of Mitigation, in order to ensure they are effectively implemented during the construction works.

6.7 Cumulative Impacts

As detailed in Section 6.5, the impacts on ornithological receptors associated with the Kilfinichen Pier development are extremely localised, and hence the potential for cumulative impacts are limited. The only project which may result in cumulative effects is the construction of the onshore timber stacking area associated with the Pier Development, as detailed Chapter 2: Project Description. This project was granted planning permission on the 23rd October 2017, as per application 17/01937/PP.

Due to the fact that the construction of the Kilfinichen Pier is reliant on material extracted from the onshore timber stacking site, the impact assessment outlined in Section 6.5, considered both the Pier Development, and the works associate with the construction of the stacking area. No significant impacts on ornithological receptors were identified associated with either the pier development, or the construction of the stacking area. Furthermore, the requirement for site personnel to remain vigilant for bird activity and stop works if a risk to a bird is identified, as detailed in Section 6.6, will also effectively reduce the risk of injury to ornithological receptors during the construction of the timber stacking area. As such the cumulative effects resulting from the simultaneous construction of the Kilfinichen Pier, and associated timber stacking area developments on ornithological receptors are assessed as **negligible: Non-Significant**.

6.8 Summary

The chapter considered the potential impacts arising from the construction phase of the Kilfinichen Pier Development on relevant ornithological receptors. The summary of effects is detailed in Table 6.8.1. No significant effects arising from the construction were identified during the assessment.

Table 6.8.1 Summary of Ornithological Impacts and Mitigation.

Receptor and Value		Predicted Impact	Impact Magnitude	Significance (Absence of Secondary Mitigation)	Mitigation Summary	Residual Impact Magnitude	Significance of Residual Effect
Common Crossbill	National	Loss of foraging habitat potentially affecting foraging efficiency in turn negatively affecting fitness.	No-Change	No-Change	N/A		
		Disturbance from construction noise and general site activities resulting in behavioural changes and reduced fitness.					
		Disturbance from artificial light resulting in behavioural changes and reduced fitness.					
Waders (Curlew)	National	Loss of foraging habitat potentially affecting foraging efficiency in turn negatively affecting fitness.	Negligible Negative Permanent Localised	Negligible: Non-Significant	No specific mitigation required.	Negligible Negative Permanent Localised	Negligible: Non-Significant
		Disturbance from construction noise and general site activities resulting in behavioural changes and reduced fitness.	Negligible Negative Temporary Localised			Negligible Negative Temporary Localised	

Receptor and Value		Predicted Impact	Impact Magnitude	Significance (Absence of Secondary Mitigation)	Mitigation Summary	Residual Impact Magnitude	Significance of Residual Effect
Waders (Curlew)	National	Disturbance from artificial light resulting in behavioural changes and reduced fitness.	Negligible Negative Temporary Localised	Negligible: Non-Significant	Working predominantly during daylight hours. Where artificial light is required only the active working area to be illuminated.	Negligible Negative Temporary Localised	Negligible: Non-Significant
Waders (Greenshank)	International	Loss of foraging habitat potentially affecting foraging efficiency in turn negatively affecting fitness.	Negligible Negative Permanent Localised	Minor: Non-significant	No specific mitigation required.	Negligible Negative Permanent Localised	Minor: Non-significant
		Disturbance from construction noise and general site activities resulting in behavioural changes and reduced fitness.	Negligible Negative Temporary Localised		No specific mitigation required.	Negligible Negative Temporary Localised	
		Disturbance from artificial light resulting in behavioural changes and reduced fitness.			Working predominantly during daylight hours. Where artificial light is required only the active working area to be illuminated.		
Waders (Woodcock)	National	Loss of foraging habitat potentially affecting foraging efficiency in turn negatively affecting fitness.	Negligible Negative Permanent Localised	Negligible: Non-Significant	No specific mitigation required.	Negligible Negative Permanent Localised	Negligible: Non-Significant

Receptor and Value		Predicted Impact	Impact Magnitude	Significance (Absence of Secondary Mitigation)	Mitigation Summary	Residual Impact Magnitude	Significance of Residual Effect
Waders (Woodcock)	National	Disturbance from construction noise and general site activities resulting in behavioural changes and reduced fitness.	Negligible Negative Temporary Localised	Negligible: Non-significant	No specific mitigation required.	Negligible Negative Temporary Localised	Negligible: Non-significant
		Disturbance from artificial light resulting in behavioural changes and reduced fitness.			Working predominantly during daylight hours. Where artificial light is required only the active working area to be illuminated.		
Loons (Great Northern Diver & Red-throated Diver)	International	Loss of foraging habitat potentially affecting foraging efficiency in turn negatively affecting fitness.	Negligible Negative Permanent Localised	Minor: Non-significant	No specific mitigation required.	Negligible Negative Permanent Localised	Minor: Non-significant
		Disturbance from construction noise and general site activities resulting in behavioural changes and reduced fitness.	Negligible Negative Temporary Localised		No specific mitigation required.	Negligible Negative Temporary Localised	
		Disturbance from artificial light resulting in behavioural changes and reduced fitness.			Working predominantly during daylight hours. Where artificial light is required only the active working area to be illuminated.		

Receptor and Value		Predicted Impact	Impact Magnitude	Significance (Absence of Secondary Mitigation)	Mitigation Summary	Residual Impact Magnitude	Significance of Residual Effect
European Shag	International	Loss of foraging habitat potentially affecting foraging efficiency in turn negatively affecting fitness.	Negligible Negative Permanent Localised	Minor: Non-significant	No specific mitigation required.	Negligible Negative Permanent Localised	Minor: Non-significant
		Disturbance from construction noise and general site activities resulting in behavioural changes and reduced fitness.	Negligible Negative Temporary Localised			Negligible Negative Temporary Localised	
		Disturbance from artificial light resulting in behavioural changes and reduced fitness.			Working predominantly during daylight hours. Where artificial light is required only the active working area to be illuminated.		
Starling	National	Loss of foraging habitat potentially affecting foraging efficiency in turn negatively affecting fitness.	Negligible Negative Permanent Localised	Negligible: Non-significant	No specific mitigation required.	Negligible Negative Permanent Localised	Negligible: Non-significant
		Disturbance from construction noise and general site activities resulting in behavioural changes and reduced fitness.	Negligible Negative Temporary Localised			Negligible Negative Temporary Localised	

Receptor and Value		Predicted Impact	Impact Magnitude	Significance (Absence of Secondary Mitigation)	Mitigation Summary	Residual Impact Magnitude	Significance of Residual Effect
Starling	National	Disturbance from artificial light resulting in behavioural changes and reduced fitness.	Negligible Negative Temporary Localised	Negligible: Non-significant	Working predominantly during daylight hours. Where artificial light is required only the active working area to be illuminated.	Negligible Negative Temporary Localised	Negligible: Non-significant
Herring Gull	National	Loss of foraging habitat potentially affecting foraging efficiency in turn negatively affecting fitness.	Negligible Negative Permanent Localised	Negligible: Non-significant	No specific mitigation required.	Negligible Negative Permanent Localised	Negligible: Non-significant
		Disturbance from construction noise and general site activities resulting in behavioural changes and reduced fitness.	Low Negative Temporary Localised	Minor: Non-significant	No specific mitigation required.	Low Negative Temporary Localised	Minor: Non-significant
		Disturbance from artificial light resulting in behavioural changes and reduced fitness.			Working predominantly during daylight hours. Where artificial light is required only the active working area to be illuminated.		
Lapwing	National	Loss of foraging habitat potentially affecting foraging efficiency in turn negatively affecting fitness.	Negligible Negative Permanent Localised	Negligible: Non-significant	No specific mitigation required.	Negligible Negative Permanent Localised	Negligible: Non-significant

Receptor and Value		Predicted Impact	Impact Magnitude	Significance (Absence of Secondary Mitigation)	Mitigation Summary	Residual Impact Magnitude	Significance of Residual Effect
Lapwing	National	Disturbance from construction noise and general site activities resulting in behavioural changes and reduced fitness.	Negligible Negative Temporary Localised	Negligible: Non-significant	No specific mitigation required.	Negligible Negative Temporary Localised	Negligible: Non-significant
		Disturbance from artificial light resulting in behavioural changes and reduced fitness.			Working predominantly during daylight hours. Where artificial light is required only the active working area to be illuminated.		
Skylark	National	Loss of foraging habitat potentially affecting foraging efficiency in turn negatively affecting fitness.	Negligible Negative Permanent Localised	Negligible: Non-significant	No specific mitigation required.	Negligible Negative Permanent Localised	Negligible: Non-significant
		Disturbance from construction noise and general site activities resulting in behavioural changes and reduced fitness.	Negligible Negative Temporary Localised		No specific mitigation required.	Negligible Negative Temporary Localised	
		Disturbance from artificial light resulting in behavioural changes and reduced fitness.			Working predominantly during daylight hours. Where artificial light is required only the active working area to be illuminated.		

Receptor and Value		Predicted Impact	Impact Magnitude	Significance (Absence of Secondary Mitigation)	Mitigation Summary	Residual Impact Magnitude	Significance of Residual Effect
Cnuic agus Cladach Mhuile SPA (Golden Eagle)	International	Loss of foraging habitat potentially affecting conservation objectives of the SPA	No Change	No-Change	N/A		
		Disturbance from construction noise and general site activities affecting conservation objectives of the SPA					
		Disturbance from artificial light affecting conservation objectives of the SPA					
Terrestrial Ornithological Receptors	Assorted	Reduction in water quality resulting in reduction of foraging success or injury.	No Change	No Change	N/A		
Marine Ornithological Receptors			Negligible Negative Temporary Localised	Negligible: Non-significant	Water quality mitigation as detailed in Chapter 8: Schedule of Mitigation	Negligible Negative Temporary Localised	Negligible: Non-significant
All Ornithological Receptors	Assorted	Physical interactions with equipment leading to injury or damage to nests.	Low Negative Temporary Localised	Minor: Non-significant	Construction personnel will be trained in identifying breeding birds and instructed to remain vigilant for bird presence during construction operations.	Negligible Negative Temporary Localised	Negligible: Non-significant

Receptor and Value		Predicted Impact	Impact Magnitude	Significance (Absence of Secondary Mitigation)	Mitigation Summary	Residual Impact Magnitude	Significance of Residual Effect
All Ornithological Receptors	Assorted	Physical interactions with equipment leading to injury or damage to nests.	Low Negative Temporary Localised	Minor: Non-significant	If a bird is present in an area where it may be injured by the construction operations, works will be stopped, until the bird has left the area. If an occupied nest is identified within the site boundary, a temporary exclusion zone of at least 20m will be established around the nest, and a suitably qualified ornithologist will be consulted to develop an appropriate mitigation strategy for the longer term.	Negligible Negative Temporary Localised	Negligible: Non-significant

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Chapter 7: Otters

KILFINICHEN ESTATE
Isle of Mull

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7 Otter (*Lutra lutra*)

7.1 Introduction

This chapter reviews the construction and operation phases of the proposed Kilfinichen Pier development, in relation to Eurasian otters (*Lutra lutra*) in and surrounding the development site. The chapter also details proposed mitigation strategies and any cumulative and residual impacts.

Full details of the development are presented in Chapter 2: Project Description, but in summary the Kilfinichen Pier development comprises of the following main components:

- Construction of stacking area and causeway;
- Access bridge and floating pier; and
- Pontoon.

7.2 Regulations, Guidance and Sources of Information

Further to the general legislation, policy and guidance detailed in Chapter 3: Statutory Context & Policy, there is specific legislation and guidance which is relevant to otters, as detailed below.

The otter is a European Protected Species (EPS) and is protected under regulation 45 of the Conservation (Natural Habitats and Species) Regulations 1994 (as amended) in Scotland which transposes into Scottish law from the European Community's Habitats Directive (92/43/EEC).

This means that it is an offence to:

- Deliberately or recklessly capture, injure or kill, harness, damage or destroy a breeding site or resting place of an EPS or a group of EPS;
- Disturb an EPS while it is occupying a structure or place which it uses for shelter or protection;
- Disturb an EPS while it is rearing or otherwise caring for its young;
- Obstruct access by an EPS to a breeding or resting place;
- Disturb an EPS in a manner that is, or circumstances which are, likely to significantly affect the local distribution or abundance of that species; and
- To disturb an EPS in a manner that is, or in circumstances which are likely to impair its ability to survive, breed or reproduce, or rear or otherwise care for its young.

In addition to the above, otter is listed in the Scottish Biodiversity List [Scottish Government, 2013], the UK Biodiversity Action Plan (BAP) [JNCC, 2016] in which they are not listed as individual species however they feature within Sea & Coast, River, Loch & Wetland and Farm & Croft land sections.

In addition, the following guidance relevant to this assessment:

- Ecology of the European Otter: Conserving Natura 2000 Rivers [Chanin, 2003]

7.3 Method of Assessment

7.3.1 Baseline Methodology

With respect to otter's baseline surveys have been undertaken in 2014 (Appendix D.1) (primarily in relation to the onshore works) and again in 2017 (Appendix D.2). In general, if it

is assessed that there are otter holts (underground shelters) or couches (above ground resting sites) present within 200m of a development then there is potential for disturbance (Scottish Natural Heritage 2018). Although the potential for the development to impact on holts/couches is of primary importance, less significant impacts, such as displacement of forging activities, may also result. For the purpose of this assessment, the Zone of Influence for otters may extend to approximately 500m based on the scale of the development, the existing level of disturbance and factors such as coastline topography. Otters tend to have exclusive home ranges, with males and females overlapping to some degree. As a result it is likely that the proposed development will potentially impact upon on a small number individuals.

The 2014 survey was undertaken on a single occasion by KEP Environmental Consulting in October 2014. Survey approach used standard methodology (Chanin, 2003) with searches undertaken for evidence of the presence and use of otters (including spraints, resting up sites, footprints and holts). The survey area extended to 750m along the coast on either side of the existing boathouse structure and along the entrance of watercourses. Field signs were recorded using handheld GPS.

A second survey, undertaken with particular reference to the proposed development below MHWS, was completed in December 2017 and included a preliminary assessment of habitat suitability, field sign survey and vantage point survey. During the preliminary assessment and field sign survey, standard methodology was again used with searches undertaken for evidence of the presence and use of otters. This second survey was undertaken by Abigail Robinson, Great Glen Ecology.

In addition, at low tide, a vantage point survey for otter activity was completed along the coastline within the survey area, which for the 2017 survey extended to include a 250m buffer to the proposed development. Low tide was at 07:54 on the 13th December and 08:58 on the 14th December 2017.

7.3.2 Impact Assessment Methodology

Full details of the assessment methodology is detailed in Chapter 4: Methodology.

7.4 Baseline

7.4.1 Designated Sites

Designated nature conservation sites within 10km of the development which have otter included on the relevant features list include the Mull Oakwoods Special Area of Conservation (SAC) which comprises of a number of components with the nearest section located 9.3km north east (Drawing 44.02.07). The SAC is designated for otter and western acidic oak woodland.

Connectivity between this section of the SAC and the Site is negligible as the designated area is located on the northern (distal) side of the Ardmeanach Peninsula with a coastal distance of in excess of 30km.

No other areas protected for otter are present within 10km of the Site.

7.4.2 Otters

The coastal habitat within the region of Kilfinichen offers good quality foraging habitat and numerous potential places of shelter (holts and couches) for otters. Otters within a coastal environment most often use natural places of shelter, in close proximity to the shoreline, but may use human sites where suitable or if natural features are limited.

Natal holts are generally located in areas of low disturbance and can be a significant distance inland depending on the surrounding habitat and suitability of holt features. Natal holts tend to be inconspicuous with very limited or no sprainting, making identification more difficult. Otters can breed at any time of year and across the UK roughly equal numbers of cubs are born in each calendar month (Macdonald & Barrett 1993). In northern Scotland some degree of seasonality is present with slight increases in frequency of births during the spring and summer months. Weaning occurs between three and four months and cubs remain with mother for up to a year. Home ranges of otters can vary significantly within linear coastal habitats with home ranges extending to 39km for males and 22km for females (Macdonald & Barrett 1993).

The 2014 survey identified no evidence of otter activity within the survey area suggesting otters are not active within the location at the time of the survey. In addition no evidence to suggest the presence of holts or couches was identified.

The 2017 survey identified that habitats and features suitable for providing shelter and feeding grounds for otter were present within the survey area and included rock ledges and boulders and deciduous woodland with hollow tree roots. In addition, easily accessible streams and rivers for freshwater, which are essential for coastal otters, present along the adjacent coastline.

During the field survey, numerous signs of otter utilising the area were identified including numerous (19 within the survey area) sites supporting spraints of varying ages. Furthermore two potential holt locations were identified in excess of 300m from the proposed location of the pier. Holt 1 on the eastern side of the development is 219m away from the onshore works boundary and 324m away from the nearest section of the proposed causeway. This holt was located within large boulders and supported recent tracks and otter spraint. Holt 2 on the western side of the development is 280m away from the onshore works boundary and 316m away from the nearest section of the proposed causeway. The feature was located on the upper edges of an area of craggy ledges and small caves, it was found littered with spraint, feeding remains and there were paths leading up to these areas.

During the vantage point surveys, sightings of at least four individual otters (mother and two cubs and single adult male) were recorded on four occasions during the two survey days. The presence of mother and cubs feeding and grooming suggests that a natal holt may be in close proximity. At the time of the survey the cubs, although still dependent on the mother were very mobile and approaching adult size. Based upon this it is estimated that the cubs were approximately 8 months old, being born around April/May. The two identified holts supported extensive signs of use, which is unusual if used as a natal holt. Natal holts tend to be more secluded in nature and signs such as heavy sprainting and feeding remains are usually very

limited to reduce risk of predation of cubs. Although the cubs observed were well grown the risks of predation are significantly reduced and the field signs at a natal holt may well increase. Taking this into consideration it is thought that the likelihood of either of these relatively exposed and coastal holts is used as a natal holt is low, although this could not be confidently confirmed. No additional holts or couches were identified during the surveys. The large number of sprainting sites, feeding sites and sightings indicates that activity is frequent within the area and it should be recognised that the differentiation between above ground resting sites and spraint sites is often difficult (Findlay, Alexander & Macleod 2015). Otters will often spraint at couch sites but the presence of spraint does not necessarily indicate a resting site. The vast majority of the sprainting and feeding sites identified within this survey were in exposed locations usually on the beach and are considered not to represent resting sites.

The male otter observed was sighted around the small island of Eilean Na H-ordaig just 100m south west of the Site and the mother and cubs were identified approximately 150m east of the Site. All findings from the 2017 surveys are identified Appendix D.2 Map 2.

It is unclear why the two surveys resulted in significant differences in levels of activity being identified. Weather conditions and tidal events may have played a role, but it is likely that otters have been present within this stretch of coastal waters over a significant number of years. For the purposes of this assessment the more contemporary field data is used as a baseline.

The coastal habitats of Mull and the wider western coast of Scotland offer highly suitable habitat for otter. The abundance of rocky shores with suitable features for holts and couches combined with suitable foraging resources (rocky seaweed shoreline with crustaceans and fish resources) and relatively low disturbance levels.

The habitat surrounding the proposed pier location at Kilfinichen supports good habitat both for foraging/hunting and for finding places of shelter. With respect to baseline disturbance at the location, an existing jetty extending approximately 55m from MHWS line supports a small number of Kilfinichen Estate vessels (cabin day boats) which utilise this existing jetty and also anchorage points in close proximity. The vessels are used for general estate duties, including non-commercial fishing and landing/retrieving stalking parties and deer/sheep. Activities at the jetty are generally restricted to the summer months and does not generally support use by third party vessels.

The B8035 public road runs immediately adjacent to the Site as well as within 20m of the identified holt locations. The existing jetty is often used as a viewpoint by tourists with low level disturbance from cars and tourists walking in the area.

7.5 Impact Assessment

7.5.1 Proposed Development

As detailed in Chapter 2: Project Description, the relevant components of the proposed development that may result in impacts on otters include:

Construction

- Shoreside works (already consented) comprises of construction of timber stacking area, and associated access tracks;
    - Reduction of the current ground level through drilling and splitting of rock using excavators and hydraulic breakers (no blasting) to create level area.
    - Provision of a crushed stone surface, for the site and access tracks.
    - Installation of a surface water drainage system, with a swale to allow settlements of fines.
- Construction of a rock armoured causeway;
    - Use of rock arising from shoreside works to be placed from the shore working outwards using excavators. The rock armoured causeway will extend for 140m from shoreline with a 60m 'L' shaped return to provide protection to 30m long pontoon.
- On completion of the rock armoured causeway, concrete foundations for the access bridge, together with a concrete slab at the south east end of the causeway track will be poured in situ.
- An access bridge and floating pier will be prefabricated offsite, before being mounted at the south east end of the causeway; and
- Installation of the existing 30m floating pontoon which will be relocated from its current position.

Construction is anticipated to last 6 to 9 months, however the start date for the works is unknown at this time.

Operation

- The pier will transport approximately 9,250 tonnes of timber per year through year round use by vessels up to 3,500 tonnes.
- Timber will be stockpiled in the shoreside stacking area prior to be loaded out to timber vessels via the causeway and pier.

Decommissioning/Demolition

- There are no future plans to discontinue use of this site, therefore, it is not considered necessary to plan for demolition and reinstatement works for closure of this site.

7.5.2 Impacts on Designated Sites

No SACs/SSSIs where otters are a qualifying or notable feature are located within or adjacent to the Site. The Mull Oakwoods SAC is of sufficient distance from the Site to remain unaffected by the proposed development. As a result these will not be discussed further in this assessment.

7.5.3 Receptor Assessment - Otter

Otters are included in both Annexes II and IV of the Habitats directive, and as such are identified as being a receptor of **International** value. The species is assessed as being of moderate behavioural sensitivity, as although the species can be very sensitive to disturbance, they are also capable of living within a disturbed/human influenced landscape.

7.5.4 Construction Impacts

Potentially significant impacts during the construction phase are expected to include;

- Risk of disturbance and potentially displacement from non-breeding holt due to construction activities.
- Risk of disturbance and displacement from natal holt due to construction activities.
- Shoreside loss of habitat (approximately 0.67Ha) due to extraction of rock and creation of timber stack area.
- Marine loss of habitat due to construction of armoured causeway (approximately 0.8Ha)
- Shoreside habitat disturbance from noise, visual impacts and increased human presence due to construction works.
- Marine habitat disturbance from noise, visual impacts and increased human presence due to construction works.
- Increased risk of road traffic mortality due to increase in vehicle movements during construction (Appendix B.1) along public road and within site, along with movement of haulage vehicles along pier structure when operational.
- Increased risk or injury, entrapment and potentially mortality from interactions with construction equipment, materials and structures.
- Potential for reduction in water quality and consequently prey base reduction in the immediate locality of the proposed development (sedimentation, risk of hydrocarbon pollution etc.).

The presence of two holt structures is the most significant concern in relation to the impacts on otters. From the information obtained during the baseline surveys it is considered that the two identified holt locations are not utilised as a natal holt, however, this may change in future years and the presence of a mother and two young cubs suggests that a natal holt may be nearby. Taking this into consideration and following a precautionary approach, for the purpose of this assessment the holts have been assumed to be natal holts.

Holt 1 is 23m from the public road in a narrow strip of open coastal habitat, as a result it is expected that the location is subject to at least some level of intermittent disturbance from traffic as well as visual and noise disturbance from boats using the local area. In addition, viewshed analysis (within QGIS v3.2 based upon an armoured causeway height of approximately 5m above MHWS and a Digital Surface Model with resolution of 2m) identified that Holt 1 is not directly visible from the armoured causeway structure. This will reduce the likelihood of disturbance and potential for displacement of otters at this holt, although operating plant, when present, will be visible to some degree.

Holt 2 is located approximately 100m away from the coast within rocky ground at the end of an informal track on the Aird Chill Fhinichin peninsula. Although further away from roads and somewhat more isolated from both noise and visual disturbance, some degree of disturbance from farmers is anticipated bearing in mid its location at the end of a track. This holt appears to be visible from the armoured causeway structure based on viewshed analysis but extensive areas adjacent are out of view.

It is not possible to say whether cubs have been seen during the summer period of 2018, but otters are capable of producing cubs at 12 to 14 month intervals (Macdonald & Barrett 1993), although females may not produce cubs every year.

In addition, due to the levels of activity within the area of the proposed development it is likely that the works will impact upon movement along the coastline, for commuting or foraging purposes. This impact is likely to be most prominent when cubs are active but young.

Taking into account the distance of the holts from the proposed works, and the relatively low levels of disturbance across the local area, it is considered that the impact due to the works through disturbance and potentially displacement is expected to be **short-term, localised** and **temporary**, with an impact magnitude of **low**. The resulting effect on otters is therefore assessed as **moderate: Significant**.

The loss of shoreline habitat is associated with both the proposed development and the consented development of the works above the MHWS line. An area of habitat up to 0.67ha will be lost due to both the footprint of the new infrastructure but also due to the excavation of rock for the construction of the causeway. The habitat above MHWS is presently dominated by exposed rough grassland and areas of bare ground with no significant areas of shelter. A small number of broadleaved trees are present, but these are small in size and do not offer any significant options for use as a place of shelter. Within the rocky shoreline between MHWS and MLWS a corridor of approximately 0.8Ha will be lost. This section of shoreline supports a typical rocky substrate and areas of already disturbed ground associated with the existing jetty and small building. The marine habitat at this location is presently subject to some level of disturbance from existing use of jetty by estate vessels and the presence of the existing jetty.

The loss of these habitats (shoreline and marine) will be **permanent** but, considering the habitat quality and ubiquitous nature of the habitats the magnitude of impact due to habitat loss is expected to be **negligible**, potentially resulting in a **minor: Non-Significant** effect.

The construction process is expected to last between 6 and 9 months and will involve the use of a maximum of two 32 tonne tracked excavators, a 25-tonne excavator and a dumper, with the addition of a small number of standard vehicles used for operatives commuting to site. The excavators will be excavating rock through predrilling and splitting using a hydraulic breaker, with material then loaded into dumper and relocated to causeway for an excavator to place, building up the causeway. This will create a level of noise significantly above the baseline within close proximity to the Site. No formal noise monitoring has taken place but it is assessed that existing noise sources include wind, waves, farming practices and road noises. Increases in underwater noise will result from the placement of rock armour, but the noise levels associated with these activities is not anticipated to be high enough to affect otters when present in the marine environment.

Although both in-air and underwater noise levels will increase construction activities will be short term and restricted to daytime. Otters are a highly mobile species with large home ranges and although the impacts are expected to be low, individual otters, during foraging and commuting, will be capable of avoiding periods where perceived noise becomes significant.

The presence of construction vehicles will result in some degree of visual impact, however, the coastline in this location supports a public road in very close proximity to the coastline, working farms and existing vessel moorings. These existing features all result in a landscape that frequently supports a variety of visual disturbances along irregular but frequent human presence from estate workers, local residents and tourists. The workforce for the development is expected to average 3 operatives with site operatives located within plant for the majority of this time and therefore not perceived as human presence.

As a result, it is expected that the **temporary** impact from noise, visual disturbances and increased human presence within both the shoreline and marine is expected to be **negligible**, potentially resulting in a **minor: Non-Significant** effect.

Due to the proximity of the coastline to the public road, there is potential for an increased risk of road casualties from traffic associated with the construction. The majority of the traffic will be the arrival of plant initially over a one week period and then the collection of plant for removal on completion. The delivery traffic will be sparse with traffic mostly limited to operative's vehicles and plant maintenance vehicles, mostly vans. Further details on traffic levels are presented within Chapter 2: Project Description with an associated Traffic Management Plan (Appendix B.1). The construction vehicles for the timber pier are expected to result in only a slight increase in traffic levels on the B8035. The timber haulage vehicles will also have a slight impact but only locally as they will only use the public road between the pier and the forest entrance approximately 400m away to the east. All traffic is expected to travel to the Site arriving from the east, passing the holt locations. Coastal otters primarily use the marine environment, however, small burns (freshwater) and suitable habitats onshore and further inland may also be used. The otters present in this location are likely to preferentially use the river corridors and associated culverts to travel inland and as such are unlikely to cross the B8035 road. Some movement across the roads is still possible and the increase in traffic during the construction period will result in a slight **temporary** increase in the potential for killing or injury of otters through road and site traffic mortality resulting in a **low** impact magnitude. This equates to a **moderate: Significant** effect.

It is possible that otters in the area will enter the construction site during periods when construction works are not ongoing. In this event, otter may seek shelter in stored materials, such as pipes and rock stock piles, excavations, or in items of plant or equipment. This will result in an increased risk of injury or accidental mortality, if equipment or materials are moved while an otter is still in-situ. Furthermore, otters may become trapped in excavations or pipes, resulting to increased stress, and potentially injury. This **temporary** impact is assessed as having a magnitude of **low**, resulting in a **moderate: Significant** effect.

A reduction in water quality in the development area, such as the release of sediment laden surface water runoff or hazardous substances including oils, would result in negative impacts on otters. However, Chapter 8: Schedule of Mitigation outlines control measures that will be put in place during construction and operation of the development in order to ensure water quality in the area is maintained. Assuming that industry standard best practice is used when considering pollution control the potential impacts from any reduction in water quality is

expected to be low. The largest impacts are likely to be from introduction of silt during introduction of rock armour. Within the marine environment, the localised sediment input is expected to be limited and of a short term nature. As a result, this **temporary** impact is assessed as having a magnitude of **negligible**, resulting in a **minor: Non-Significant** effect.

As detailed in Section 7.2, the otter is fully protected as an EPS under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). Based upon the survey results it is considered very unlikely that the identified places of shelter (Holt 1 and Holt 2) will be significantly disturbed taking into account the distance from the proposed works. However, it should be noted that due to the observations of cubs within close proximity to the site, it is possible that a disturbance to an otter while caring for its young may occur due to effects of displacement. If this were to occur then it may result in an offence being committed, and hence an EPS licence is likely to be required.

7.5.5 Operational Impacts

Potentially significant impacts during the operational phase are expected to include;

- Risk of disturbance and potentially displacement from non-breeding holt due to operational activities.
- Risk of disturbance and displacement from natal holt due to operational activities.
- Risk of disturbance if timber stacking areas are utilised as shelters on temporary basis when timber is stored.
- Increased risk of road traffic mortality due to increase in vehicle movements during operational phase (Chapter 2: Project Description and Appendix B.1) along public road and from haulage vehicles along pier structure.
- Disturbance and displacement of commuting and foraging activities.

Operational activities are anticipated as being highly variable with up to 20 articulated timber lorry movements per day during peak timber movements. These lorry movements will be from the forestry to the north and include a distance of approximately 400m to the east along the public road. Timber movement will build up stocks in the stacking area, prior to loadout onto transport vessels via the causeway, access bridge and floating pier. During peaks of timber movement, the traffic levels and associated noise will represent a significant increase in traffic related noise and visual disturbance. Increased traffic levels are unlikely to impact on Holt 2 as this is on the western side of the development and in excess of 300m form the loading area. Holt 1 will potentially be impacted upon as the holt is located close to the public road. However, the otters at this location are presently taking shelter in close proximity to the public road and as a result are subject to the lower fluctuating levels of traffic. The increased traffic represents a risk to otters through traffic mortality, both within the development and on the public roads, but the increased risk will depend heavily upon the behaviour of individual otters and timing of traffic movements. As a worst case, it is considered that this **long-term** impact to be of **Low** magnitude resulting in a **moderate: Significant** effect.

As detailed above the laydown area will be used for storing timber and at any one time will support varying levels of timber stacks. It is possible that these timber stacks if left undisturbed

for a period of weeks may become a potential sheltering resource for otter. The timber stacks would not represent optimal habitat for taking shelter but it there is a small risk of use at some point. If otter do use the timber stacks for a shelter, then during loading of timber on to vessels there is the possibility of killing or injury of individuals. It is assessed that the probability of use of timber stacks by otter is very low, but could result in accidental killing or injury of individuals. On balance the issue represents a small increase in the potential for killing or injury of otters, this **long-term** impact is assessed to have a magnitude of **negligible,** resulting in a **minor: Non-Significant** effect.

The presence of a new structure punctuating the relatively undisturbed coastline is likely to result in some displacement of foraging and commuting behaviour and may result in habitat fragmentation for mothers with highly dependent cubs, which are unable to swim around the new structure. However, in the longer term it is possible that the new structure could result in new areas of intertidal and marine habitat supporting prey fish and crustacean species. Overall, it is assessed that the **permanent** impact of a new physical structure on commuting and foraging has a magnitude of **low**, resulting in a **moderate: Significant** effect.

7.6 Mitigation

The below details the mitigation and forms the Otter Protection Plan (OPP).

7.6.1 Construction

- A pre-construction otter survey will be undertaken no more than 4 weeks prior to construction works commencing, the survey will extend to at least 500m from proposed works. This survey will include vantage point surveys to identify if any cubs are present. Immediately upon completion of this survey the need to apply for an EPS Licence will be reassessed. If new holts (potentially used as natal holts) are identified within 200m of the development or it cannot confidently be ascertained that a mother otter will not be disturbed while it is rearing or otherwise caring for young, highly dependent cubs, then it will be necessary to apply for an EPS License to allow the works to progress lawfully. If an EPS License is required an Otter Protection Plan based upon the details within this document and amended where necessary to account for any changes in activity will be prepared and submitted to the issuing body, SNH.
- Exclusion zones: The identified holts are in excess of 200m from the proposed works and as such require no specific exclusion zones. However, it is recommended that the construction footprint of the development both within the terrestrial and marine environment is minimised as far as it practicable. If new otter holts/resting sites are identified during the construction process, construction work will cease and an ecologist and/or SNH consulted immediately for advice.
- All Site Operatives will be briefed on the legislation, ecology and field signs of otter through an Otter Toolbox Talk. Briefings will be clear and unambiguous ensuring that all work stops and advice sought from a suitably experience ecologist where any environmental concerns are raised. In addition, an Otter Advice Note will be made available in the site welfare facilities, detailing the legal responsibilities on site, the

importance of maintaining levels of awareness in relation to otters, and procedures to follow should concerns be identified.

- If otters approach closer than 50m to ongoing works, either on land or within the marine environment, then works should cease until such time that the otter(s) has moved further than 50m away from works.
- As the coastline within the development area is frequently used by adult and juvenile otters, maintaining easy access along the coastline is important to ensure that impacts on commuting and foraging behaviour is minimised. As a result a single culvert will be installed within the rock armour spanning the width of the causeway. The culvert will consist of a 600mm diameter rigid pipe located at approximately the MHWS line. This will allow otters to move freely through the Site without having to pass over the structure.
- All machinery stored on site and the immediate area will be subject to checks for otter prior to work commencing each day to ensure otter are not present.
- All fencing will have a gap of 200mm between ground level and the lower part of the fence to allow otters to pass freely underneath.
- To minimise the potential impacts on breeding otter within the area works will not be commenced if highly dependent cubs are present within 300m. Cubs are generally within or very close to a holt during the first 2-3 months. The potential presence of cubs will be assessed during the pre-construction surveys.
- All exposed pipes (excluding culverts once in place) will be capped when not required and any significant trenches, excavations will be fitted with a 45-degree escape ramp to prevent entrapment of otters.

7.6.2 Operational

Once the construction period has been completed the concerns over otter are limited. However, a number of practices safeguarding otter at the location will be employed.

- During periods when timber is stored on Site, particular care will be taken to ensure that otter are not present within timber stacks prior to timber movement. Searches for otters should be undertaken prior to movement and the use of heavy equipment.
- During the approach of large vessels during timber movement, observations for otter within 100m of the Site should be undertaken. There is potential for displacement of otter, including juveniles during this process, which should be avoided. If otter are present within 100m of the Site, then the final approach of the timber vessel should be slowed momentarily to allow the otter to move away from the Site.
- Operating activity will be limited to day time hours (7am-7pm).
- Vehicle speed limits of 10mph will be introduced and adhered to within the site boundary.

7.7 Cumulative Impacts

The area does not support extensive development affecting otters and only a small number of other developments have been identified that may result in a cumulative impact.

As this EIAR covers the proposed development below MHWS level, the associated works above MHWS have been considered as a potential source of cumulative impact. The associated land based works are restricted to an area of excavation for gaining rock armour which will be extracted without the need for blasting. These impacts have to some degree been included within this EIAR and are likely to represent a negligible additional impact due to their direct association both temporally and spatially with the construction of the causeway and associated pier structures.

The formation of a number of forestry tracks were proposed under permitted development within the Dererach Forest to the north east of the Site which will be the main source of timber for export. The present state of track construction is unknown and no information on the scale of works or baseline survey information for otter is available. In addition the felling operations themselves may have impacts on otter if habitats within the forestry area (such as the associated watercourses) are utilised by otter, including for places of shelter, especially natal holts. Developments and land management activities such as this have the potential to impact upon otter, especially natal holts as these can often be inland away from the coastline to minimise potential for disturbance and predation. It is possible that such development and land management practices add to a cumulative impact. However, assuming best practice approaches are undertaken during the forestry works the impacts are likely to be low as they will be restricted to the forestry blocks.

A further recent development consisting of a similar rock armour causeway and jetty was constructed at Pennyghael, adjacent to the Cross at Pennycross. The development was completed in 2012 and enabled timber to be exported from the south of the Island. The project resulted in impacts on otters, including disturbance to resting sites. Although short-term temporary disturbance resulted it is assessed that the project resulted in a minor positive impact for otter with new foraging habitats and potential shelter locations created (pers. comm. Project Ecologist) although no detailed post project monitoring has been undertaken. This development is approximately 2km across Loch Scridain or 7.5km around the coast. Although there is unlikely to be a significant cumulative impact from this development, it has increased the number of large vessels in the area.

Overall the above projects are anticipated to have a **negligible** magnitude cumulative impact on resulting in a **minor: Non-Significant** cumulative effect.

7.8 Residual Effect

In the absence of mitigation, some impacts on otters resulting from the construction and operation of the Kilfinichen Pier development were assessed in Section 7.5 to have the potential to result in significant negative impacts on otters. These potential impacts are particularly associated with the possible disturbance, displacement, and interactions with plant and equipment. As a result, a comprehensive mitigation strategy has been proposed in Section 7.6, in the form of an Otter Protection Plan.

The OPP will reduce the predicted magnitudes of impact on otters, by minimising the potential for disturbance, displacement, and interactions with plant and equipment. As such, adherence

to the OPP, reduces the magnitude of all potential impacts on otters to **negligible**, and as such the residual effect of the proposed development is assessed as **minor**: **non-significant**.

It is noted that the potential need for an EPS licence remains. The mitigation strategy outlined in Section 7.6 will form the basis of any EPS licence application, should it be required upon completion of pre-construction surveys.

7.9 Summary

The proposed construction of a rock armoured causeway and associated pier elements will likely have a minor negative impact on otter during the construction process during the construction process and in the short-term post construction. However, in the longer term it is expected that the development would be neutral or even provide a minor positive impact. A series of cumulative impacts are highlighted, although none appear to be significant based on available information. If the proposed mitigation is implemented and the need for additional measures and/or an EPS License application is reassessed upon completion of the pre-construction surveys, then no significant impacts on otters are expected.

7.10 References

Chanin, P. (2003) *Ecology of the European Otter. Conserving Natura 2000 Rivers Ecology Series No. 10*. Peterborough.

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Chapter 8: Schedule of Mitigation

KILFINICHEN ESTATE
Isle of Mull

8 Schedule of Mitigation

A summary of the proposed mitigation measures identified in the EIAR for the Kilfinichen Pier Development is provided in Tables 8.1. The mitigation measures detailed in Table 8.1 also outline the primary and tertiary mitigation identified during the scoping process, for topics which were subsequently scoped out of the EIA with agreement of Marine Scotland.

The Schedule of Mitigation will be used to inform the task specific Risk Assessed Method Statements (RAMS), in order to ensure the mitigation measures identified through the EIA process are effectively implemented during the construction phase.

Table 8.1 Schedule of Mitigation.

Topic	Stage	Aspect	Mitigation	Relevant Guidance	Reference
Air Quality and Climate Change	General Construction	Suspension of dust leading to surface soiling and annoyance of receptors.	Sources of dust will be minimised, and suppression measures e.g. sprinklers will be used in open areas and stockpiles where necessary and practicable.	**PPG6: Working at Construction and Demolition Sites**	Scoping Report Section 5.5
			Regular maintenance will be undertaken on plant, vehicles and vessels.		
	General Operation	Complaints from residents as a result of dust arising from operation of the pier.	Complaints will be investigated, and consideration given to surfacing the pier.		
Archaeology and Cultural Heritage	General Construction	Discovery of unknown remains with potential damage being caused to those remains.	A protocol for archaeological discoveries will be implemented during construction operations.	Protocol for Archaeological Discoveries for Offshore Renewables Projects 2014	Scoping Report Section 6.5
Marine Mammals	Causeway Construction	Injury of marine mammals due to rock placement.	Rock fill/armour will be placed and not dropped from height, during construction of the causeway.		Scoping Report Section 7.6
			Watching brief for marine mammals conducted during rock placement operations.		
		Acoustic injury of marine mammals during construction.	Construction techniques avoid the use of pile driving and blasting.		
Landscape, Seascape and Visual	General Construction	Visual impact arising from the construction site and construction machinery.	Works will generally be conducted between 7am to 7pm, Mondays to Saturday, minimising the requirement for artificial lighting.	Guidance Note: Controlling Light Pollution and Reducing Lightning Energy Consumption	Scoping Report Section 8.5
			Where lighting is required, it will be directional, and only illuminate the necessary working area.		
			Rock armouring will be sourced locally to ensure similar colours and geology to the surrounding environment.		

Topic	Stage	Aspect	Mitigation	Relevant Guidance	Reference
Landscape, Seascape and Visual	General Construction	Visual impact arising from the construction site and construction machinery.	The laydown area will be installed at approximately +6.5mCD which will minimise visibility from the B8035 road.		Scoping Report Section 8.5
			When construction equipment is not in use it will be parked up neatly at the base of the laydown area to minimise visibility.		
Noise and Vibration (In-air and underwater)	General Construction	Increased in-air noise as a result of construction that could lead annoyance of residents and disturbance of fauna.	Works will generally be conducted between 7am to 7pm, Mondays to Saturday.	BSI (2014). BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites.	Scoping Report Section 11.5
			Rock will be placed from a minimum practicable height.		
			Vehicles and equipment will be well maintained.		
	General Operation	Increased in-air noise as a result of pier operation including timber stacking and loading on timber transport vessels.	Works will generally be conducted between 7am to 7pm, Mondays to Saturday.		
			Vehicles and equipment will be well maintained.		
Natural Resource Usage and Waste	General Construction	Generation of waste from construction works and onsite welfare facilities.	Waste hierarchy employed.	PPG6: Working at Construction and Demolition Sites	Scoping Report Section 12.5
			Waste appropriately segregated.		
			Licenced waste disposal routes utilised.		
		Marine litter.	Training will be provided to all personnel with regard to waste management and that littering will not be tolerated.		
		Use of natural resources.	Reuse of rock and infill material for causeway creation where practicable.		
Traffic, Access and Navigation	General Construction/ Operation	Potential navigational risks from increased vessel movement.	Navigational Risk Assessment provided as a standalone document.		Scoping Report Section 13

Topic	Stage	Aspect	Mitigation	Relevant Guidance	Reference
Water Quality and Coastal Processes	General Construction	Increased sediment loading into water column from infilling and rock armouring that can see resuspension of sediments.	Rock will be placed from a minimum practicable height.	GPP 5: Works and Maintenance in or Near Water	Scoping Report Section 14.5
		Loss of containment of hazardous substances during construction could reach the marine environment and reduce water quality.	Adequate spill response equipment on site.	GPP 21: Pollution Incident Response Planning	
			Designated wash down areas for concrete contaminated equipment and tools, located at least 10m from any watercourse or body.	PPG 22: Incident Response - Dealing with Spills	
			Regular maintenance will be undertaken on plant, vehicles and vessels.	GPP 5: Works and Maintenance in or Near Water	
			Use of licences disposal routes for hazardous waste and contaminated water.	GPP 4: Treatment and disposal of wastewater where there is no connection to the public foul sewer	
			Storage of chemicals and hydrocarbons in secondary containment, where applicable.	GPP 5: Works and Maintenance in or Near Water	
			Any stored hydrocarbons and chemicals will be stored at least 10m from any watercourse or body.		
		Surface water runoff can enter the marine environment and can carry with it pollutants and sediments.	Permeable construction material used on the pier will reduce surface water		
			Creation of a surface water drainage system, including a swale.		
	General Operation	Surface water runoff can enter the marine environment and can carry with it pollutants and sediments.	Creation of a surface water drainage system, including a swale.		

Topic	Stage	Aspect	Mitigation	Relevant Guidance	Reference
Benthic Ecology	Causeway Construction	Potential introduction of invasive non-native species which could degrade the benthic ecosystem.	Adoption of best practice mitigation measures, including cleaning and inspection of plant and equipment, and the implementation of appropriate ballast water management systems.	GreenBlue MNNS Guidance **International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM)**	EIAR Chapter 5 Section 5.5.2
			Vessels, materials and equipment will be locally sourced.		
	Operation – Vessel Traffic		All vessels associated with the operation of the pier development will comply with the International Convention for the Control and Management of Ships' Ballast Water and Sediments Management Convention.		
	General Construction	Reduction in water quality affecting benthic environment.	Standard best practice mitigation measures for the prevention of surface water run-off, and accidental releases of hazardous substances are included in Table 8.1.		EIAR Chapter 5 Section 5.5.2
Ornithology	General Construction	Potential disturbance of birds from artificial lighting.	Works will generally be conducted between 7am to 7pm, Mondays to Saturday, minimising the requirement for lighting.	Guidance Note: Controlling Light Pollution and Reducing Lightning Energy Consumption	EIAR Chapter 6 Section 6.5.2
			Lights will be switched off when not in use.		
			Where artificial light is required, only the active working area will be illuminated.		
		Reduction in water quality affecting ornithological receptors.	Standard best practice mitigation measures for the prevention of surface water run-off, and accidental releases of hazardous substances are included in Table 8.1.		EIAR Chapter 6 Section 6.5.3

Topic	Stage	Aspect	Mitigation	Relevant Guidance	Reference
Ornithology	General Construction	Physical injury of ornithological receptors resulting from interactions with plant and equipment.	All construction staff will be instructed to remain vigilant for bird presence during construction operations through site inductions and toolbox talks.		EIAR Chapter 6 Section 6.6
			If a bird is present in an area where it may be injured by the construction operations, works will be stopped, until the bird has left the area.		
			If an occupied nest is identified within the site boundary, a temporary exclusion zone of at least 20m will be established around the nest, and a suitably qualified ornithologist will be consulted to develop an appropriate mitigation strategy.		
Otters	General Construction	Reduction in water quality affecting otters.	Standard best practice mitigation measures for the prevention of surface water run-off, and accidental releases of hazardous substances are included in Table 8.1.		EIAR Chapter 7 Section 7.5.4
	General Construction	Potential disturbance and displacement from non-breeding or natal holts or resting sites during construction.	Adherence to the Otter Protection Plan (OPP) which includes the following provisions: • A pre-construction otter survey should be undertaken no more than 4 weeks prior to construction works commencing. • The survey will include vantage point surveying to identify if any cubs are present.	Ecology of the European Otter, Conserving Natura 2000 Rivers Ecology Series	EIAR Chapter 7 Section 7.6.1

Topic	Stage	Aspect	Mitigation	Relevant Guidance	Reference
Otters	General Construction	Potential disturbance and displacement from non-breeding or natal holts or resting sites during construction.	• Immediately upon completion of this survey the need to apply for an EPS Licence will be reassessed. If new holts (potentially used as natal holts) are identified within 200m of the development or it cannot confidently be ascertained that a mother otter will not be disturbed while it is rearing or otherwise caring for young, highly dependent cubs, then an EPS License will be applied for. • If an EPS License is required a Species Protection Plan based upon the details within this document and amended where necessary to account for any changes in activity will be prepared and submitted to SNH. • No specific exclusion zones are required for the holts identified to date. However, the construction footprint of the development both within the terrestrial and marine environment will be minimised as far as it practicable. • If new otter holts/resting sites are identified during the construction process, construction work will cease and an ecologist and/or SNH consulted immediately for advice.	Application for a Licence Relating to EPS: Guidance Notes on Providing Supporting Information (SNH, 2015)	EIAR Chapter 7 Section 7.6.1

Topic	Stage	Aspect	Mitigation	Relevant Guidance	Reference
Otters	General Construction	Shoreside and marine habitat disturbance from noise, visual impacts and increased human presence due to construction works and active construction works.	• All site operatives will be briefed on the legislation, ecology and field signs of otter through sites inductions and toolbox talks. Briefings will be clear and unambiguous ensuring that all work stops, and advice sought from a suitably experience ecologist where any concerns regarding otters are raised. • In addition, an Otter Advice Note will be made available in the site welfare facilities, detailing the legal responsibilities on site, the importance of maintaining levels of awareness in relation to otters, and procedures to follow should concerns be identified. • If otters' approach closer than 50m to ongoing works, either on land or within the marine environment, then works will cease until such time that the otter(s) has moved further than 50m away from works. • Works will not be commenced if a mother otter with highly dependent cubs are present within 300m of the development. • A single culvert will be installed within the rock armour spanning the width of the causeway, to allow otter to pass through the structure. The culvert will consist of a 600mm diameter rigid pipe located at approximately the MHWS.	Ecology of the European Otter, Conserving Natura 2000 Rivers Ecology Series	EIAR Chapter 7 Section 7.6.1
		Disturbance to breeding otters resulting in cub mortality.			
	Causeway Construction	Habitat fragmentation resulting from the installation of the causeway.			

Topic	Stage	Aspect	Mitigation	Relevant Guidance	Reference
Otters	General Construction	Habitat fragmentation resulting from the installation of the causeway.	• All fencing will have a gap of 200mm between ground level and the lower part of the fence to allow otters to pass freely underneath. • All machinery stored on site and the immediate area will be subject to checks for otter prior to work commencing each day to ensure otter are not present. • All exposed pipes (excluding culverts once in place) will be capped when not required, and any significant trenches, excavations will be fitted with a 45-degree escape ramp to prevent entrapment of otters. • During periods when timber is stored on Site, particular care will be taken to ensure that otters are not present within timber stacks prior to timber movement. • Searches for otters should be undertaken prior to movement and the use of equipment. • Vehicle speed limits will be introduced within the site boundary. • Operating activity will be limited to day time hours (7am-7pm). • Timber vessels approaching the Pier will maintain observations for otter once they are within 100m of the site. • If otters are present within 100m of the Site, then the vessel will allowing the otter to move away from the Site.		EIAR Chapter 7 Section 7.6.1
	General Construction	Otter entrapment or injury in site materials, structures and equipment.			
	General Operation	Otter entrapment or injury in during timber stacking and loading operations.			EIAR Chapter 7 Section 7.6.2
		Potential disturbance and displacement of otters during timber stacking operations.			

Chapter 9: Conclusion

KILFINICHEN ESTATE
Isle of Mull

9 Conclusion

The Kilfinichen Pier Development will facilitate the export of harvested timber from commercial forestry plantations on the Ardmeanach Peninsula, on the west coast of the Isle of Mull. Currently, it is not possible to export the timber from this region, since the peninsula's road infrastructure is deteriorating, and is no longer suitable for the heavy goods vehicles used to transport timber. No existing marine export routes are accessible without the use of the road network. As a result, the forestry plantations cannot be harvested, and will soon become over-mature, leading to a significant reduction in the commercial value of the timber.

The proposed development will provide an onshore timber stacking area (which is subject to an existing planning consent), a 140m long rock armoured causeway with a 60m L-shaped return, and a 40m long access bridge and a floating pier. A pre-existing pontoon will also be incorporated into the causeway design. The access bridge and floating pier will be detachable and is designed to be compatible with the existing timber loading facility at Pennyghael. As such the bridge and pier can be transported between Kilfinichen and Pennyghael, depending on where it is required, allowing the asset to be shared, improving resource efficiency. The proposed development will allow timber cargo vessels to berth on the Ardmeanach peninsula, in the immediate vicinity of the aforementioned forestry plantations, thus allowing export of the harvest timber by sea, with minimal reliance on the public road network.

Consultation with statutory consultees, interested bodies and stakeholders, including the local community, has informed the scope and content of the Environmental Impact Assessment Report (EIAR). Strategic alternatives to the current design have been taken into consideration in order to minimise the potential impacts on the environment. The assessment presented in this EIAR is based on the information available at the concept design stage, but it is acknowledged that a more detailed design period will take place. A brief topic-by-topic summary is now outlined below.

A benthic survey was conducted in inform an understanding of the benthic habitats and species present in the vicinity of the proposed development. No sensitive or high value benthic habitats or species were identified. As such the benthic ecology assessment concluded that while some benthic habitat will be permanently lost, no significant effects are expected, due to the small scale of the development foot print. The assessment also found that adherence to environmental best practice results in no significant effects on the benthic environment associated with potential water quality impacts, or the risk of introducing marine non-native species.

An ornithological assessment was conducted, supported by two wintering bird surveys of the development site and surrounding area. While numerous birds, species were found to frequent the area, the assessment concluded that the development site did not provide valuable breeding or foraging habitat to ornithological receptors. The habitat loss is extremely small and as such give rise to no significant effects. Disturbance is minimal due to the scale of the construction works and the majority of the works being carried out during daylight minimising the need for lighting. Water quality impacts, and potential injury to birds resulting

from interactions with plant and equipment were also assessed, but no significant effects were identified, assuming adherence to standard environmental best practice.

An otter survey was conducted in order to inform the basement of potential impacts of the development on otters in the vicinity of the site. It was found that the area in the vicinity of the site provides valuable habitat to otters, and as such, in the absence of mitigation, the assessment identified potential significant effects on otters resulting from disturbance and interactions with material and equipment associated with both the construction and operation phases. An Otter Protection Plan (OPP) was therefore developed, in order to provide effective mitigation, to reduce the magnitude of the potential effects on otters. Following the implantation of the OPP, all potential residual effects on otters are reduced to non-significant.

Cumulative assessments with both onshore and offshore proposed developments were carried out. Due to the limited extent of the potential environmental impacts which may result from the proposed development no cumulative impacts were identified in any of the topic-specific assessments.

During the EIA process for the Kilfinichen Pier Development, primary, secondary, and tertiary mitigation has been identified, which is outlined in both the EIAR, and the associated Scoping Report. Mitigation proposed at the scoping stage, was used as the basis for scoping out numerous topics from the EIA process. Therefore, a comprehensive Schedule of Mitigation (SoM) has been provided, in order to ensure all the mitigation measures identified in both the Scoping Report, and the EIAR are captured in a single table. The SoM will be used to inform the Risk Assessed Method Statements developed by the principal contractor and used to control the construction operations. This approach ensures the identified mitigation will be effectively implemented during the construction phase.

In conclusion, provided appropriate mitigation measures are implemented, the proposed Kilfinichen Pier Development will not have any long term permanent significant effect on the environment. The construction and operation of the proposed Kilfinichen Pier Development will bring benefits to both the local and regional economy. If the development were not to go ahead, the opportunity to harvest the peninsulas timber resources and utilise them as a sustainable resource may be lost.

Appendix A.1 - Competency Statements

KILFINICHEN ESTATE
Isle of Mull

KILFINICHEN ESTATE
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1 Introduction

Affric Limited, on behalf of Kilfinichen Estate, have led the Environmental Impact Assessment Report (EIAR) production for the Kilfinichen Pier Development, however it has been a team effort. Affric Limited has worked with a variety of consultants to ensure that appropriate experts have contributed relevant technical input to the assessment. Table 1.1 details the lead authors for each of the chapters. Further information with regard to the experience and expertise of the various companies and personnel who have written sections of the EIAR is provided in Section 2.

Table 1.1 Lead Authors for EIAR Chapters.

Chapter	Lead Author/Main Contributor
1: Introduction	[Redacted] – Affric Limited
2: Project Description	[Redacted] – Affric Limited [Redacted] – Affric Limited
3: Statutory Context & Policy	[Redacted] – Affric Limited [Redacted] – Affric Limited
4: Methodology	[Redacted] – Affric Limited
5: Benthic Ecology	[Redacted] – Affric Limited [Redacted] – Affric Limited
6: Ornithology	[Redacted] Affric Limited [Redacted] – Affric Limited
7: Otters	[Redacted] – Tracks Ecology
8: Schedule of Mitigation	[Redacted] – Affric Limited [Redacted] – Affric Limited
9: Conclusion	[Redacted] – Affric Limited

2 The Authors

2.1 Affric Limited

Established in 2012, Affric are a growing and highly responsive environmental consultancy business providing a comprehensive range of environmental advice, surveys, planning support, stakeholder and project management services. With a broad and expanding portfolio of clients, they work on a diverse range of projects in the public and private sector from SME's to multi-national energy companies. Affric work with their clients to provide high quality tailored services, to ensure that any given project has the most appropriate expertise, irrespective of the sectors or regions in which they operate.

[Redacted] A Chartered Environmentalist with 20 years' experience. Her qualifications include a MSc in EIA, Auditing and Management Systems and BSc *(Hons)* in Environmental Chemistry. Having lead authored multiple harbour development Environmental Statements/EIAR's she has knowledge of both terrestrial and marine issues. Her environmental expertise coupled with Fiona's comprehensive understanding of the Kilfinichen Pier Development project has allowed her to coordinate this EIAR and review the technical content of the EIAR chapters.

[Redacted] : Senior Consultant [Redacted] is a Marine Biologist with specific expertise in Marine Mammals and underwater acoustics, holding an MRes in Marine

Mammal Science. Having been a lead contributor to several marine infrastructure EIAs, and acted as the Environmental Clerk of Works (ECoW) on previous harbour developments his knowledge combines a comprehensive understanding of the EIA process with sound technical knowledge of construction processes, and practical implementation of effective mitigation. [Redacted] was a lead author of multiple EIAR chapters and coordinated the EIA process.

[Redacted] : Has a first-class BSc *(Hons)* in Environmental Science from the University of the Highlands and Islands. As a Junior Consultant, Cornelius drew on experience he has gained through supporting the EIA process and EIAR production for other major infrastructure projects in Scotland, including port development, and subsea interconnector projects. He authored the Introduction, Methodology, and Conclusions of this EIAR, supported [Redacted] co-authoring numerous topic specific chapters.

2.2 APEM Ltd

APEM Ltd is leading independent environmental consultancy specialising in freshwater, marine ecology and aerial surveys. Their success is demonstrated by employing over 120 staff in eight offices in the UK, Germany and the US. APEM Ltd also strongly believe in corporate responsibility and aims to act responsibly by being committed to the environment and society by engaging the local communities in which they operate.

[Redacted] is a fisheries scientist with APEM Ltd and conducted analysis of the benthic survey results, in order to provide additional technical content to the Benthic Ecology chapter. He is also a Chartered Environmentalist (CEnv), Full Member of the Institute of Environmental Management and Assessment (MIEMA) and Registered Member of the Institute of Fisheries Management (MIFM). He has undertaken Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA) for all scales of infrastructure projects in both the terrestrial and marine environment, working both in a consultancy setting and directly for public- and private- sector developers.

[Redacted] has EIA experience from authoring technical chapters and assessments as well as wider project management and EIA coordination. He has worked on EIAs from project inception and feasibility studies, to discharge of conditions or requirements prior to construction, through EIA screening, EIA scoping, preparation of Environmental Statements (ES) and Preliminary Environmental Information (PEI) reports and determination/examination procedures.

2.3 Tracks Ecology

Tracks Ecology formed in 2014, provide ecological consultancy, wildlife research and UAV services. All works undertaken by the company follow the strict Code of Conduct set by the Chartered Institute of Ecology and Environmental Management.

[Redacted] was lead author of the Otters Chapter. He has over 15 years ecological experience within both the academic and consultancy sectors working on a wide range of research and development projects requiring high quality ecological surveys. Through a number of roles, James has worked on projects relating to large Ecological Impact Assessments for wind farms, single turbine projects and other development schemes including biomass, hydro-electric, housing and highways. His expertise is centred on protected species and

habitat surveys, with extensive experience in initial scoping reports, baseline assessments and focused species surveys, along with skills in impact assessments, mitigation and enhancement strategies. Since going independent in 2014, James has developed his independent consultancy further, to provide aerial survey (CAA qualified and fully insured use of UAVs) and GIS services with a particular emphasis on environmental applications. He works within the CIEEM Code of Conduct and provides unbiased advice through a strong evidence-based approach.

2.4 Great Glen Ecology

Great Glen Ecology conducted the wintering bird, and otter surveys to inform the topic specific impact assessments. The wintering bird surveys were conducted by [Redacted] , a suitably qualified ornithologist, with extensive experience of conducting wintering bird surveys on the west coast of Scotland, in support of proposed infrastructure developments. The otter surveys were conducted by [Redacted] a qualified ecological surveyor, with 7 years' experience.

2.5 EcoFish Global Ltd

Are a specialist consultancy that provides technical and scientifically robust services, having worked in multiple industry sectors, including: forestry, fisheries, and energy. EcoFish Global undertook the benthic survey, drawing upon expert input from their benthic ecology team. The benthic analysis was conducted by [Redacted] a highly skilled marine taxonomist who provides sorting, identification and analytical quality control services, and participates in the National Marine Biological Analytical Quality Control Scheme.

B.1 – Kilfinichen Estate Traffic Management Plan

KILFINICHEN ESTATE
Isle of Mull

PROPOSED TIMBER LOADING PIER

KILFINICHEN

ISLE OF MULL

FOR

KILFINICHEN ESTATE

TRAFFIC MANAGEMENT PLAN
26/5/2015

Campbell of Doune Ltd.

4561-14

PROPOSED TIMBER LOADING PIER
KILFINICHEN

ISLE OF MULL

Traffic Management Plan

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PROPOSED TIMBER LOADING PIER
KILFINICHEN

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Traffic Management Plan

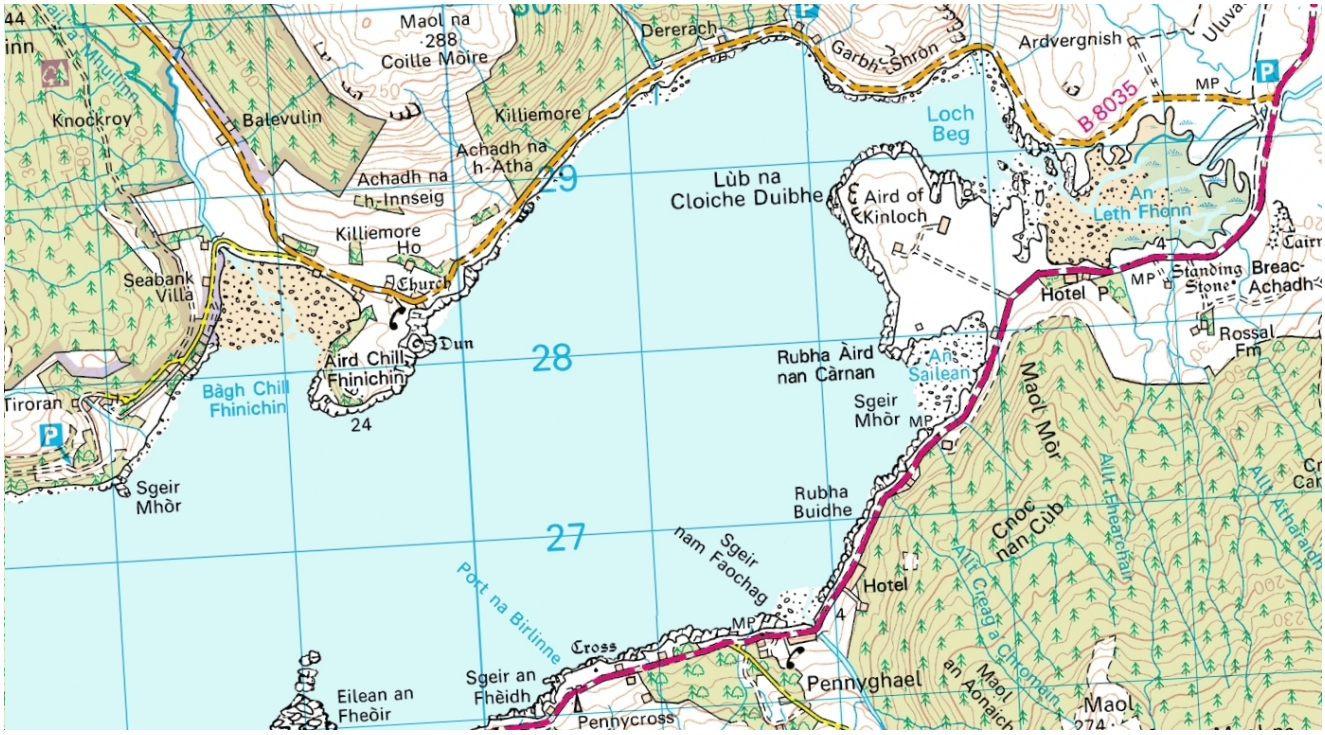
1. Introduction

This report provides an assessment of the likely access and traffic impacts associated with the proposed construction of a timber loading pier at Kilfinichen, Mull for Kilfinichen Estate within the Argyll and Bute Council area. This report aims to provide an assessment of construction and operational traffic and address the impact on recreational access.

2. Location of Proposed Scheme

The proposed timber pier is located on the north shore of Loch Scridain immediately south of the B8035 Road and south east of Killiemore House. The Site location map below shows how the site is accessed directly from the B8035 road. The B8035 is shown in yellow/orange.

Figure 1: Site location plan



3. Route Description

POINT 1 - A849/B8035 Junction:



Figure 2: A849 Craignure to Fionnphort /B8035 Junction.

The A849 is the main coastal trunk road which runs around the Isle of Mull.
The site may be accessed from this junction only. The A849/B8035 is a modern junction and wide enough to allow heavy goods vehicles to turn on and off the A849 road from either direction. Construction vehicles will be capable of negotiating this junction without causing any disturbance to other road users. The A849 is used regularly by forestry vehicles and access to the site from this junction is possible for construction vehicles.

It is 6.5 km to the site on the B8035 from this junction.



Figure 3: A849 Craignure- Fionnphort /B8035 Junction Map

PROPOSED TIMBER LOADING PIER
KILFINICHEN

ISLE OF MULL

Traffic Management Plan

POINT 2 – Site Access from B8035



Figure 4: Site access from B8035

The site access will be formed to the loch side from the B8035 where the car is located in Fig 6.

There is good visibility for this junction. The site will be accessed approaching from the Craignure/Fionnphort road.

POINT 3 – Haul Route for timber



Figure 5: Timber Haul Route

The timber to be felled and extracted is in forestry to the North, North West and North East of Killiemore House. The pier has been located to reduce the public road mileage of timber haulage to the absolute minimum. The haul distance on the public road between the exit from the forest opposite Eilean a' Ghaill and the Pier site at the number 9, both on the above map, is 400m. This length of road is relatively straight and is suitable for articulated vehicles. Signage will be erected at the Timber Pier entrance and the egress from the forest, alerting other road users to the possibility of oncoming construction vehicles during construction and timber lorries during operational use.

A condition survey of this length of road may be conducted jointly with the roads authority prior to a site start being made. Prior to haulage to the pier commencing any timber haulage operations will be subject to the existing Timber Transport Management Plan (as amended).

4. Users of the Route from Salen to the Craignure-Fionnphort Road

The B8035 Road between Salen and the Craignure-Fionnphort road junction is a minor road which carries relatively light traffic. The area is sparsely populated with traffic use limited generally to domestic and delivery vehicles including the Council refuge service vehicles.

Recently two hydroelectric schemes have been constructed using the B8035 as access with no traffic problems.

The construction vehicles for the timber pier will have a light impact on this road as it is planned to win the rock fill for pier construction on site.

The timber haulage vehicles will impact the road but only on the short stretch of 400m between the exit from the forest and the entrance to the Timber Pier.

5. Recreational Access

The project has no impact on recreational access.

6. Description of the project traffic type and distribution

The Kilfinichen Timber Pier will take approximately 6-9 months to construct from start to finish. The bulk of the traffic will be the arrival of plant initially over a one week period and then the collection of plant for removal on completion.

Operational construction traffic is described below.

Personnel traffic – Based on similar past projects, the construction team is estimated to average around 3 people for the 2-3 months construction phase.
Construction machinery traffic – It is estimated that two large 32 tonne tracked excavators and one smaller 25 tonnes will be required. In addition, it is anticipated that additional machinery including a 4*4 wheel dumper and tracked dumper will be required. It is anticipated that the machinery will be delivered to site and remain for the duration of the project except for maintenance swap out etc. Machinery will be brought to site on low loaders and flatbed Lorries.

Construction material traffic – The construction entails cut and fill of rock on the site and then the installation of a berthing face. The delivery traffic will be sparse with traffic mostly limited to operative's vehicles and plant maintenance vehicles, mostly vans.

Operation and maintenance traffic – When the Timber pier is operational, the traffic demand is very low for maintenance vehicles. The planned road usage to haul timber to the pier will peak at 20 Lorries per day set by the Timber Transport Management Plan which is already in force on the B8035.

7. Estimated Traffic Volumes

It is estimated that the following vehicle movements will result from the construction of the timber pier:

Table 1 – Potential traffic movements during the construction phase.

Activity	Total Number of Vehicles	Duration of Activity	Vehicle Frequency	Total Two-Way Movements
Low loader lorry	2	1 week at start of construction	1 to 2 per week	2 per week
25 tonne concrete and aggregate lorries	45	in month 5	2 every week	4 per week
Flat bed 18 tonne lorries delivering plant and machinery	4	In month 6	2 every 3 weeks	4 every 3 weeks
Vans and small trucks making deliveries	10	Spread over 3 months	10 every week	20 every week
Personnel using cars (Assuming a max. Of 5 personnel on site)	5	Spread over 3 months	Maximum of 5 per day	Maximum of 10 per day

The above information indicates that a typical day at the peak of the construction period would see less than an average an average of less than 1 HGV on site. Deliveries using vans and small trucks would account for an average increase of 1 vehicles travelling to site per day throughout the construction period. The maximum number of vehicles resulting from site personnel travelling to and from the site would be 5 per day. This figure assumes that many personnel will travel separately and it should be borne in mind that this level of traffic would not be experienced every day. This is a total of 6 vehicles per day or 12 traffic movements.

8. Proposed Transport Mitigation Measures

The construction phase of the project will have the most significant effect on traffic flows on local roads in the vicinity of the site, with an average of 1 HGVs, 1 or 2 vans or small trucks and up to 5 cars on site per day (38 vehicle movements per day). This additional traffic will have very minimal impact upon the A84 trunk road which is an already highly congested road which supports many HGVs daily. To help minimise disruption to the local roads deliveries to site are to be made out with peak commuting and school run times, i.e. 7-9am and 4-6pm.

Furthermore, this situation is likely to last only for a limited period as materials are transported to the site. The construction period is estimated to last 6-9 months. Once operational, the increase in traffic resulting from the scheme will be limited to the timber vehicles described below.

The impact on the public will be minimal during construction. The scheme will place no restriction on access for the public once completed subject to legal health and safety restrictions.

9. Timber vehicles during operation

The Timber Pier is being constructed to allow round logs to be transported from Mull with a minimum impact of the Argyll and Bute Council road network. The juxtaposition of the exit from the forest and access to the Timber Pier Means that only 400m of relatively straight public road is to be trafficked.

It is intended that there will be about up to 20 articulated timber lorry movements per day of fully laden 40 Tonnes GVWs at peak times in accordance with the Timber Transport Management Plan. The aim is to build up stocks of timber at the pier in readiness for the loading of vessels.

The public road affected by the timber vehicle movements may be inspected jointly by Argyll and Bute Council and a representative of Kilfinichen Estate before and after final use by forestry vehicles or at any other time with mutual agreement with Argyll and Bute Council.

Appendix C.1 – Kilfinichen Estate Benthic Survey (Fauna and Particle Size Distribution – PSA)

KILFINICHEN ESTATE
Isle of Mull



EcoFish
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Kilfinichen Estate

Benthic Survey (Fauna and Particle Size Distribution – PSA)

JUNE 2018

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1 INTRODUCTION

1.1 Project Background

Eco-Fish Global Ltd was commissioned by Kilfinichen Estate in June 2018 to carry out a Benthic Survey for a proposed pier site at Loch Scridain on the Isle of Mull. The main purpose of this work was to inform the environmental impact assessment report (EIAR).

1.2 Site Description

The site is situated in at Loch Scridain on the Isle of Mull in Scotland (approx. NM 49854 28266). The development is situated in relatively sheltered coastal location.

1.3 Purpose of the Report

The scope of the current commission is as follows:

- To conduct benthic grab sampling (using a Van Veen grab) at locations where the pier is to be situated, one near the coast and one near the seaward end of the development;
- To conduct analysis of the samples via lab analysis (faunal identification of marine benthic invertebrates and particle size distribution); and
- To evaluate the baseline habitat conditions of the site.

1.4 Sampling Locations and Effort

1. 1A (Invertebrates) - (Sieved Sample) - Approx. NM 49896 28264;
2. 1B (Sediment)- (Un-sieved Sample) - Approx. NM 49896 28264;
3. 2A (Invertebrates) - (Sieved Sample) - Approx. NM 49980 28172; and,
4. 2B (Sediment) - (Un-sieved Sample) - Approx. NM 49980 28172.

1.5 Guidance & Regulations

1.5.1 Water Framework Directive

The key purpose of the WFD is to establish a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater. The framework aims to:

- *prevent further deterioration and protect and enhance the status of aquatic ecosystems and, with regards to their water needs, terrestrial ecosystems and wetlands directly depending on the aquatic ecosystems;*
- *enhance protection and improvement of the aquatic environment, inter alia, through specific measures for the progressive reduction of discharges, emissions and losses of priority substances, and the cessation of phasing-out discharges, emissions and losses of the priority hazardous substances; and*
- *ensure the progressive reduction of pollution of groundwater and prevent it's further pollution.*

Under the WFD member states are required, to achieve "good ecological status" in inland surface waters, transitional waters and coastal waters. Ground waters must also

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be protected and restored to ensure the quality of dependant surface water and terrestrial ecosystems. The WFD is formally transposed into national legislation through the Water Environment (Controlled Activities) (Scotland) Regulations 2011. Through these regulations SEPA is empowered to control activities likely to have an impact upon the water environment (i.e. pollution, abstraction, impoundment and engineering).

Consequently, SEPA can recommend/enforce regulations upon controlled activities, including the development of monitoring programmes. Classified waterbodies receive legal protection under the Environmental Liability (Scotland) Regulations 2009, which make it an offence to have an adverse impact on a waterbody that is consistent with deterioration in the water's status or potential under the WFD. The WFD identifies the quality elements relevant for the determination of surface water ecological status. The WFD provides a comprehensive breakdown of quality elements to be assessed in the coastal water environment, which are presented in Table 1.1.

Table 1.1: Quality Elements for Classification of Surface Water Status (Coastal Waters)

Coastal Waters	
Biological Elements	
Biology	Composition, abundance and biomass of phytoplankton
	Composition and abundance of other aquatic flora
	Composition and abundance of benthic invertebrate fauna
Hydromorphological elements supporting the biological elements	
Morphological conditions	Depth variation
	Structure and substrate of the coastal bed
	Structure of the intertidal zone
Tidal regime	Direction of dominant currents
	Wave exposure
Chemical and physico-chemical elements supporting the biological elements	
General	Transparency
	Thermal conditions
	Oxygenation conditions
	Salinity
	Nutrient conditions
Specific pollutants	Pollution by all priority substances identified as being discharged into the body of water
	Pollution by other substances identified as being discharged in significant quantities into the body of water

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2 METHODS

2.1 Desktop Study

A detailed desktop study was undertaken to identify any classified sites and/or legally protected/ecologically significant species, relevant to the study area. The following web-based sources were utilised for this:

- SEPA (www.sepa.org.uk) - provided information on the current surface water status/potential of the study area under the WFD.

2.2 Benthic Ecology and Substrata (sub-tidal)

Locations for sampling were informed by a video survey, carried out by an experienced diver. As the habitat was similar across the whole survey area, two sample locations were selected within the survey area, one near the coast (**NS**) and one near the seaward end of the development (**FS**). Two samples were taken at each sampling location with one sieved on location and any biological material fixed in Formalin for transfer to laboratory analysis and the second retained for particle size distribution (PSD) to inform the understanding of habitat type.

For the assessment and within the development area of influence, benthic community composition and particle size distribution was first determined by physical sampling using a 0.045m^2 Van Veen grab. The Van Veen grab sampling method was selected to determine species, abundance and composition of benthic invertebrate fauna (in the sediment), and characteristics of the sediment (inc. particle size distribution).

2.3 Laboratory Analysis

Faunal identification and classification of marine benthic invertebrates from samples **1A-NS** and **2A-FS** was undertaken by a competent analyst who personally participates in the National Marine Biological Analytical Quality Control (NMBAQC) scheme.

For analysis the Infaunal Trophic Index (ITI) was used. The purpose of this is to describe the feeding behaviour of soft bottom benthic communities in terms of a single understandable parameter. Infaunal Trophic Index, ITI where species are assigned to one of 4 feeding groups to indicate the degree of disturbance at a station (1 filter / suspension feeders, 2 detritus feeders, 3 deposit feeders, 4 sub – surface deposit feeders). Scores between 0-30 classify as "degraded", 30-60 classify as "changed" and 60-100 classify as "normal." ITI is evaluated from 100% of those taxa for which scores have been allocated.

Particle size distribution (PSD) analysis of samples **1B-NS** and **2B-FS** was undertaken by ALS Environmental who are an MCERTS accredited laboratory.

2.4 Frequency

This survey was carried out via a single site visit, in June 2018.

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3 RESULTS

3.1 Desktop Study

3.1.1 Water Framework Directive

Loch Scridain is a coastal water body (ID: 200064), in the Scotland river basin district. It is 29.0 square kilometres in area.

The coastal waters of Loch Scridain (ID: 200064) have been categorised by SEPA as not being heavily modified, not being artificial, and with a typology of CW11. SEPA classified Loch Scridain as having an overall status of *Good* with *High* confidence, and with an overall ecological status of *Good*, with an overall chemical status of *Pass*. There are currently no pressures with this water body.

Table 3.1 identifies the individual quality aspects of this waterbody.

Table 3.1: Ecological Quality Parameters of Loch Scridain under the WFD

Ecological Quality Parameters of Loch Scridain under the WFD (2016)	
Site details	
Water body name	Loch Scridain
Water body ID	200064
Overall status	Good
Pre-HMWB Status	Good
Overall ecology	Good
Physico-chem	High
Dissolved oxygen	High
Dissolved inorganic nitrogen	High
Biological elements	Good
Invertebrate Animals	Good
Benthic invertebrates (IQI)	Good
Macroalgae (FSL)	High
Macroalgae (RSL)	Good
Phytoplankton	High
Specific pollutants	Pass
Unionised ammonia	Pass
Hydromorphology	High
Morphology	High

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3.2 Fieldwork and Data Analysis

3.2.1 Benthic Grab Samples and Analysis

The composition and abundance of benthic invertebrate fauna from the two sampling locations are presented in Table 3.2 below. The Infaunal Trophic Index (ITI) for each sample is presented in Table 3.3. and

Table 3.2: Benthic Invertebrate Fauna Analysis

PHYLUM	GENUS	SPECIES	ITI GROUP	1A-NS	2A-FS	TOTAL
HYDROZOA			1		P	
NEMERTEA			3	3	1	4
	Lineidae		3		1	1
<1CM NEMATODA			4	P	P	
ANNELIDA	Harmothoe	imbricata	3		1	1
	Eteone	longa agg	3	1		1
	Pseudomystides	limbata	3	1	2	3
	Glycera	alba	3		1	1
	Glycinde	nordmanni	3	1		1
	Platynereis	dumerilii	1	1		1
	Exogone	naidina	2	10	14	24
	Sphaerosyllis	bulbosa	2	1		1
	Erinaceusyllis	erinaceous	2		5	5
	Sphaerosyllis	taylori	3	2	2	4
	Nephtys	hombergii	3	1	2	3
	Aponuphis	bilineata	3	2		2
	Lumbrineris	c.f. cingulata	3	2	7	9
	Marphysa	bellii		1		1
	Protodorvillea	kefersteini	4	1		1
	Paradoneis	lyra	2		1	1
	Orbiniidae			Frags		
	Prionospio	fallax	2	4	1	5
	Prionospio	spp.	2	3	2	5
	Magelona	alleni	2	2		2
	Magelona	minuta	2	1	1	2
	Chaetozone	setosa	2		1	1
	Tharyx	spp	2	4	4	8
	Macrochaeta	clavicornis			1	1
	Capitella	spp	4	1		1
	Mediomastus	fragilis	3	3	1	4
	Scalibregma	inflatum	2		1	1
	Galathowenia	oculata	2	1	1	2
	Owenia	spp	1	2	1	3
	Melinna	palmata	3	3	20	23
	Ampharete	lindstroemi agg	2		1	1
	Ampharetidae	(damaged)	2	2		2

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PHYLUM	GENUS	SPECIES	ITI GROUP	1A-NS	2A-FS	TOTAL
	Terebellides	shetlandica	2	2		2
	Jasmineira	caudata	1	1		1
	Polychatea juv				1	1
	Polychaeta damaged			Frags	Frags	
OLIGOCHAETA	Tubificoides	amplivasatus	4	4	26	30
CRUSTACEA	Balanus	crenatus	1	P		
	Ostracoda		2	2	1	3
	Harpacticoida		2	1	6	7
	Ampelisca	tenuicornis	1		1	1
	Harpinia	antennaria	2		1	1
	Urothoe	elegans	1	1		1
	Dexamine	spinosa			1	1
	Microdeutopus	anomalus	1	2	3	5
	Microdeutopus	versiculatus	1		1	1
	Crassicorophium	bonellii	1	1		1
	Phtisica	marina	1		1	1
	Jaera	sp	3	2	1	3
	Tanaopsis	graciloides	2		1	1
	Eudorella	truncatula	1		1	1
	Liocarcinus	navigator	3		1	1
MOLLUSCA	Pusillina	sarsii		2	1	3
	Brachystomia	sp	3	1		1
	Gastropoda (damaged)				1	1
	Anomiidae juv		1		1	1
	Mytilus	edulis juv	1		1	1
	Musculus	subpictus	1	1	2	3
	Mya	truncata juv	1	1		1
	Hiatella	arctica	2		1	1
BRYOZOA			1		P	
ASCIDIACEA			1		P	
PHORONIDA	Phoronis	spp	1	1	5	6
ECHINODERMATA	Amphiura	filiformis	1		1	1
TOTAL				**78**	**137**	**215**

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Table 3.3: ITI Assessment for Benthic Invertebrate Fauna

ITI ASSESSMENT FOR SUB TIDAL BENTHIC INVERTEBRATE FAUNA				
Infaunal Trophic Index (ITI)	**1A-NS**		**2A-FS**	
Group 1 - Suspension feeders	11		18	
Group 2 - Surface detritus feeders	33		42	
Group 3 - Surface deposit feeders	22		40	
Group 4 - Sub - surface deposit feeders	6		26	
ITI Score	**56.06**		**47.14**	

Sediment descriptions are presented in Table 3.4 and particle size distributions tables and graphs from ALS are presented further below (in order).

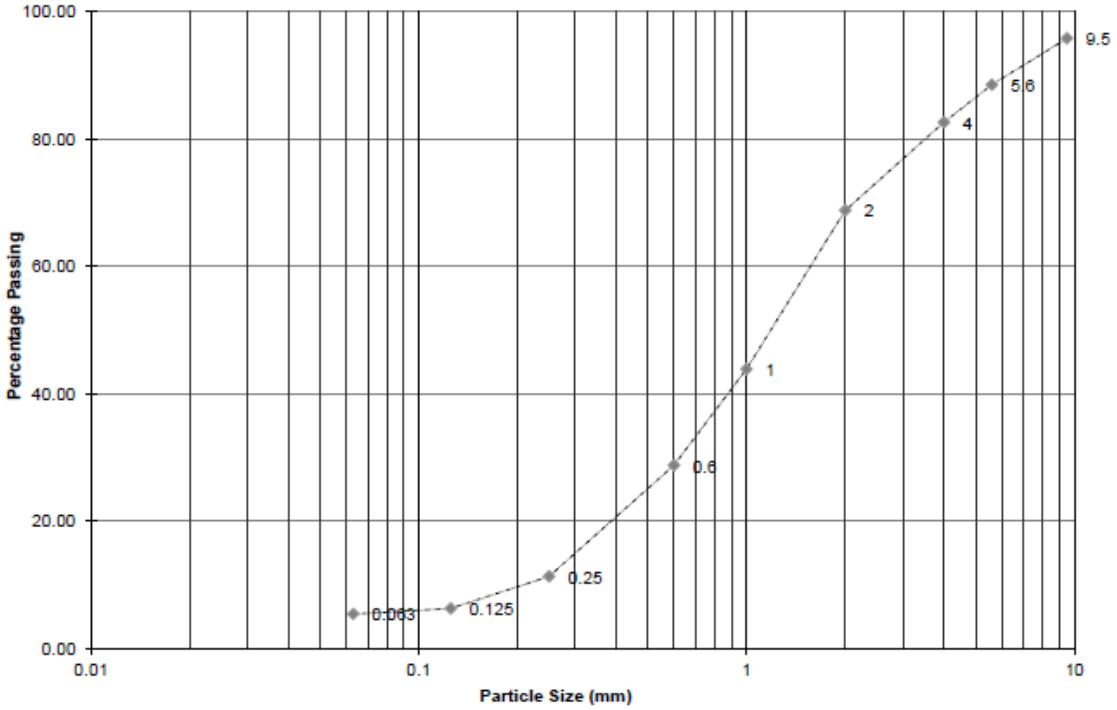
Table 3.4: Sample Sediment Descriptions

SAMPLE NUMBER	SEDIMENT DESCRIPTION
1B-NS	Sandy silt with some stones and seaweed, dark brown in colour
2B-FS	Sandy silt with a small amount of gravel and seaweed, dark brown in colour

1B-NS

Particle Size (mm)	% Passing
9.5	95.84
5.6	88.54
4	82.64
2	68.80
1	43.86
600um	28.73
250um	11.30
125um	6.28
63um	5.38

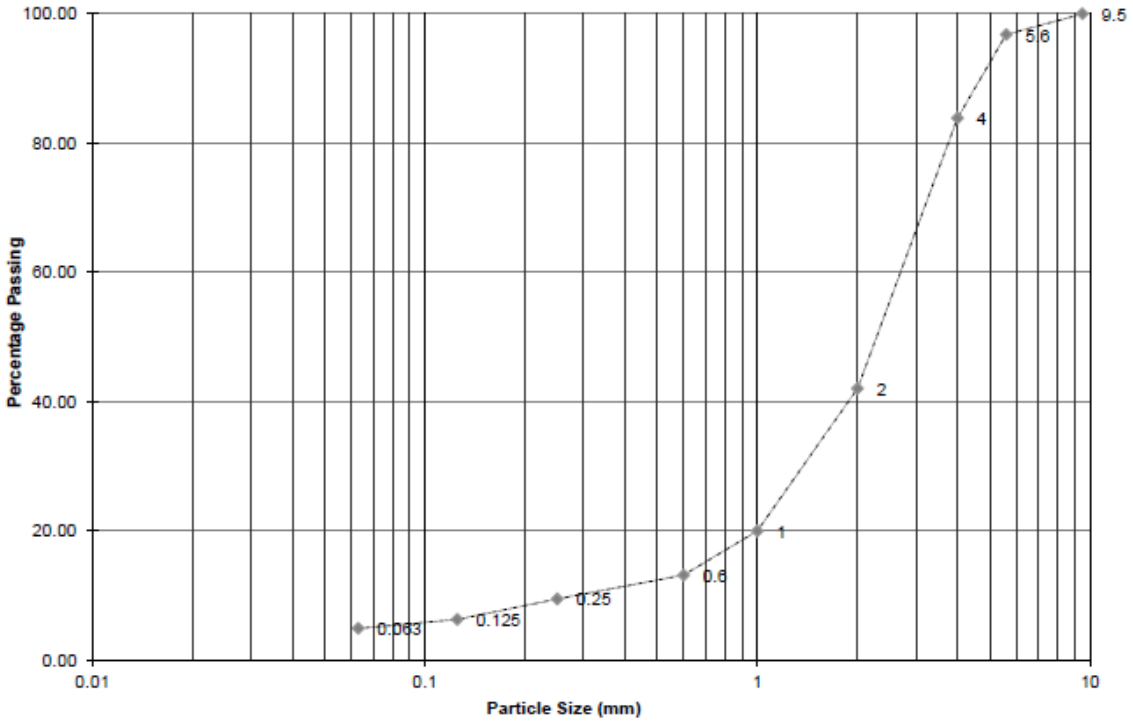
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2B-FS

Particle Size (mm)	% Passing
9.5	100.00
5.6	96.80
4	83.86
2	41.99
1	19.98
600um	13.12
250um	9.43
125um	6.26
63um	4.87

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4 EVALUATION OF RESULTS

4.1 Evaluation

From the results it is clear that Loch Scridain is a classified waterbody (within overall status of *Good*). In the study area the substrate and seabed is dominated by soft sand/silt with small amounts of gravel and seaweeds. The results from the particle size distribution (PSD) support this for substrate also.

The results of the benthic grab samples and analysis, show that a wide range of genus and species were present in both samples, with abundances of 78 individuals in **1A-NS**, and 137 in **2A-FS**. Family groups included Nemertea, Nematoda, Annelida, Oligochaeta, Crustacea, Mollusca, Bryozoa, Ascidiacea, Phoronida and Echinodermata, and the majority of these are considered to be surface detritus feeders and surface deposit feeders (in this order). Lower numbers of sub-surface deposit and suspension deposit feeders were also present within the samples.

The ITI scores for both samples ranged from **47.14 (2B-FS)** to **56.06 (1B-NS)** respectively (indicating communities that classify as "changed").

The survey results for Samples 1 and 3 are what was expected as they correspond with the *Good* status ratings that are given for biological, invertebrate animals, and benthic invertebrates in Table 3.1.

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APPENDIX A (Site Photographs)



Plate 1 – Proposed development location at Loch Scridain - rocky, shelfing shore line going into a uniform silty / sand substrate across the development area.



Plate 2 – Van Veen grab (0.045m^2) apparatus being prepared for use.

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Plate 3 – Sieved sample for faunal identification of marine benthic invertebrates - preserved and stored in a tightly sealed container (**1A-NS**).



Plate 4 – Sieved sample for faunal identification of marine benthic invertebrates - preserved and stored in a tightly sealed container (**2A-FS**).

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Plate 5 – Sample stored in a tightly sealed container and frozen prior to lab Particle Size Distribution (PSD) analysis - fairly uniform sandy, silt with a few stones and some sea weed (**1B-NS**).



Plate 6 – Sample stored in a tightly sealed container and frozen prior to lab Particle Size Distribution (PSD) analysis (**2B-FS**)

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Appendix D.1 – Survey of Wintering Birds at a Proposed Pier Development Site, Kilfinichen Estate

KILFINICHEN ESTATE
Isle of Mull

SURVEY OF WINTERING BIRDS

AT A PROPOSED PIER DEVELOPMENT SITE,

KILFINICHEN ESTATE.

Summary of results following two survey visits, December 2017 and February 2018

Prepared by [Redacted] on behalf of Great Glen Ecology

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MAP 4A/B VANTAGE POINT SURVEY – HIGH TIDE.

ANNEX II – GUIDE TO BTO BIRD ACTIVITY MAP SYMBOLS

INTRODUCTION

Background

This report was commissioned by [Redacted] of Kilfinichen Estate, and presents the results of a winter bird survey completed during two rounds, in December 2017 and February 2018. The surveys were required by Scottish Natural Heritage during winter 2017/8 in order to inform an Environmental Impact Assessment within an area proposed for development of a new pier.

Location

The site proposed for the pier is at the head of Loch Scridain, Isle of Mull (grid reference NM 498 283).

Designations

Cnuic agus Cladach Mhuile Special Protection Area (SPA) lies within the survey boundary, and is designated to support breeding populations of golden eagle *Aquila chrysaetos.* The location of the survey area in relation to the SPA may be seen on Map 1, Annex I.

Survey Objective

The purpose of this study is to undertake a wintering birds survey, using standardised methods, within and adjacent to a site proposed for development of a new pier by Kilfinichen Estate on Loch Scridain, Isle of Mull. The results will inform the Environmental Impact Assessment (EIA).

METHOD

The brief for the ornithological survey was as follows:

"National Biodiversity Network (2017) data records 27 bird species protected under Schedule 1 of the Wildlife and Country Act 1981 within a 5km radius of the site. In addition to this, the Cnuic agus Cladach Mhuile SPA is 200m north of the development. This is designated for the support of breeding populations of Golden eagle (Aquila chrysaetos). Loch Beg and Loch Scridain support a wide range of water birds, including waders throughout the year, and divers and grebes particularly in the winter. As such, it is proposed that two bird surveys are undertaken: one in early winter (November or December), and one approximately two months after the initial survey. The area will be surveyed by a walk-around, following standard BTO procedures, as well as a vantage point survey directly at the proposed development. This will include a full assessment of all birds utilising both the direct proposed development area, and the adjacent surroundings along the loch. Whilst on the winter bird surveys there will be an assessment of any suitable nesting habitat in the development area, which will inform whether a breeding bird survey is likely to be required or not. If a breeding bird survey is required, this would need three visits to take place from April-July."

In order to fulfil this brief, a distribution and abundance survey was devised, which involved mapping the location and activity of birds within a defined survey area. This area incorporated

the proposed development plus a 500 metre buffer (Map 1, Annex I) in recognition of the possible effects of the development adjacent to the proposed development site. This is in line with SNH recommended guidelines for survey areas for wind farms (SNH 2014[1]). Only target species were mapped, though all bird species encountered were noted. Target species were defined as those occurring on any of the following lists:

- Schedule 1 of the Wildlife & Countryside Act 1981;
- Annex 1 of the EC Birds Directive; and
- Red-listed Birds of Conservation Concern

Two different survey methods were employed: one for terrestrial areas, and one for intertidal and open water areas. For terrestrial areas, a walkover method was used, according to the following guidelines:

"The walk route should give representative coverage of all the key habitats on the study site and pay particular attention to features/habitats which may be of potential ornithological importance, e.g. water bodies, woods, crags. Periodic scanning for birds and stops to listen for calls should be incorporated." (SNH, 2014[1])

In practice, this involved walking all roads, tracks, pathways, field boundaries, open land and woodland edges, and marking the location of birds on field maps using standard BTO species and activity codes.

For intertidal and open water areas, a vantage point survey was carried out directly at the site of the proposed development. The survey area in this case extended for 500 metres along the coastline in each direction, and this was buffered 500 metres out on to the loch to create the offshore survey area. Carrying out the survey entailed sitting quietly, scanning periodically all around this area using binoculars and telescope, and mapping target species within the survey area. Target species were drawn from the same lists as the terrestrial survey, but only included water birds (defined as divers, grebes, cormorants, herons, swans, geese, ducks, rails, waders, gulls, terns and kingfisher). Instead of the standard BTO activity codes used for the terrestrial survey, behaviour was coded as follows for the coastal survey:

1 - Roosting;

2 - Loafing/at rest;

3 - Foraging

4 - Flying - Non-continuous passage

5 - Flying - Continuous passage

Species were mapped where they were first observed.

1. [1]SNH (2014). *Recommended bird survey methods to inform impact assessment of onshore wind farms.* Guidance. Scottish Natural Heritage, Scotland, UK

To cover a full tidal cycle, two 3-hour watches were carried out on each visit: one 1.5 hours either side of high tide, and the other 1.5 hours either side of low tide.

Both types of survey were undertaken in reasonable weather conditions, avoiding strong winds, persistent rain and poor visibility. Conditions were noted for each survey.

Whilst undertaking the surveys, and in line with the brief, an assessment was made of the suitability of habitats present in the survey area for breeding for the Schedule 1, Annex 1 and Red List species observed during the surveys, in order to inform the necessity for breeding bird surveys.

RESULTS

Walkover, high and low tide vantage point surveys.

Fieldwork and mapping was completed by [Redacted] during December 2017 and February 2018. Timings were as follows:

First visit - December 2017

- Terrestrial walkover survey: 14/12/2017 0900-1500 hrs
- High tide vantage point survey: 13/12/2017 1300-1600 hrs
- Low tide vantage point survey: 15/12/2017 0815-1115 hrs

The OS grid reference of the observer's position for vantage point surveys was NM 49862 28287.

Second visit - February 2018

- Terrestrial walkover survey: 26/02/2018 1400-1800 hrs
- High tide vantage point survey: 27/02/2018 1440-1740 hrs
- Low tide vantage point survey: 27/02/2018 0825-1125 hrs

The OS grid reference of the observer's position for vantage point surveys was NM 49777 28097. The position was moved from that of the first visit, as it was felt that the new position afforded a better overall view of the proposed development site and the surrounding buffer.

A total of 41 species were recorded during the course of these surveys. 13 of these were Schedule 1, Annex 1 and/or Red List species. A summary is provided in Table 1 below.

Table 1. Bird species recorded during winter surveys at Kilfinichen Pier, December 2017 and February 2018

Common name	Scientific name	BTO code	Schedule 1 (S), Annex 1 (A), Red List (R)
Blackbird	*Turdus merula*	B.	
Blue Tit	*Cyanistes caeruleus*	BT	
Buzzard	*Buteo buteo*	BZ	
Chaffinch	*Fringilla coelebs*	CH	
Coal Tit	*Periparus ater*	CT	
Common Crossbill	*Loxia curvirostra*	CR	S
Common Gull	*Larus canus*	CM	
Curlew	*Numenius arquata*	CU	R
Dunlin	*Calidris alpina*	DN	
Dunnock	*Prunella modularis*	D.	
Goldcrest	*Regulus regulus*	GC	
Goldfinch	*Carduelis carduelis*	GO	
Great Black-backed Gull	*Larus marinus*	GB	
Great Northern Diver	*Gavia immer*	ND	S, A
Great Tit	*Parus major*	GT	
Greenshank	*Tringa nebularia*	GK	S
Grey Heron	*Ardea cinerea*	H.	
Guillemot	*Uria aalge*	GU	
Herring Gull	*Larus argentatus*	HG	R
Hooded Crow	*Corvus cornix*	HC	
Lapwing	*Vanellus vanellus*	L.	R
Mallard	*Anas platyrhynchos*	MA	
Meadow Pipit	*Anthus pratensis*	MP	
Oystercatcher	*Haematopus ostralegus*	OC	
Raven	*Corvus corax*	RN	
Razorbill	*Alca torda*	RA	
Red-breasted Merganser	*Mergus serrator*	RM	
Redshank	*Tringa totanus*	RK	
Red-throated Diver	*Gavia stellata*	RH	S, A
Redwing	*Turdus iliacus*	RE	S, R
Robin	*Erithacus rubecula*	R.	
Rock Pipit	*Anthus petrosus*	RC	
Shag	*Phalacrocorax aristotelis*	SA	A, R
Skylark	*Alauda arvensis*	S.	R
Snipe	*Gallinago gallinago*	SN	
Song Thrush	*Turdus philomelos*	ST	R
Starling	*Sturnus vulgaris*	SG	R

Table (cont). Bird species recorded during winter surveys at Kilfinichen Pier, December 2017 and February 2018

Common name	Scientific name	BTO code	Schedule 1 (S), Annex 1 (A), Red List (R)
Treecreeper	*Certhia familiaris*	TC	
Wood Pigeon	*Columba palumbus*	WP	
Woodcock	*Scolopax rusticola*	WK	R
Wren	*Troglodytes troglodytes*	WR	

28 of these species were recorded on both visits. 7 were only recorded on the first visit (Common Crossbill, Dunlin, Goldfinch, Lapwing, Meadow Pipit, Redshank, Treecreeper). 6 were only recorded on the second visit (Coal Tit, Dunnock, Guillemot, Razorbill, Red-throated Diver, Skylark). Some of these differences may reflect real gains and losses. Others may simply be a case of the species being present but not observed on one or other occasion.

Maps 2-4, Annex I, show the locations and activity/behaviour codes for Schedule 1, Annex 1 and Red List species for the walkover, high tide and low tide vantage point surveys.

Suitability of nesting habitat for Schedule 1, Annex 1 and Red List species

It should be noted that the following is a guide only and does not constitute specific advice or recommendations as to whether a breeding bird survey will be necessary. Such advice should be sought following liaison with SNH and will be informed by the EIA process.

The deemed presence of suitable breeding habitat for a particular species does not mean the species will breed. Conversely it cannot be guaranteed that species for whom no suitable breeding habitat is deemed to be present will not breed.

No judgement or assumptions are made as to whether any particular species or habitat is more or less likely to be negatively impacted by this, or any, type of development than any other.

Also, consideration is only given to those species observed during the surveys. Other species may occur that were either not observed during the surveys, or may be present on the site at a different time period (such as migrant breeders that only arrive in the spring). The following can therefore in no way be regarded as a complete report on presence of suitable nesting habitat for all Schedule1, Annex 1 and Red List species that may utilise the survey area.

Table 2. Species of conservation interest where nesting is possible given the distribution of suitable habitat.

Species	Notes
Common Crossbill	Breeds in coniferous trees in commercial plantations, forests and mixed woodlands.
Curlew	Breeds on moors, wet meadows, rough grassland, hill pastures and coastal marshes.
Lapwing	Breeds on farmland, pastures, wet grassland, marshland, fens and bogs.
Skylark	Breeds on upland grassland, farmland, heaths and coastal marshes.
Song Thrush	Breeds in trees in broadleaved and coniferous woodland, hedgerows, parks and gardens.
Starling	Breeds in trees in open country, farmland and woodland, and in buildings in urban areas.
Woodcock	Breeds in deciduous or mixed woodland, and moorland. Limited suitable habitat present in the survey area.

Table 3. Species of conservation interest where breeding is possible but less likely given scarcity of suitable habitat.

Species	Notes
Herring Gull	Breeds colonially on sea cliffs, beaches, coastal islands and urban rooftops. Suitable habitat scarce in the survey area.
Shag	Breeds colonially on coastal cliffs and ledges, in caves and under boulders. Very limited to no suitable habitat in the survey area.

Table 4. Species of conservation interest unlikely to breed within the survey area.

Species	Notes
Great Northern Diver	Does not breed in the UK.
Greenshank	Breeds on open wet moorland and bogs with small pools. No suitable habitat present in the survey area.
Red-throated Diver	Breeds on pools and lochans on upland moors and bogs. No suitable habitat present in the survey area.
Redwing	Breeds in broadleaved woodland, coniferous plantations, parkland and scrub. Very rare breeder in the UK and highly unlikely to breed in the survey area.

CONCLUSIONS

- A total of 41 species were recorded during the course of the wintering surveys in December 2017 and February 2018; 13 of these were Schedule 1, Annex 1 and/or Red List species.

- Within the survey area, habitats suitable for supporting breeding populations of at least seven Schedule 1, Annex 1 and/or Red List species observed were recorded.

- The need for a breeding bird survey should be determined as part of the EIA process following consultation with SNH. Although suitable habitats for at least seven Schedule 1, Annex 1 and/or Red List species were noted, potential impacts from the development will depend on the timing and construction methods.

REFERENCES

SNH (2014). *Recommended bird survey methods to inform impact assessment of onshore wind farms.* Guidance. Scottish Natural Heritage, Scotland, UK.

ANNEX I – MAPS

MAP 1a/b Survey area and designations.
MAP 2a/b Walkover survey
MAP 3a/b Vantage point survey – low tide
MAP 4a/b Vantage point survey – high tide.

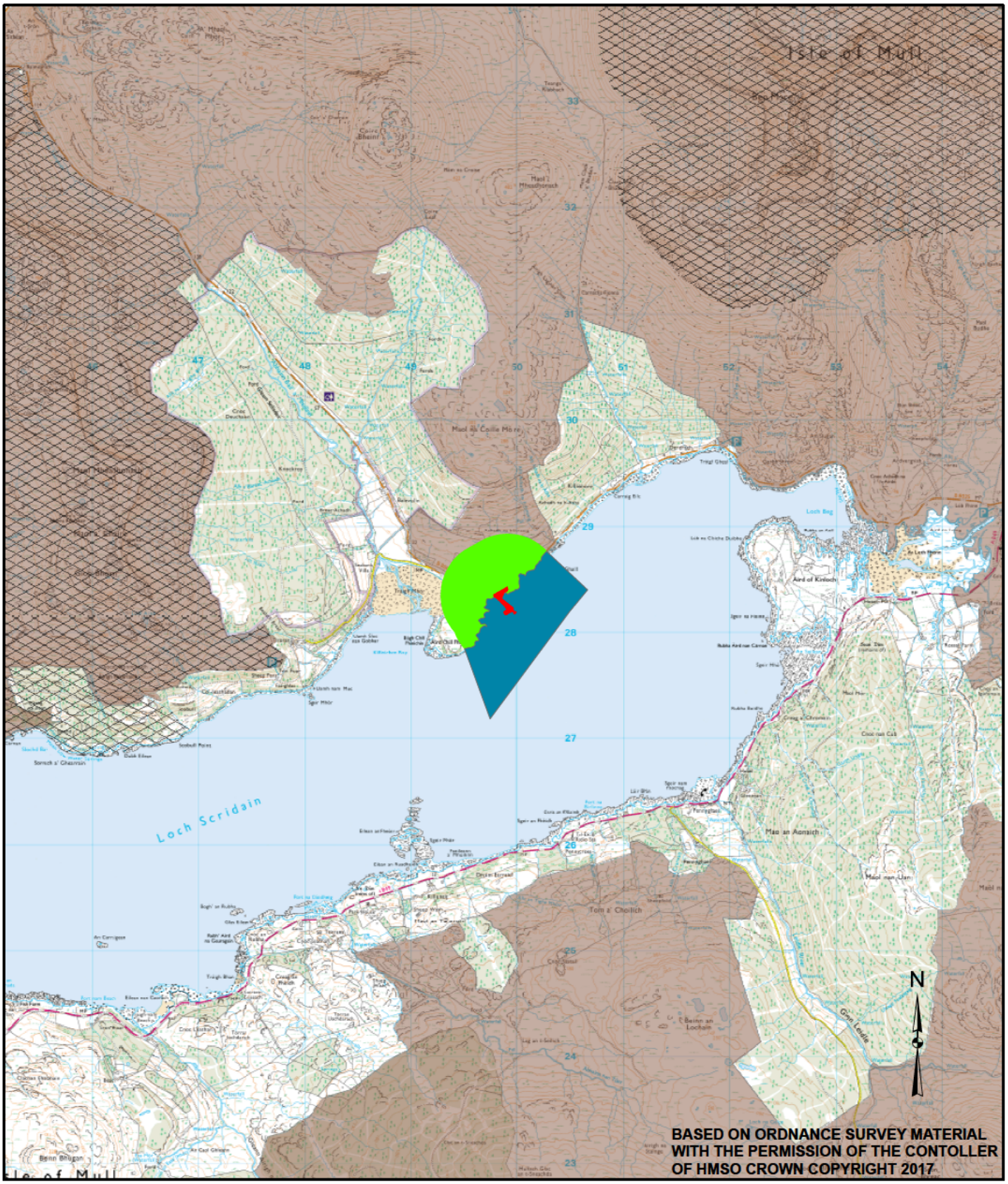
Suffix of a = December 17 visit

Suffix of b = February 18 visit

ANNEX II – Guide to BTO bird activity map symbols

MAP 1

KILFINICHEN PIER WINTER BIRD SURVEY
Survey Area and Designations



Legend

- Development footprint
- High & low tide VP survey boundary (500m from shoreline)
- Terrestrial walk over survey boundary
- Site of Special Scientific Interest (SSSI)
- Special Protection Area (SPA)

1:50,000

DRAWN BY: GREAT GLEN ECOLOGY

MAP 2a

KILFINICHEN PIER WINTER BIRD SURVEY
Wallkover Survey
14/12/17 0900-1500 hrs



Legend

Terrestrial walkover survey boundary

Development footprint

1:7,000

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MAP 2b

KILFINICHEN PIER WINTER BIRD SURVEY
Walkover Survey
26/02/2018 1400-1800 hrs



Legend

Terrestrial walkover survey boundary

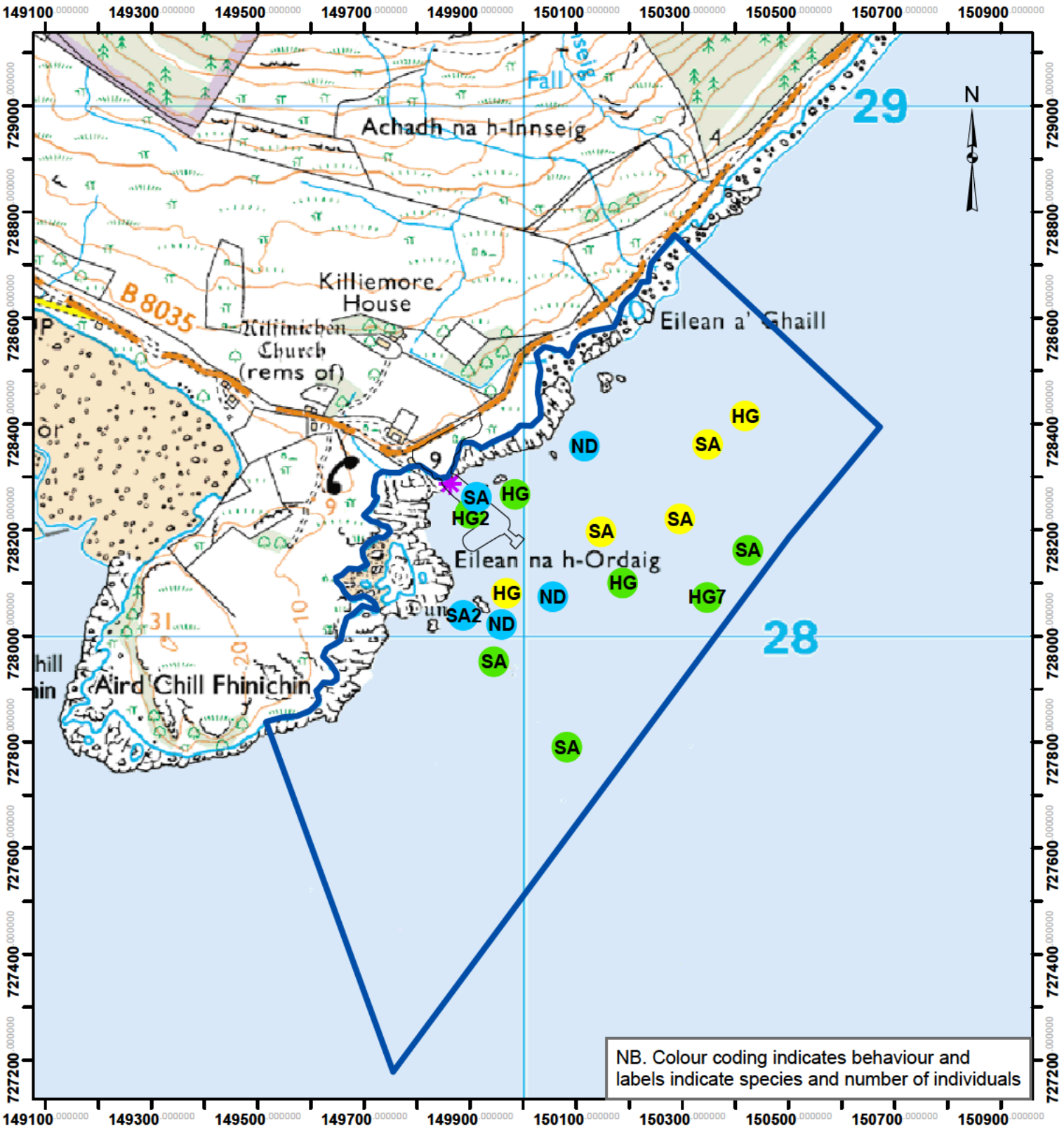
Development footprint

1:7,000

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KILFINICHEN PIER WINTER BIRD SURVEY
Low tide vantage point survey (first visit)
15/12/2017 0815-1115 hrs

MAP 3a



LEGEND

- Development footprint
- VP survey boundary
- VP position December 2017

Low tide VP sighings Dec 17

- 3.Foraging
- 4. Flying, non continuous passage
- 5 Flying, continuous passage

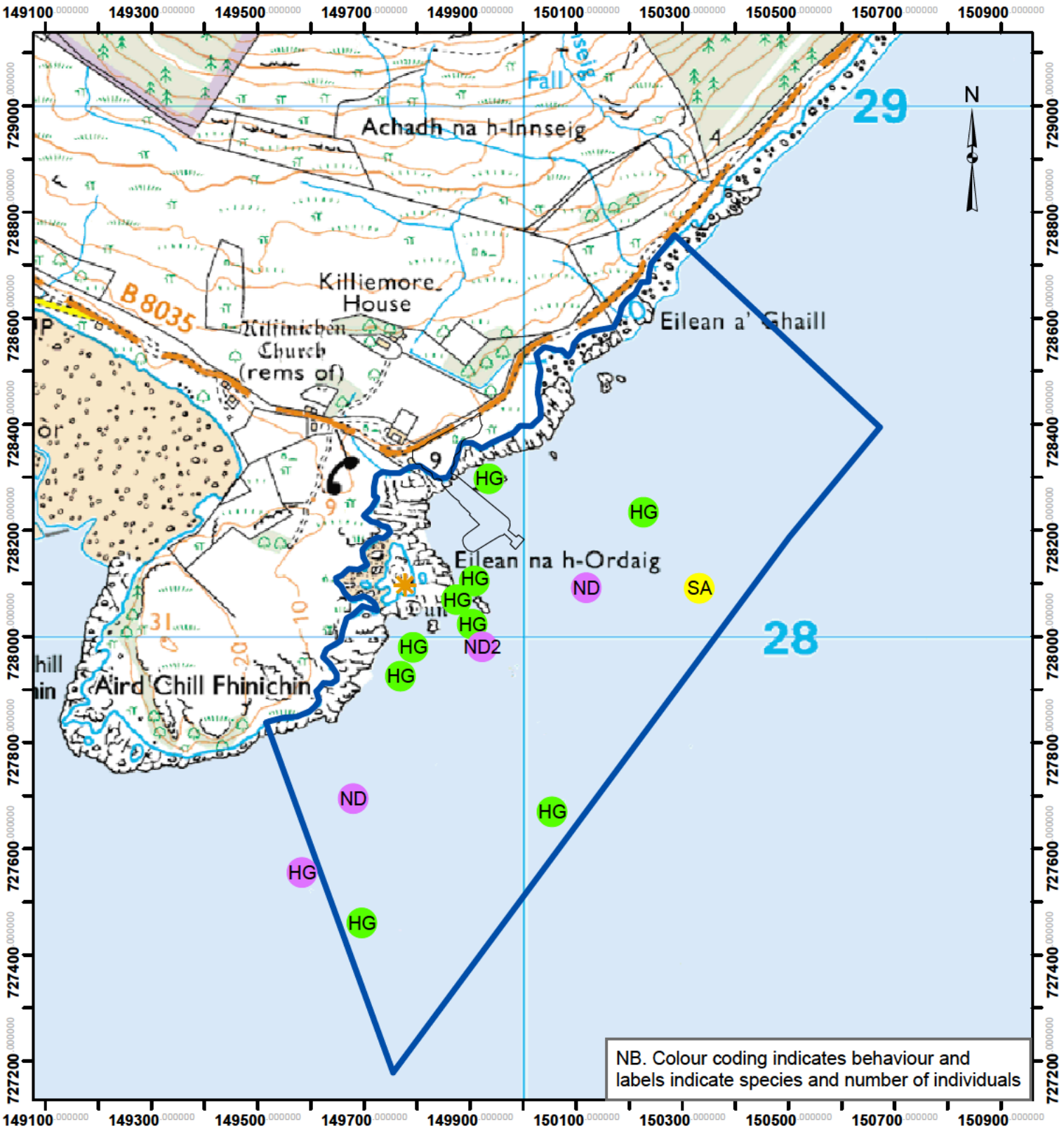
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KILFINICHEN PIER WINTER BIRD SURVEY
Low tide vantage point survey (second visit)
27/02/2018 0825-1125 hrs

MAP 3b



LEGEND

- Development footprint
- VP survey boundary
- VP position February 2018

Low tide VP sightings Feb 18

- 2. Loafing/at rest
- 4. Flying, non continuous passage
- 5. Flying, continuous passage

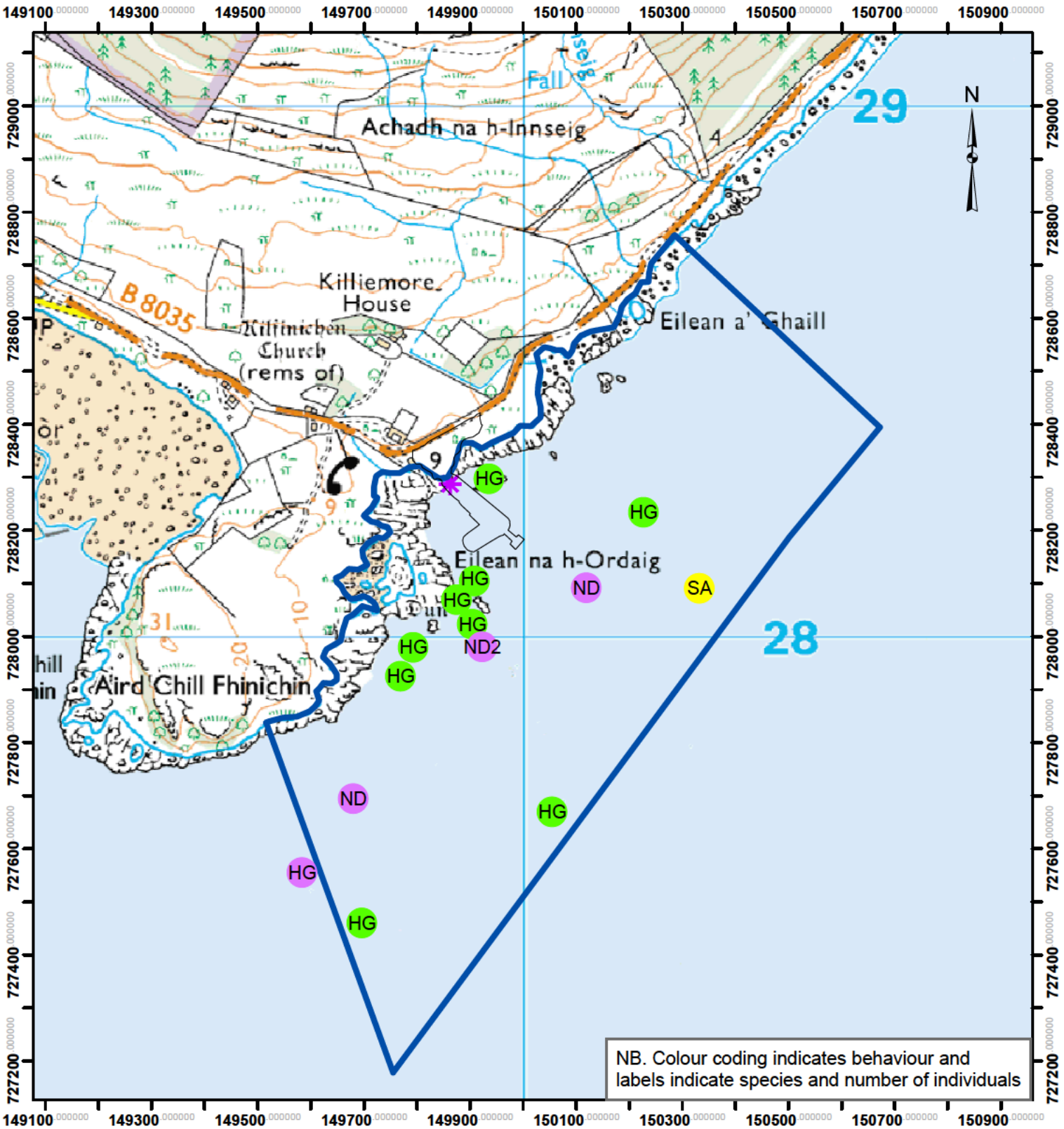
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KILFINICHEN PIER WINTER BIRD SURVEY
High tide vantage point survey (first visit)
13/12/2017 1300-1600 hrs

MAP 4a



LEGEND

- Development footprint
- VP survey boundary
- VP position December 2017

Low tide VP sightings Feb 18

- 2. Loafing/at rest
- 4. Flying, non continuous passage
- 5. Flying, continuous passage

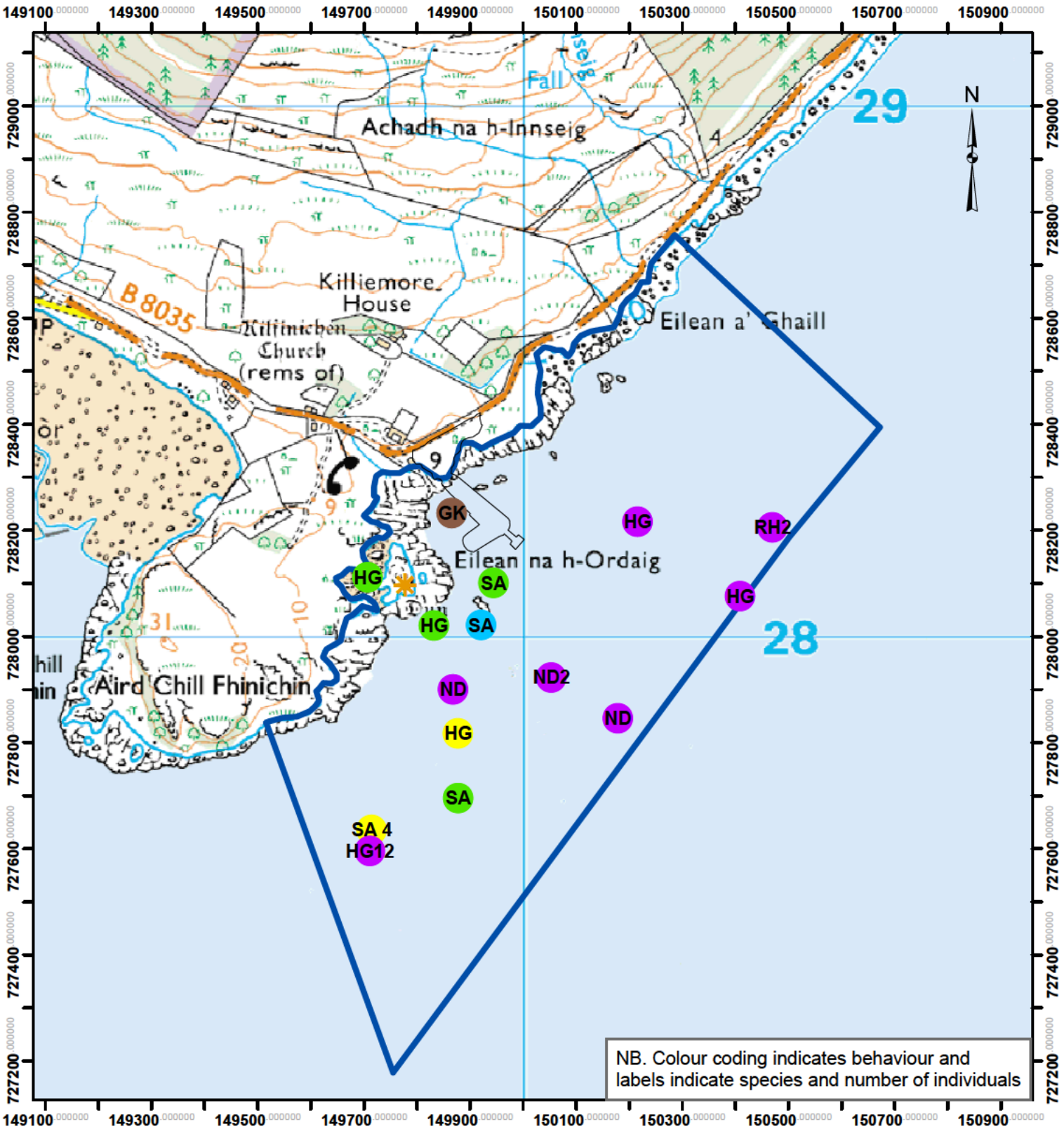
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KILFINICHEN PIER WINTER BIRD SURVEY
High tide vantage point survey (second visit)
27/02/2018 between 0825-1125 HRS

MAP 4b



LEGEND

- Development footprint
- VP survey boundary
- VP position February 2018

High tide VP sightings Feb 18

1. Roosting
2. Loafing/at rest
3. Foraging
4. Flying, non continuous passage
5. Flying, continuous passage

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Appendix E.1 – Survey of Otter at a Proposed Pier Construction Site, Kilfinichen Estate - 2014

KILFINICHEN ESTATE
Isle of Mull

KEP Environmental C

OTTER SURVEY – Kilfinichen, Isle of Mull, Argyll & Bute

[Redacted] MA (Hons), Ecological Consultant

3rd November, 2014

KEP Environmental Consulting 59 Hunter Street, Kirn, Dunoon, Argyll, Scotland, PA23 8JR
T [Redacted] **E** [Redacted]

Introduction

Kilfinichen Estate is proposing to apply for planning permission to build a timber causeway/pontoon at Kilfinichen in order to facilitate the transport of timber from the estate while avoiding placing undue pressure on the road network. Prior to applying for formal planning permission the estate requested a survey to establish the use of the area by otters.

Legislation

European Protected Species (EPS) are protected by the EC Habitats and Species Directive 92/43/EEC, which were translated into UK law through The Conservation (Natural Habitats, &c.) Regulations 1994. In Scotland, this was amended by The Conservation (Natural Habitats, &c.) Amendment (Scotland) Regulations 2004 and 2007 and the Conservation (Natural Habitats, &c.) Amendment (No. 2) (Scotland) Regulations 2008. The European otter is a EPS and the Regulations make it an offence to deliberately or recklessly harass, capture, injure or kill or disturb the species while it is occupying a structure or place it uses for shelter or protection, to disturb it while it is rearing or otherwise caring for its young, to obstruct access to a breeding site or resting place or to otherwise deny the use of a breeding site or resting place. Disturbance of a EPS in a manner that is likely to significantly affect the local distribution or abundance of the species by impairing its ability to survive, breed or reproduce, to disturb such an animal while it is migrating or hibernating, or to damage or destroy a breeding site or resting place of such an animal is an offence. The otter is also a UK BAP species and a Local BAP priority species in Argyll & Bute.

Survey 2014

Survey Conditions

The ideal time to conduct otter surveys is when water levels are low but in this location, as is the case on most of the west cost, there can be periods of high rainfall causing water levels to change quickly. On the 22nd October when the survey was conducted the water levels were high and weather conditions were very wet and windy which are not optimal conditions for the survey.

Methods

Evidence of the presence and use of otters was searched for and, where found recorded, including: spraints, resting up sites, slides, footprints, holts and rolling areas. If resting up sites were encountered the likely frequency of use was assessed and recorded under the following: regular, breeding and temporary. Locations were recorded and a 10-figure grid reference determined by a GPS. The area surveyed extended 750 metres along the coast on either side of the boathouse structure and into the entrance of any perennial water courses.

Results

No evidence of otter activity was found.

Conclusions and Recommendations

The lack of any signs of otter activity suggest that otters are not frequenting the site at this time of the year, nor is there any evidence of permanent breeding or lying-up sites. This does not rule out the possibility of occasional use at other times of the year, but potential impacts of the proposed scheme on otters appear to be small.

Appendix E.2 – Survey of Otter at a Proposed Pier Construction Site, Kilfinichen Estate - 2018

KILFINICHEN ESTATE
Isle of Mull

SURVEY OF OTTER

AT A PROPOSED PIER CONSTRUCTION SITE, KILFINICHEN ESTATE

Report Prepared by Abigail Robinson and edited by [Redacted] Great Glen Ecology

January 2018

GREAT GLEN ECOLOGY

Mersey Cove, Torrin, Isle of Skye

Mobile [Redacted] **Tel** [Redacted] , **e-mail** [Redacted]

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MAP 2 – LOCATION OF SIGHTINGS, HOLTS AND SIGNS OF OCCUPANCY

ANNEX II – DATA

TABLE 1 – SIGHTINGS
TABLE 2 – POTENTIAL HOLTS
TABLE 3 – OTHER SIGNS OF OCCUPANCY

SUMMARY

An otter survey was commissioned by [Redacted] , Kilfinichen Estate, during November 2017. The objective was to determine the presence or absence of otter *Lutra lutra* at a site proposed for development of a new pier, Loch Scridain, Isle of Mull. This work follows a survey completed during 2015 prior to construction of a boat house on the same site, during which time no evidence of otter was found.

A systematic walk-over survey and an observational survey at low tide was completed within a 250 m buffer zone of the proposed development on the 13th and 14th of December 2017. All evidence of otter occupancy was recorded including sightings, spraints, footprints, shelters and potentially suitable habitat.

A female otter with two cubs was observed and filmed within the 250 metre buffer zone.

A potential natal holt was located with fresh signs of occupancy within 250 metres of the development.

An adult male otter was observed and filmed within the 250 metre buffer zone.

Abundant spraint and feeding signs at varying stages of decay were found throughout the site.

The survey concluded that the site is now occupied by overlapping male and female territories, whilst breeding was successful during 2017 evidenced by the presence of two half-grown cubs. The proximity of holts to the adjacent public road suggests the female has some tolerance to routine disturbance by traffic and people, whilst a boat house has recently been constructed adjacent to the pier site.

A mitigation plan and controls during and after development are recommended in order to minimise the potential impact of the proposed pier on otter.

The following stages are suggested in order to form a robust mitigation plan without incurring unnecessary costs:

1. Determine whether planned operations are likely to increase disturbance to unacceptable levels around holts and disrupt breeding and cub rearing. Take into consideration current patterns of human disturbance, the distance of holts from the proposed development, natural topography, existing and potential screens and barriers. Consider the probability that the period of breeding success during 2017 may have been coincidental with the recent construction of a boat house.

2. If, after considering the points in paragraph 1 above, potential disturbance is still deemed unacceptable to a natal holt but development work can be timed to start **before** May 2018: Seek expert advice on the age of otter cubs recorded within the video footage on the 13th and 14th December 17. Determine whether there is a "window" during which development work can start which a) will have a minimal impact on the existing cubs and b) can be timed to coincide with a period before a new litter is likely to be born during 2018.

3. If, after considering the points in paragraph 1, potential disturbance is deemed as unacceptable and development work will commence **after** early May 2018: Monitor the age of future litters using camera trapping. Time the start of works for a point when cubs are mobile and relatively independent.

INTRODUCTION

Background

This report presents the results of an otter survey completed during December 2017. The survey aimed to establish the suitability of habitat and signs of occupancy of the Eurasian otter *Lutra lutra* around a site proposed for the development of a pier at Kilfinichin Estate.

Otters are strictly protected by the Wildlife and Countryside Act 1981 (as amended) and have the highest level of protection under the Habitat Regulations as a European Protected Species. Under the Wildlife and Countryside Act it is an offence to intentionally kill, injure, take, possess or trade wild animals whilst interference with places used for shelter or protection is prohibited, as is intentionally disturbing animals occupying such places. If any of the above resulted from a person being reckless, even if they had no intention of committing the offence, their action would still be considered an offence.

Development has the potential to impact on otters in various ways, for example habitat destruction, damage to holts and increased disturbance or injury caused by machinery or a change in site usage. As such, the possible impacts to otters should be considered while planning proposed development, minimising any potential disturbance.

Survey Objectives

The purpose of this survey is to confirm whether otters are present or absent within a 250 metre buffer of the proposed development, and to identify features and habitats potentially important for the conservation of otter on which the development may have an impact. The findings of the survey will be used to inform an Environmental Impact Assessment for the site.

Location

The site proposed for the pier is at the head of Loch Scridain, Isle of Mull (grid reference NM 498 283). Following guidance from SNH a buffer zone of 250 metres surrounding the proposed pier was surveyed for all evidence of otter activity (Map 1, Annex I).

Designations

Cnuic agus Cladach Mhuile Special Protection Area (SPA) lies within the survey boundary, and is designated to support breeding populations of golden eagle *Aquila chrysaetos*

METHOD

Systematic walkover survey.

Fieldwork was completed on the 13 h and 14th of December 2017 by [Redacted] , Great Glen Ecology. Data analysis, mapping and report writing were completed by [Redacted] [Redacted] and edited by [Redacted]

Within the survey area a preliminary assessment was made to determine the suitability of habitat and features for supporting otters.

Any signs of otter occupancy were recorded. Where otters are present the chances of finding spraint within 600 metres is high (Chanin, 2003). As such, to determine occupancy, the survey area was systematically searched for spraint and other signs such as footprints on soft verges or tracks through long vegetation. Bridges and culverts are a common location for spraint and were also checked. Features which provide shelter or safe resting places, such as tree roots or rock ledges, are also an essential component of a favourable habitat and were recorded along with a thorough search for possible shelters, specifically underground holts and above ground couches.

Observational Survey

At low tide, an observational survey for otter activity was completed along the area of coastline within the survey area. Low tide was at 7:54 am on the 13th and 8:58 am on the 14th December. Weather was mixed with little wind and the odd shower, ideal conditions for otter sightings.

RESULTS

Suitability of Habitat

Habitats and features suitable for providing shelter and feeding grounds for otter were present within the survey area. These included rock ledges and boulders, deciduous woodland with hollow tree roots and rivers passing through the farmland and woodland down to the sea. Easily accessible streams and rivers for freshwater are essential for otters on the coastline, used for bathing. As such, the surrounding area of the coastline in this survey area is ideal for supporting otters.

Sightings

Table 1 (Annex II) and Map 2 (Annex I) shows sightings recorded during the observational survey. Four otters were observed during both days on similar areas of the coastline. An adult female was spotted with two cubs, grooming and eating on the seaweed and fishing and playing in the water. An adult male was observed on a different area of the coastline eating and sprainting. Annex III provides photo and video evidence of these sightings. As such this is confirmation that overlapping territories of both male and female otter fall within the survey area, and a natal holt is likely to be in the vicinity.



***Above** Female and two cubs on shoreline observed within the survey area.*

Potential Holts and Feeding Sites

Table 2 (Annex II) documents evidence of potential holts or couches. Point 008 was located to the west side of the survey area (Map 2, Annex I) where an area of craggy ledges and small caves was found littered with spraint, feeding remains and paths leading up to these areas (Annex III). This, combined with visual observations of an adult bitch and cubs suggests potential for a natal or nursery holt.

A second potential holt or shelter was found to the east side of the survey area (Map 2, Annex I) amongst boulders. Recent mammal tracks were present however it was inconclusive as to whether the tracks had been created by otter. One spraint was found at this site (Table 2, Annex II and photo 7, Annex III).



***Above** Potential holt with recent spraints.*

Other Signs of Occupancy

Map 2 (Annex I) shows where spraint was concentrated throughout the survey area. Spraint was found at varying stages of decay (refer to Table 3, Annex II). Otters are habitual, with large territories, consistent with this evidence. Eaten crab remains were found in and around areas where concentrations of spraint were found.



Above and below *Examples of 2 spraints found on the beach*



DISCUSSION

Overlapping territories occupied by an adult female with two cubs, and an adult male, are present within 250 metres of the proposed development. This is supported by video evidence and recent signs of occupancy at potential holts, feeding grounds and resting places. Although the cubs sighted during the survey are relatively mobile it is unclear whether they are sufficiently independent to adapt to any sudden disturbance caused by development.

One potential holts identified within 250 metres of the proposed development and a second holt at just over 300 metres away are likely to be used by the female as natal holts and for raising cubs given the distribution of sightings and spraint.

The sensitivity of otter to disturbance will increase if the female gives birth to a new litter during a period when development is scheduled to start.

In north-west Scotland otters can breed at any time of year (Kruk, 2006). A female will often only have one litter of up to three cubs in a year and she continues to care for them until they are mature at around one year old. Natal holts with young cubs (generally of up to three or four months old) are particularly vulnerable to disturbance.

The female on this site does, however, appear to have some tolerance to routine human disturbance given that breeding was successful during 2017 - despite the proximity of holts to the public road and construction of a boat house adjacent to the proposed pier.

Further liaison with Scottish Natural Heritage is recommended at the earliest opportunity. Following liaison with SNH a robust mitigation plan may be required in order to minimise unacceptable disturbance and ensuring operations are completed legally.

The following stages are suggested in order to form a robust mitigation plan without incurring unnecessary costs:

1. In order to minimise the requirement for further monitoring assume both holts identified are used as natal holts and for the rearing of cubs.

2. Determine whether planned operations are likely to increase disturbance to unacceptable levels around holts and disrupt breeding and cub rearing. Take into consideration current patterns of human disturbance, the distance of holts from the proposed development, natural topography, existing and potential screens and barriers. Consider the probability that the period of breeding success during 2017 may have been coincidental with the recent construction of a boat house.

3. If, after considering the points in paragraph 2 above, potential disturbance is still deemed unacceptable to a natal holt but development work can be timed to start **before** May 2018: Seek expert advice on the age of otter cubs recorded within the video footage on the 13th and 14th December 17. Determine whether there is a "window" during which development work can start which a) will have a minimal impact on the existing cubs and b) can be timed to coincide with a period before a new litter is likely to be born during 2018.

4. If, after considering the points in paragraph 2, potential disturbance is deemed as unacceptable and development work will commence **after** early May 2018: Monitor

the age of future litters using camera trapping. Time the start of works for a point when cubs are mobile and relatively independent.

5. Monitor the breeding population on completion of the pier, refine the mitigation plan if required.

CONCLUSIONS

- Overlapping territories occupied by an adult female with two cubs, and an adult male, are present within 250 metres of the proposed development.
- It is unclear if there will be significant increases to the current patterns of disturbance during development, and if otter on this site will be able to adapt assuming no mitigation.
- One natal holt is likely to be within 250 metres of the proposed development with a second holt at just over 300 metres away. The sensitivity of otter to disturbance may increase if the female gives birth to a new litter during a period when development is scheduled to start.
- Breeding was successful during 2017 despite the proximity of potential holts to the public road, and recent construction of a boat house. This suggests the female may have some tolerance to routine human disturbance.
- Further liaison with SNH is recommended at the earliest opportunity.
- Following liaison with SNH a robust mitigation plan may be required to allow development on this site to proceed.

REFERENCES

Anon (2008) *Otters and Development* Scottish Wildlife Series, Scottish Natural Heritage online publication.

Chanin P (2003). *Monitoring the otter* Lutra lutra. Conserving Natura 2000 Rivers Monitoring Series No 10, English Nature Peterborough.

Kruuk, H (2006) *Otter ecology, behaviour and conservation.* Oxford University Press

ANNEX I – MAPS

MAP 1 – Survey area and designations

MAP 2 – Location of sightings, holts and signs of occupancy

ANNEX II – DATA

TABLE 1 – Sightings

TABLE 2 – Potential holts

TABLE 3 – Other signs of occupancy

Drawings

KILFINICHEN ESTATE
Isle of Mull



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Lochview Office, Loch Duntelchaig
Farr, Inverness, IV2 6AW

Telephone: 01808 521 498
Email: info@affriclimited.co.uk
www.affriclimited.co.uk

Title: Kilfinichen Location.

Drawing No: 44.02.01

Page 1	Rev No: 1	Drawing Date: 23/11/2017

Projection: OSGB 1936/British National Grid EPSG:27700

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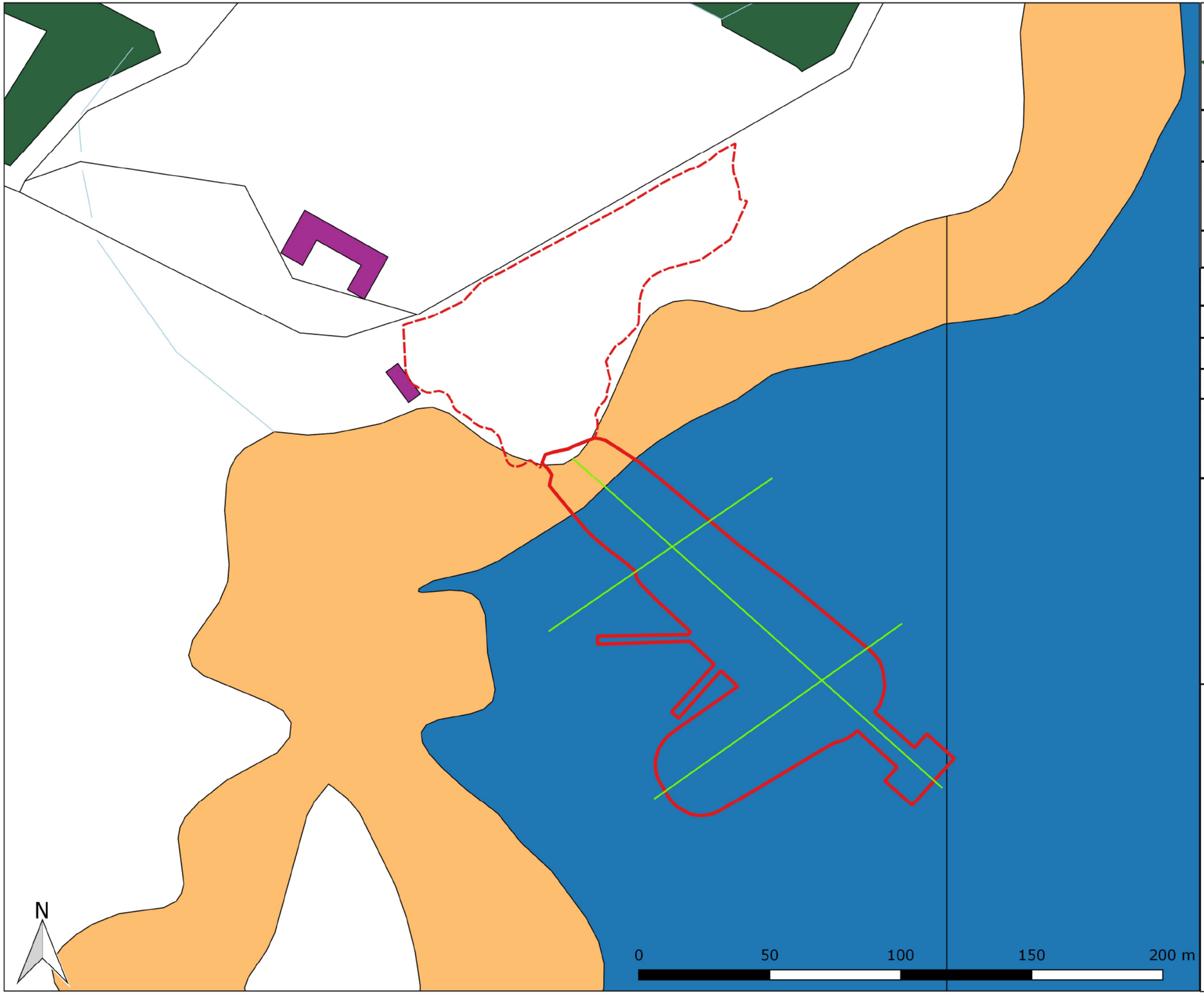
Kilfinichen

N

0 10 20 30 40 50 km

Legend

- Kilfinichen
- Red Line Boundary
- Works Above MHWS
- Tidal Water
- Fresh Water
- Foreshore
- Buildings
- Woodland



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Title: Kilfinichen Proposed Benthic Transects

Drawing No: 44.02.05

Page 1	Rev No: 1	Drawing Date: 20/04/2018

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Legend

- Red Line Boundary
- Works Above MHWS
- Transect Lines
- Road
- Tidal Water
- Building
- Woodland
- Foreshore



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Title: Otter Results and Impact Assessment

Drawing No: 44.02.07 Otter Results and Impact Assessment

Page 1	Rev No: 1	Drawing Date: 15/08/2018

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Legend

- Site Boundary

Otter Survey Results

- Holt
- Sighting
- Spraint
- Feeding remains
- Holt buffer (100m lines)
- Viewshed from causeway end (5m above MHWS)
- Causeway culvert (600mm)

149800 149900 150000 150100

728400 728300 728200 728100

File 572

1A

File 571

2A

File 570



Biotopes

Video transects

- LR.LLR.F.Asc
- IR.LIR.K.LhypLsac
- IR.LIR.K.Lsac
- SS.SMp.KSwSS.LsacCho

Grabs

- SS.SCS.CCS.MedLumVen
- SS.SMu.ISaMu.MelMagThy

N

0 20 40 60 80 Meters

APEM

Project
P2961 Kilfinichen Estates
Subtidal Benthic Ecology Surveys

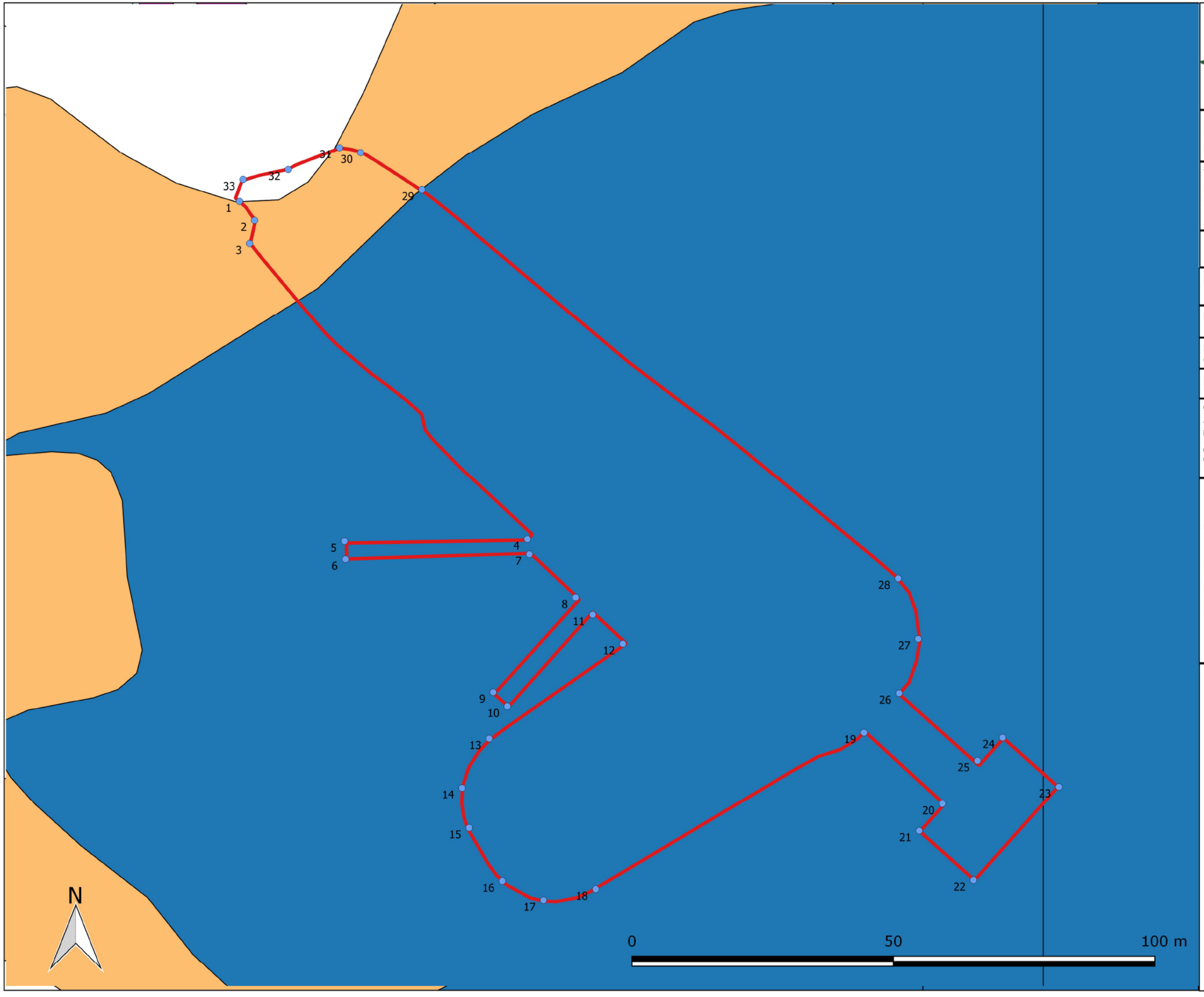
Title
Kilfinichen subtidal Biotopes
Drawing No. 44.02.08

Scale	Drawn	Chk	Auth
1:1,250	SP	AS	AS

Coordinate System
British National Grid
(OSGB 1936)

Date
20/08/2018

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Title: Kilfinichen Marine Licence Points

Drawing No: 44.02.09

Page 1	Rev No: 1	Drawing Date: 09/08/2018

Projection: OSGB 1936/British National Grid EPSG:27700

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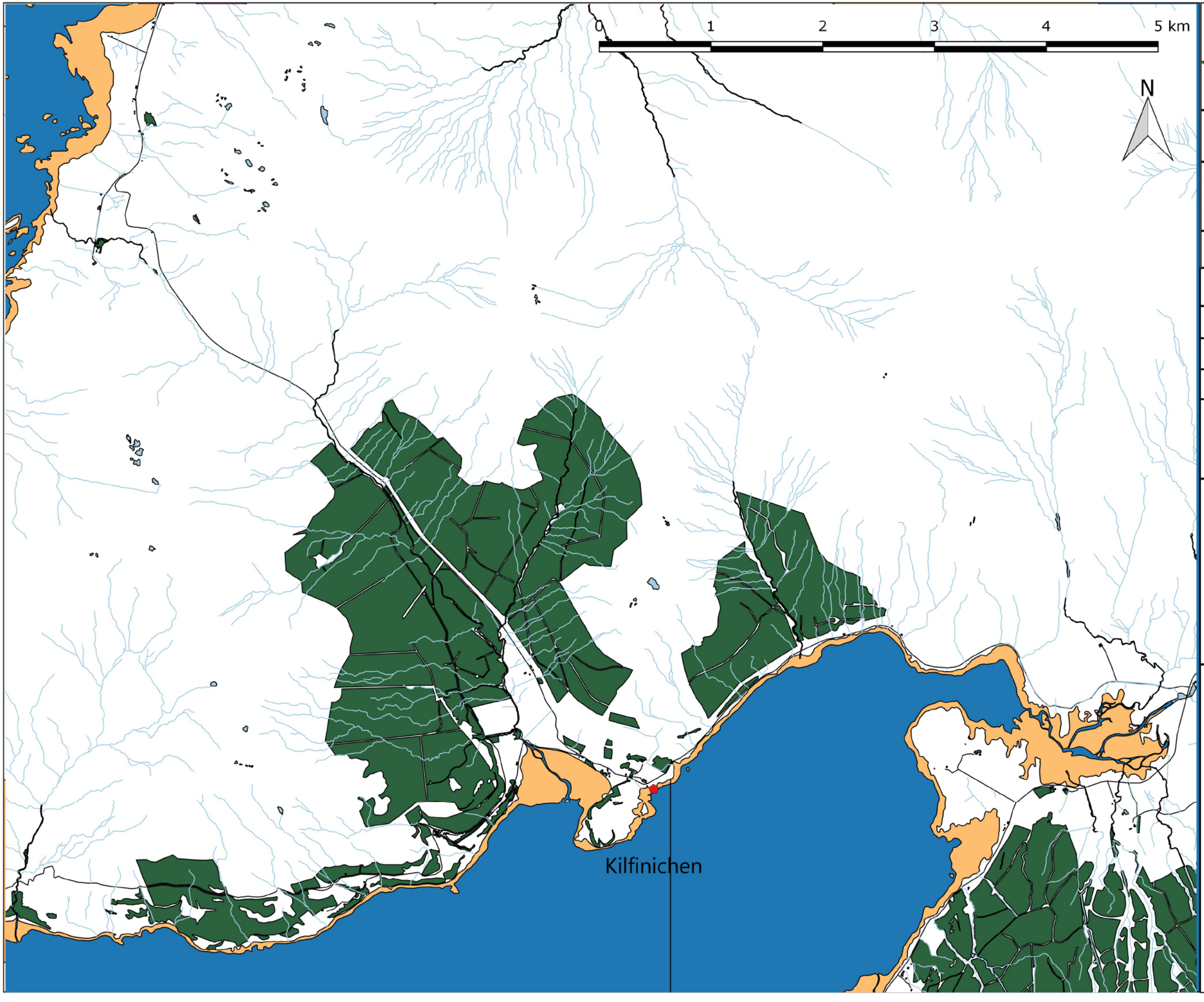
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Legend

- Red Line Boundary
- Marine Licence Points
- Tidal Water
- Building
- Foreshore



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Title: Kilfinichen Timber Plantation

Drawing No: 44.02.10

Page 1	Rev No: 1	Drawing Date: 09/08/2018

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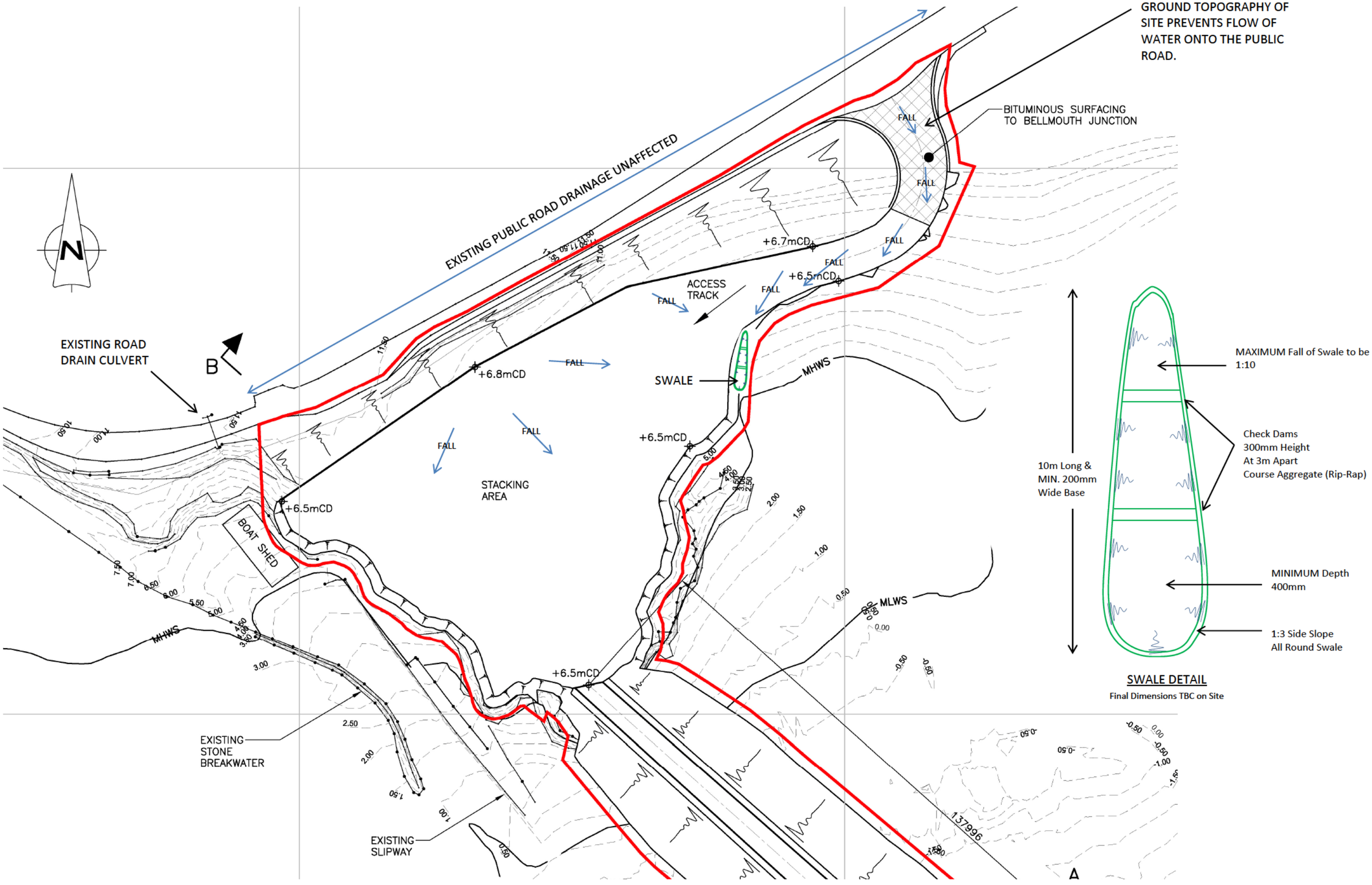
Legend

- Kilfinichen
- Foreshore
- Tidal Water
- Building
- Woodland
- Freshwater
- Roads

PLANNING PERMISSION: 17/01937/PP
KILFINICHEN PIER FACILITY – SURFACE WATER DRAINAGE PLAN

8TH NOVEMBER 2017

Over marked extract from drawing number 1570-117 - Proposed General Arrangement.



SWALE DETAIL

Final Dimensions TBC on Site

Kilfinichan
FB
Cattle Grid
Kilfinichen
Church (remains of)
Cemetery
Issues
The Old Post Office
TCB
Cattle Grid
Track
Track
Boat House
Mean High Water Springs
Rock
Mean Low Water Springs
Rock
Rock
Rock, Sand and Shingle
MHWS
A ird Chill Fhinichin
Dun
Eilean na h-O rdaig

LAND WITH APPLICANTS OWNERSHIP OUTLINED IN BLUE

PROPOSED SITE AREA OUTLINED IN RED

GENERAL NOTES

1. ALL LEVELS ARE IN METRES AND RELATE TO CHART DATUM, UNLESS NOTED OTHERWISE.
2. ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS NOTED OTHERWISE.
3. ORDNANCE DATUM IS +1.85m ABOVE CHART DATUM.
4. MHWS +4.3mCD
   MLWS +0.8mCD

Argyll and Bute Council
Planning and Regulatory Services
Application ref no: 17/01937/PP
Date received: 25/8/17
Drawing no: 1 of 9
Revisions: NO

REV	DATE	DETAILS	DRAWN	CHK'D	APP'D

AMENDMENTS

CLIENT
KILLIEMORE ESTATES

PROJECT
KILFINICHEN PIER

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HEBRIDES 01851 81454 hebrides@wallacestone.co.uk

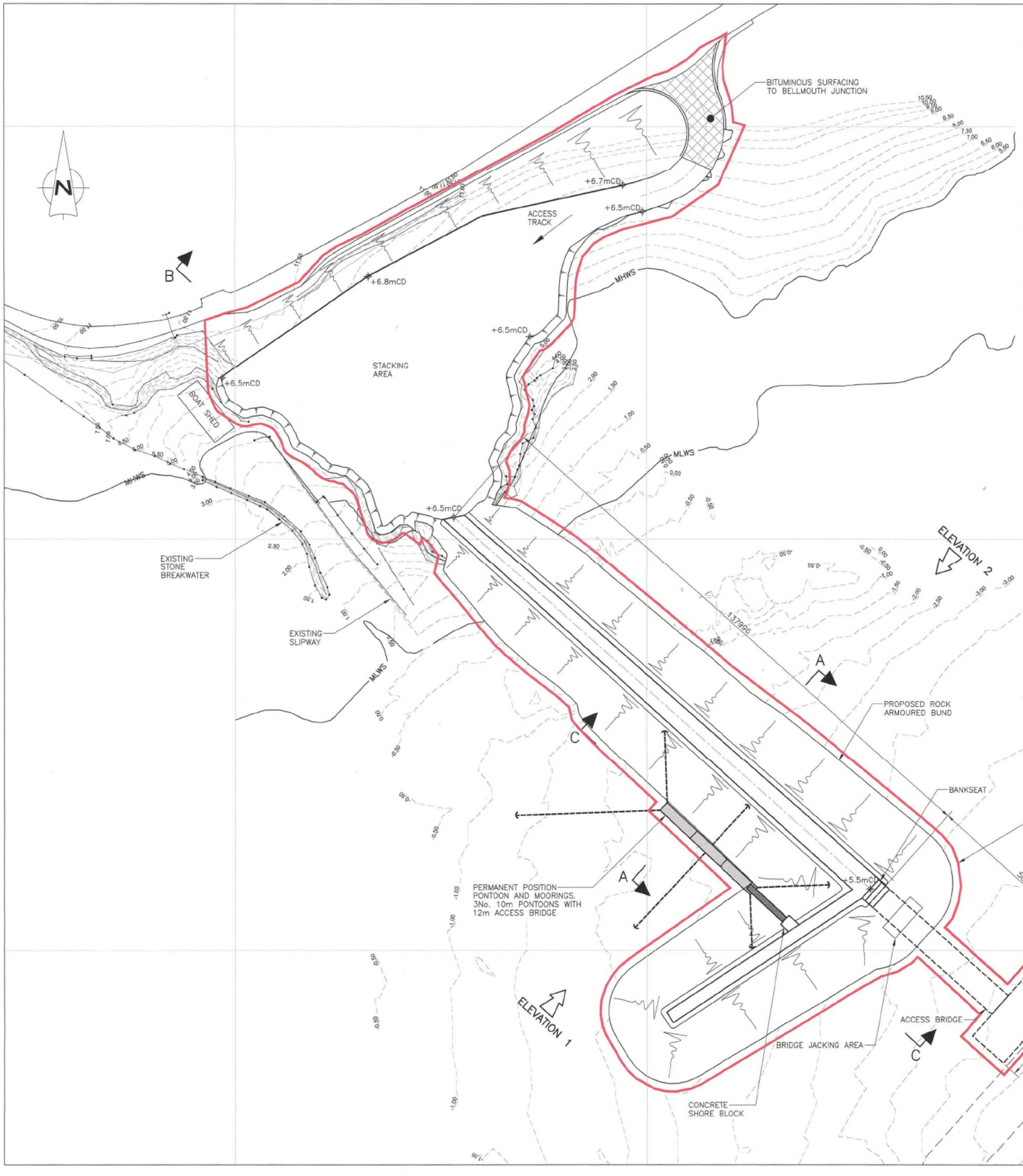
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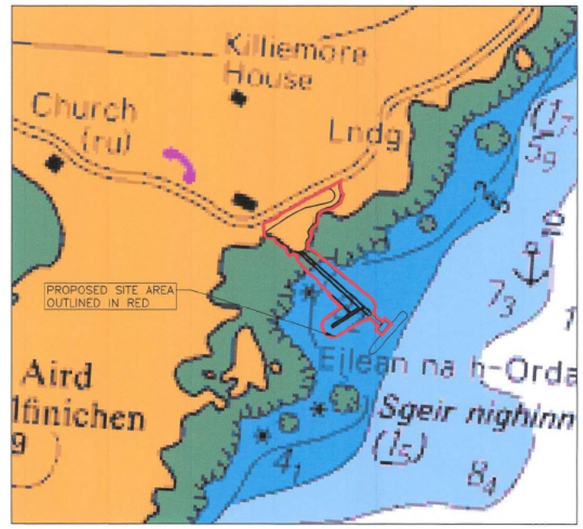
ARGYLL AND BUTE COUNCIL
This plan has been APPROVED by the PLANNING AUTHORITY and is to be read in conjunction with the Planning Conditions of Consent No. 17/01937/PP
[Redacted]
Head of Planning and Regulatory Services
Date 26/9/17

DRAWN	CHECKED	APPROVED
JA	GB	GB
DATE 13.07.17	DATE 13.07.17	DATE 13.07.17

SCALE (A1) 1:1000
STAGE PLANNING
REVISION

PROJECT No. 1570
DRAWING No. 116





LOCATION PLAN

SCALE 1:5000

GENERAL NOTES

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3. ORDNANCE DATUM IS +1.85m ABOVE CHART DATUM.
4. MHWS +4.3mCD
   MLWS +0.6mCD
5. THIS DRAWING TO BE READ IN CONJUNCTION WITH 1570/118 & 120.

Argyll and Bute Council
Planning and Regulatory Services
Application ref no: 17/01937/PP
Date received: 05/9/17
Sheet no: 2 of 4
Officer initials: DM

REV	DATE	DETAILS	DRAWN	CHK'D	APP'D

AMENDMENTS

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PROJECT
KILFINICHEN PIER

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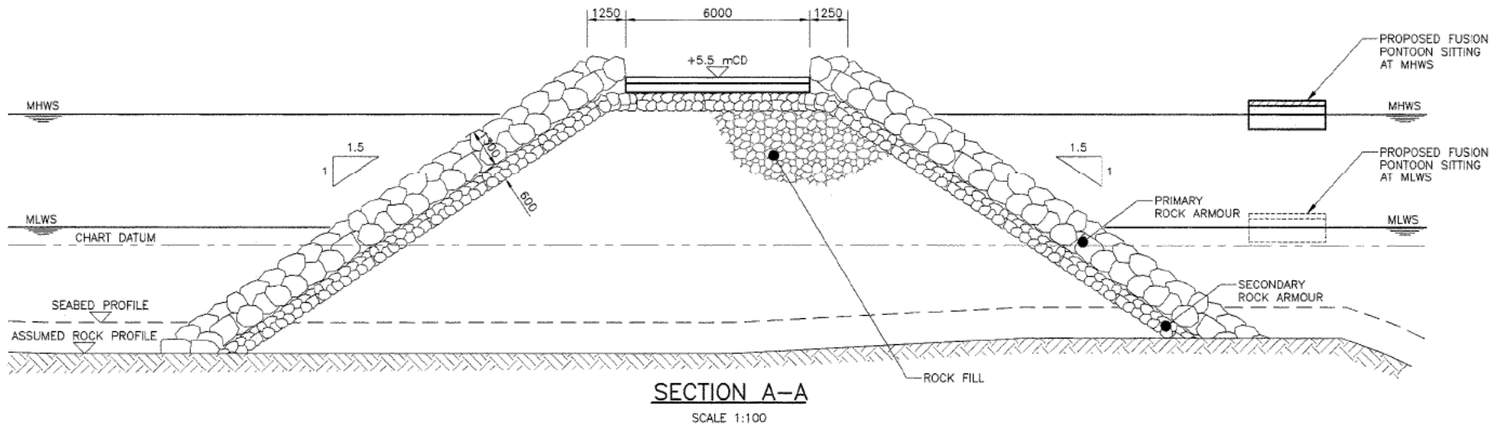
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PROPOSED GENERAL ARRANGEMENT (A1)

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STAGE PLANNING
REVISION

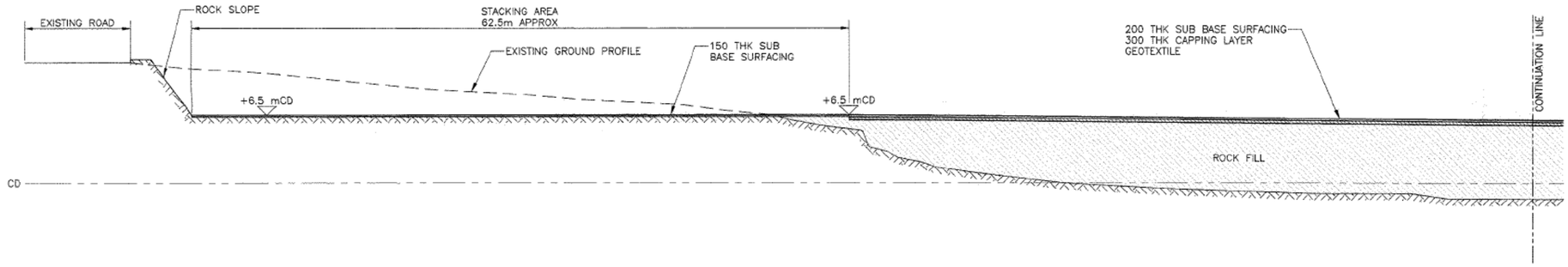
PROJECT No. 1570
DRAWING No. 117

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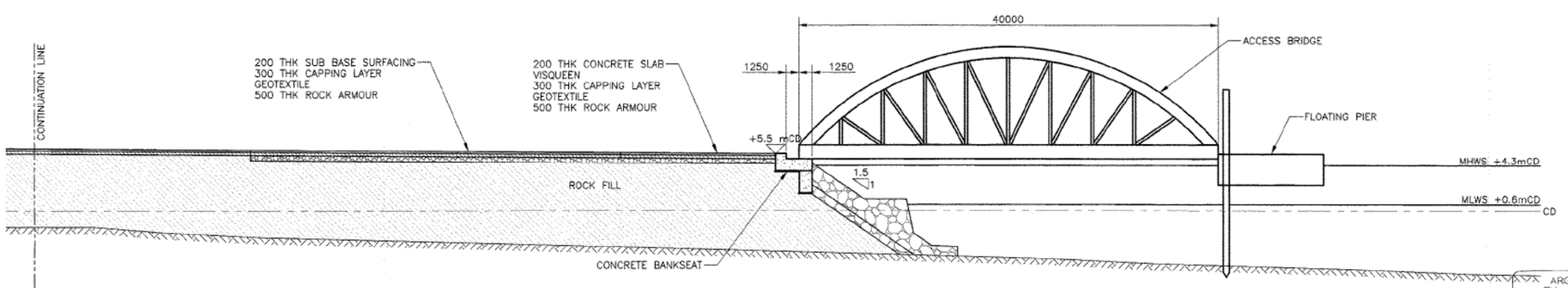
SCALE 1:100



SETION B–B

PART 1

SCALE 1:250



SETION B–B

PART 2

SCALE 1:250

GENERAL NOTES

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4. MHWS +4.3mCD
   MLWS +0.6mCD
5. THIS DRAWING TO BE READ IN CONJUNCTION WITH 1570/117.

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Planning and Regulatory Services

Application ref no: 17/01937/PP
Date received: 25/9/17
No of plans: 7 of 9
Drawing no: 20

REV	DATE	DETAILS	DRAWN	CHK'D	APP'D

AMENDMENTS

CLIENT

KILLIEMORE ESTATES

PROJECT

KILFINICHEN PIER

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DRAWING TITLE

PROPOSED SECTIONS THROUGH CAUSEWAY

(A1)

DRAWN	CHECKED	APPROVED
JA	GB	GB
DATE 13.07.17	DATE 13.07.17	DATE 13.07.17

SCALE (A1) AS SHOWN

STAGE PLANNING

REVISION

PROJECT No. 1570

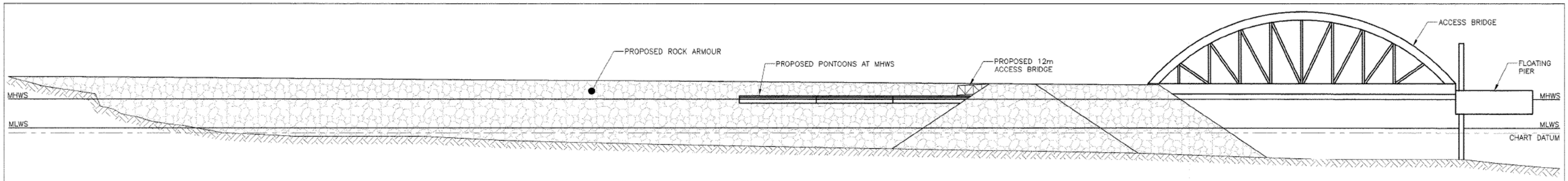
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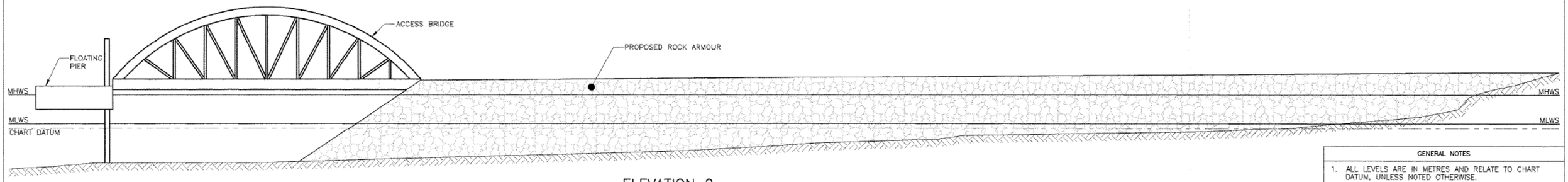
Head of Planning and Regulatory Services

Date 28/10/17



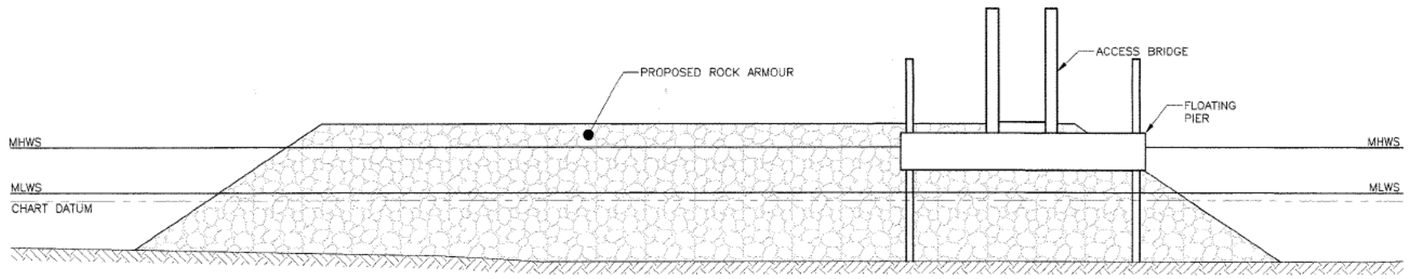
ELEVATION 1

SCALE 1:250



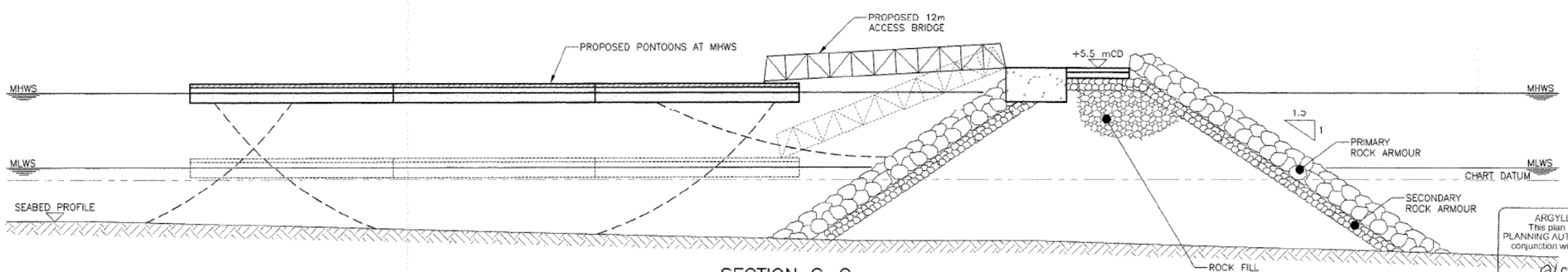
ELEVATION 2

SCALE 1:250



ELEVATION 3

SCALE 1:250



SECTION C–C

SCALE 1:125

GENERAL NOTES

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3. ORDNANCE DATUM IS +1.85m ABOVE CHART DATUM.
4. MHWS +4.3mCD
   MLWS +0.6mCD
5. THIS DRAWING TO BE READ IN CONJUNCTION WITH 1570/117.

Argyll and Bute Council
Planning and Regulatory Services

Application ref no: 17/01937/PP
Received: 05/9/17
Page no: 4 of 4
Plan no: 20

REV	DATE	DETAILS	DRAWN	CHK'D	APP'D

AMENDMENTS

CLIENT

KILLIEMORE ESTATES

PROJECT

KILFINICHEN PIER

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DRAWING TITLE

PROPOSED ELEVATIONS AND ADDITIONAL SECTION (A1)

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JA	GB	GB
DATE 13.07.17	DATE 13.07.17	DATE 13.07.17

SCALE (A1) AS SHOWN

STAGE PLANNING

REVISION

PROJECT No. 1570

DRAWING No. 120

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[Redacted]

Head of Planning and Regulatory Services

Date: 28/9/17

Glossary

KILFINICHEN ESTATE
Isle of Mull

1 Glossary

Acronym	Definition
AA	Appropriate Assessment
A&BC	Argyll ad Bute Council
AB-LDP	Argyll and Bute Local Development Plan
BAPs	Biodiversity Action Plans
BoCC	Birds of Conservation Concern
BTO	British Ornithology Trust
CD	Chart Datum
CEMD	Construction Environmental Management Document
cSAC	Candidate Special Area of Conservation
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EPS	European Protected Species
EPSL	European Protected Species
GEN	General Planning Principles
HRA	Habitats Regulations Appraisal
IEEM	Institute of Ecological and Environmental Monitoring
IEMA	Institute of Environmental Monitoring and Assessment
INNS	Invasive Non-native Species
ITI	Infaunal Trophic Index
JNCC	Joint Nature Conservation Committee
LDP	Local Development Plan
LNCS	Local Nature Conservation Sites
LNRs	Local Nature Reserves
MHWS	Mean High-water Springs
MLWS	Mean Low-water Springs
MPA	Marine Protected Area
MS-LOT	Marine Scotland Licensing Operations Team
NMBAQC	National Marine Biological Analytical Quality Control
NMP	National Marine Plan
NPF	National Planning Framework
OPP	Otter Protection Plan
PAC	Pre-application Consultation
PANs	Planning Advice Notices
PMF	Priority Marine Features
SAC	Special Area of Conservation
SOM	Schedule of Mitigation
SNH	Scottish Natural Heritage
SPA	Special Protection Area
SPP	Scottish Planning Policy
SSSI	Special Site of Scientific Interest
UK	United Kingdom